



H-Gram 027: There Are No Headstones at Sea—The Search for *Wasp* and *Hornet*

3 May 2019

In this H-gram, I deviate from my normal methodology of tracking with anniversaries of World War I, World War II, and Vietnam in order to discuss the recent discoveries by RV Petrel of the lost World War II-era aircraft carriers *Wasp* (CV-7) and *Hornet* (CV-8), and other ships sunk in "Iron Bottom Sound" during the Guadalcanal campaign. Full details can be found in attachment H-027-1.

The battles in and around Guadalcanal were among the most ferocious and costly in the history of the United States Navy. The Japanese fought with extraordinary skill and tenacity, sinking two U.S. aircraft carriers, five heavy cruisers (plus an Australian heavy cruiser,) two light cruisers, 15 destroyers, and numerous other vessels. The U.S. Navy countered with extreme courage and determination, sinking two Japanese battleships, one light carrier, and numerous cruisers and destroyers. In the end, despite several defeats, the U.S. Navy emerged victorious, albeit at a very high cost. Nearly 5,000 U.S. Sailors died in these battles, including Rear Admiral Daniel Callaghan, Rear Admiral Norman Scott, and all five Sullivan brothers.

Wasp was mortally wounded on 15 September 1942 by what is probably the most effective spread of torpedoes in history. A salvo of six torpedoes from Japanese submarine I-19 was responsible for the loss of the carrier, sinking (belatedly) the destroyer O'Brien (DD-415), and putting the battleship North

Carolina (BB-55) out of action for two months. *Hornet* was mortally wounded at the Battle of the Santa Cruz Islands on 26 October 1942 by what was probably the most well-executed coordinated dive-bombing and torpedo attack by either side during the war. After a day-long beating, *Hornet* eventually succumbed to the cumulative damage of three aerial torpedoes, seven bombs, two crashed Japanese aircraft, nine U.S. torpedoes, hundreds of U.S. 5-inch rounds, and, finally, four torpedoes from Japanese destroyers.

Although the loss of *Wasp* and *Hornet* represent "defeats," in each case there were innumerable instances of extraordinary valor and courage by U.S. Sailors. It was the Sailors on ships like *Wasp* and *Hornet* who held the line in the darkest times of the war and turned the tide even before the industrial might of the United States could be brought to bear. The officers and Sailors who fought in these battles were mostly volunteer professionals (the draft had only been instituted just before the start of the war). Many had endured the long inter-war period of inadequate budgets, low pay, slow promotions, and national neglect, yet they did not shirk their duty, often going into battle against overwhelming odds, with critical weaponry that was inferior to that employed by the Japanese. The point of finding and publicizing Navy shipwrecks is to ensure that the legacy of valor and sacrifice by these Sailors is known to the Navy today and by the American people, and will live on as long as our Navy exists.

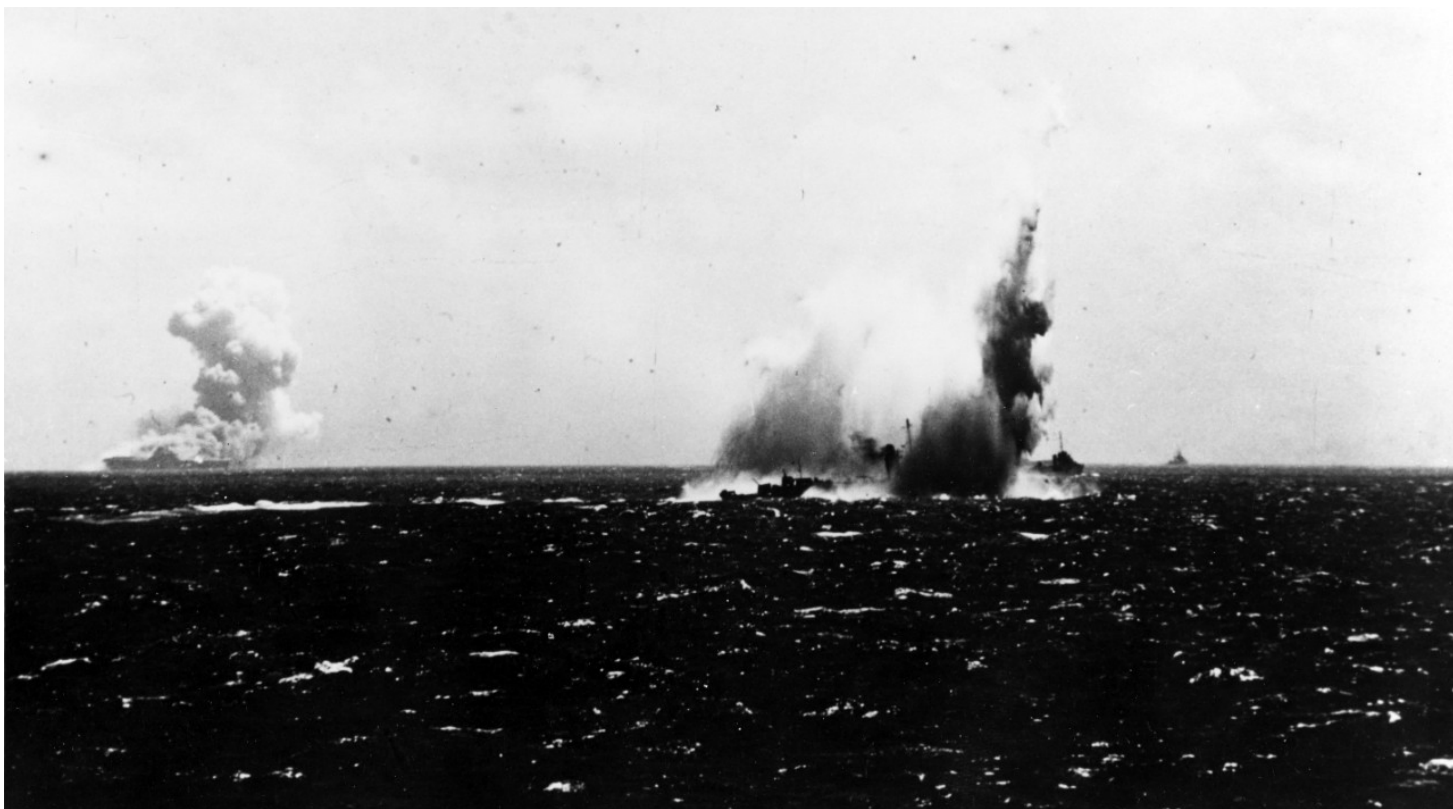
On 12 February, CBS broke the story that the privately funded research ship Petrel had located the wreck of the Hornet. On 13 March, the online New York Times Magazine, followed by CBS, broke the story that Wasp had been located by Petrel, followed by another story on 14 March, and the hardcopy New York Times Sunday Magazine on 17 March. Both stories made national morning and evening news, and were picked up by a wide variety of national and international media, telling a wide audience stories that the U.S. Navy can be proud of. Actually, Wasp was located first, on 14 January. Over the last several years, the Naval History and Heritage Command (NHHC) and Petrel have established a trusted collaborative relationship, and, for the first time, NHHC personnel had been invited to participate in this expedition. I had the pleasure to be on board Petrel for the discovery of the Wasp, although I have to admit that seeing an aircraft carrier on the bottom of the ocean is quite a sobering experience.



USS Wasp (CV-7): Ship's data plaque, photographed in September 1940 (19-N-22199).



USS Hornet (CV-8): View taken after commissioning at Norfolk Navy Yard, Portsmouth, Virginia, 19 November, 1941, from directly astern while in drydock. Note details of after end of flight deck, ship's name across stern, and ship's boat stowage beneath flight deck (19-N-26400).



USS O'Brien (DD-415) is torpedoed by a Japanese submarine during the Guadalcanal campaign, 15 September 1942. USS Wasp (CV-7), torpedoed a few minutes earlier, is burning in the left distance. O'Brien was hit in the extreme bow, but whipping from the torpedo explosion caused serious damage to her hull amidships, leading to her loss on 19 October 1942, while she was en route back to the United States for repairs (80-G-457818).

H-027-1: There Are No Headstones at Sea— The Search for Wasp and Hornet

H-Gram 027, Attachment 1

Samuel J. Cox, Director NHHC

March 2019

High on a windswept bluff above the Pacific at San Francisco's Land's End stands an American flag and a memorial to the heavy cruiser USS *San Francisco* (CA-38). It is overlooked by most visitors because on the other side of the parking lot is a spectacular view of the Golden Gate Bridge, under which that battered cruiser returned, under her own power, despite having been hit 45 times during the brutal night battle off Guadalcanal on Friday the 13th,

November 1942. I, however, never miss an opportunity to pay my respects at the memorial, for although *San Francisco* returned from the battle with a Presidential Unit Citation, 110 of her crewmen (including 7 Marines) did not.

The memorial consists of the bridge wings of *San Francisco*, removed after the battle, and almost sold for \$350 in scrap value at the end of the war. The port bridge wing is perforated with holes large and small, inflicted by the Japanese battleship *Hiei* and other ships. It is profoundly emotionally sobering to know that the shells and shrapnel that blasted through that metal killed Rear Admiral Daniel Callaghan, Captain Cassin Young, and every other officer on the bridge except Lieutenant Commander Bruce McCandless, who chose to keep *San Francisco* in the battle rather than disengage, despite his serious wounds. Other shells killed the previously wounded executive officer, the acting executive officer, and every officer senior to McCandless but one, Lieutenant Commander Herbert Schonland, who, as the damage control officer, stayed below to keep the damaged cruiser from capsizing.

Rear Admiral Callaghan would be awarded a posthumous Medal of Honor, along with three of *San Francisco's* crew: McCandless, Schonland, and Boatswain's Mate First Class Reinhardt Keppler. Captain Young, who had been awarded a Medal of Honor for heroism during the attack on Pearl Harbor, would receive a Navy Cross along with 31 others of his crew (21 posthumously including Young); 21 Silver Stars were also awarded. Despite this record of extraordinary valor and ultimate sacrifice, an ever-decreasing number of people today have any clue of the price the U.S. Navy paid in the early days of World War II to buy the time for a nation that was unprepared for war, so that the U.S. could achieve ultimate victory in that terrible war, so that we could all have the freedom we take for granted today.

The *San Francisco* memorial is oriented so that it points along a great circle course to the island of Guadalcanal. The largest town on Guadalcanal, Honiara, is now the capital of the independent Solomon Islands, in a relatively isolated area of the South Pacific northeast of Australia. As I arrived at Honiara International Airport (formerly Henderson Field, the name still on the tower) on 1 January 2019, it was clear that Guadalcanal was not quite as far off the beaten path as it was in 1942 when Imperial Japan and the United States waged a brutal months-long campaign for control of Henderson Field. From the airfield I could see "Bloody Ridge," one of several immortalized places on the island where U.S. Marines and, later, U.S. Army troops, fought valiantly and at great cost to prevent repeated Japanese counter-attacks from regaining control of the airfield that the Japanese had originally begun to build. I could also see Mount Austen, site of a modern Japanese memorial to the over 20,000 Japanese soldiers and sailors who died in vain trying to re-take the airfield.

As I stood on the bridge of the research vessel *Petrel* with its sweeping view and my first sight of the waters north of Guadalcanal, I admit to being overcome with emotion, literally choking up and barely able to speak for several minutes. Although the sea was calm, the sky overcast but not threatening, a typical late tropical afternoon, I knew

that unseen under those placid waters were about 30 U.S. Navy ships, and another 10 or so in waters adjacent to Guadalcanal. Almost 5,000 U.S. Navy Sailors had died in five major night surface battles, two carrier versus carrier duels, and dozens of smaller but deadly naval battles for control of the sea, and countless dogfights for control of the skies over the sea. From where I was standing, in about a 60-degree arc, I could clearly see the sites of all five surface battles: Savo Island, the worst defeat for the U.S. Navy at sea in history (9 August 1942); Cape Esperance, a narrow U.S. victory (11-12 October); the suicidal bloodbath for both sides of 13 November and the costly but decisive U.S. naval victory on 14-15 November; and Tassafaronga (30 November), yet another terrible U.S. defeat, but which did not change the outcome of the campaign. So many U.S. and Japanese ships were lost in these waters that they became known as Iron Bottom Sound.

I had been invited aboard the *Petrel* to participate in their search for two U.S. aircraft carriers lost in the campaign for Guadalcanal: the USS *Wasp* (CV-7) and the USS *Hornet* (CV-8), and, time permitting, other sunken U.S. and Japanese ships. To be frank, it would have been enough just for the opportunity to see Iron Bottom Sound, and pay my respects to those thousands of Sailors who left such a legacy of honor, courage, and commitment that our Navy strives to live up to today. But, the chance to be the first to see aircraft carriers unseen for 77 years was an opportunity I couldn't let pass.

Petrel is a privately funded, highly sophisticated ocean research ship, equipped with state-of-the-art autonomous and remote underwater research equipment capable of search of the ocean floor down to 19,000 feet and of covering a larger search area faster than previous research ships. It also had better internet connectivity via satellite than I have from my desktop at work, which I suppose would be expected given the ship was funded by Microsoft co-founder Paul Allen, who sadly passed away last year. Mr. Allen did live to see his dream of finding the lost heavy cruiser USS *Indianapolis* (CA-35), sunk with heavy loss of life in the last weeks of World War II. *Petrel* continues to fulfill his wish of honoring his

father's World War II naval service by locating other U.S. ships lost in action.

The U.S. Naval History and Heritage Command's Underwater Archaeology Branch pays close attention to any effort to find sunken U.S. Navy vessels. Under customary international maritime law, sunken naval vessels remain sovereign property, and the "right of salvage" or the "right of finds" for sunken merchant ships or commercial vessels do not apply. The U.S. Navy retains title to all sunken ships and aircraft wrecks (including terrestrial) in perpetuity unless specifically legally divested (the Civil War ironclad USS *Monitor* sunk off Cape Hattaras in 1863 is a rare example of this). In addition, the U.S. Navy has traditionally viewed a sunken naval vessel as a "fit and final resting place," for U.S. Navy Sailors lost at sea due to the enemy or the elements, and this has recently been codified by a U.S. Navy regulation (at NHHHC's instigation). Many of these wrecks are "war graves," or otherwise represent the last resting place of Sailors who gave their lives in the service of our country, and, as such, deserve to be treated with the utmost respect and decorum—they are literally hallowed sites as much as the Tomb of the Unknown Soldier or Arlington National Cemetery. In addition, many of these sunken craft are hazardous due to unexploded ordnance or risk environmental contamination due to trapped fuel oil, as well as other potential dangers.

In 2004, the "customary" maritime law was legally codified by the U.S. Congress under the "Sunken Military Craft Act (SMCA)," for U.S. warships, naval auxiliaries, or other shipping operating under U.S. government control in non-commercial service (e.g., merchant ships carrying U.S. war material in convoy) as well as military aircraft. The act applies to U.S. ships that meet the definition of "military craft" anywhere in the world, but applies only to U.S. citizens. That is, U.S. sunken military craft outside U.S. territorial waters are not protected by the SMCA from salvage activity by foreign entities, although "customary" maritime law still applies to the extent that the foreign entity chooses to respect it. Nation-states generally do respect customary maritime law (which was also codified under the United Nations Law of the Sea Convention, which

the United States signed but has not yet ratified). However, some salvagers conduct operations either unbeknownst to nations or outside any national jurisdiction. For example, within the last several years, British and Dutch warship wrecks lost during the Battle of the Java Sea in February 1942 such as the British heavy cruiser HMS *Exeter*, have been blown apart by explosives and the pieces brought up by claw crane to barges (most likely from China), with human remains buried in unmarked mass graves ashore and the remains of the ship used as scrap (metal from shipwrecks that occurred before the advent of atmospheric nuclear explosions appears to have a market value worth the effort). In the case of Java Sea, such salvage operations are believed to have been conducted without the knowledge of official Indonesian government authorities.

The U.S. has lost two ships to this illicit activity in the Java Sea, the destroyer USS *Pope* (DD-225) and the submarine USS *Perch* (SS-176), with the saving grace being that neither vessel went down with their crews (their hell began in Japanese prisoner of war camps). NHHHC continues to work closely with the U.S. Country Team in Jakarta to have Indonesia declare the wreck of the heavy cruiser USS *Houston* (CA-30) a protected maritime conservation zone so that she does not meet the same fate. *Houston* was lost on 1 March 1942 along with the Australian light cruiser HMAS *Perth* in a heroic night action against an overwhelming Japanese force in the Sunda Strait; approximately 600 of *Houston*'s crew went down with the ship and are likely entombed within. Many others died in the water or in Japanese captivity.

Throughout all previous incarnations of the command, NHHHC has kept a database of known or estimated positions of sunken U.S. naval vessels or aircraft as a matter of course and for the sake of history. It includes about 3,000 shipwrecks of all sizes dating to the Continental Navy plus 14,000 (and counting) aircraft wrecks. This database activity now has additional impetus as NHHHC is the U.S. Navy's executive agent for administering SMCA, and there are severe civil penalties (up to \$100,000 per day) that can be levied on any U.S. citizen who deliberately disturbs a wreck covered by the act. In order to prove any such case in court, however, it is

important to know the exact location and condition of wrecks in order to prove disturbance. Although Indonesia came under criticism for failing to protect the Java Sea wrecks, the reality is that even the U.S. Navy lacks the resources to monitor the condition of most of sunken naval vessels. Working with legitimate private researchers such as the *Petrel*, or receiving reports from responsible recreational divers, is generally the only way NHHHC can learn of the location and condition or ongoing disturbance of U.S. Navy wrecks.

Under SMCA, it is perfectly legal for anyone to dive on a U.S. Navy wreck anywhere in the world (consistent with local laws) so long as there is no intent to disturb the wreck. If there is a valid scientific, educational, archaeological, environmental, or other U.S. Government purpose, NHHHC has authority to issue a permit to a requestor for controlled disturbance of a wreck, which so far has been extremely rare. (Special policies are in place in the case of supporting activity by the Defense POW/MIA Accountability Agency–DPAA.)

Initially, Mr. Allen's group (operating under his corporation, Vulcan, Inc.) began hunting shipwrecks in 2015 using his private yacht, *Octopus* (which was equipped with very sophisticated underwater search gear), and relying entirely on their own independent research. *Octopus's* survey of U.S. and Japanese ships in Iron Bottom Sound and the location of the Japanese super-battleship *Musashi* in the Philippines attracted NHHHC attention. It quickly became apparent that Vulcan's Subsea Team was a very responsible organization, with exceptional capability, that treated the wrecks with the utmost respect, with no intent other than to find the wrecks and then publicize the courage and sacrifice of those U.S. Sailors who served aboard. (The team also had the wherewithal to get these stories of U.S. Navy valor into widely disseminated media such as the *New York Times* and CBS and not just into an H-gram.) In addition, Vulcan's Subsea Team voluntarily shared positional and condition information (including extensive video and photos) with NHHHC, and made clear they had no intent to publicize the precise coordinates of the wrecks. This began a collaborative relationship between Vulcan and NHHHC, at no cost to the U.S. Navy other than staff

time I chose to commit to the effort (which is a sunk cost). I would also note that NHHHC collaborates with a few other research entities, such as Bob Ballard—so long as the research is legitimate, there is no intent to disturb the wreck, and the exact location is not publicized.

With the purchase of *Petrel* in 2016, and the desire by Mr. Allen to find the wreck of the USS *Indianapolis* (after multiple previous efforts by others had failed), the vessel's underwater search group approached NHHHC for additional data to supplement the considerable amount of data they had already amassed. As director of NHHHC, I had previously directed NHHHC historians and underwater archaeologists to do a "deep dive" (in the records) regarding the loss of *Indianapolis*. As a result of that, along with modern wind/current drift computer modeling courtesy of the U.S. Naval Academy Oceanography Department, NHHHC determined that the actual position of *Indianapolis'* loss was about 40 nautical miles west-southwest of the "official" U.S. Navy position used in the court of inquiry and court martial of Captain Charles McVay in 1945. I directed this information be shared with *Petrel*. Given her exceptional capability, she would have eventually found *Indianapolis* without NHHHC's help, and, in fact, the actual position of *Indianapolis* was about the same distance west but a bit further to the north than NHHHC's estimated position (but a lot closer than the "official" Navy position). Nevertheless, the successful search of the *Indianapolis*, Vulcan's care in managing the release of information (enabling NHHHC to initiate contact with the *Indianapolis* Survivor's Association so that the remaining few survivors learned of the discovery before it hit the media), and the no-cost sharing of data from *Petrel* established a solid foundation for a trusted relationship that continues to this day.

The Vulcan Group prefers to keep future operations by *Petrel* as proprietary information and does not divulge positional data of the ship while underway. However, since the *Indianapolis* search, *Petrel* has shared future plans with NHHHC. During 2018, *Petrel* located the aircraft carrier USS *Lexington* (CV-2), lost during the Battle of the Coral Sea in May 1942, the light anti-aircraft cruiser USS *Juneau* (CL-52), sunk by Japanese submarine *I-26* after being severely

damaged in the 13 November 1942 battle off Guadalcanal, and the light cruiser USS *Helena* (CL-50), sunk during the Battle of Kula Gulf in July 1943. The 2018 expedition searched for, but was unable to locate, the destroyer USS *Strong* (DD-467), sunk in the southern Kula Gulf by what is believed to be the longest successful torpedo shot in history (11 nautical miles) by a Japanese Type-93 "Long Lance" torpedo. *Petrel* would subsequently locate *Strong* on 26 February 2019.

In late 2018, *Petrel*'s team issued an invitation to NHHHC to participate aboard the vessel in a search for the lost aircraft carriers USS *Wasp* (CV-7) and USS *Hornet* (CV-8), and other ships in the Guadalcanal area, time permitting. Under the RHIP ("rank has its privileges") principle, I took the first underway period out of Honiara from 2-16 January, and NHHHC's long-time director of underwater archaeology, Bob Neyland, took the second two-week underway period. Upon arrival on board *Petrel*, I reacquainted with Mr. Robert Kraft, the head of *Petrel*'s "A.T.U." Unit ("All Things Underwater"); Mr. Paul Mayer, senior researcher and jack of many trades; and Ms. Janet Greenlee, their superb public outreach leader. On board with me were also Mr. Ed Caesar, an award-winning (Foreign Press Association 2014 Journalist of the Year) international correspondent doing a story for the *New York Times Magazine*, and international award-winning professional photographer David Maurice Smith.

The initial plan was to go after *Hornet* first due to her more extensive battle record (launching the Doolittle Raid on Japan; participating in the pivotal Battle of Midway, in which her entire torpedo squadron was shot down in one of the most valiant attacks against overwhelming odds in U.S. naval history; and her ultimate loss in the Battle of Santa Cruz in October 1942, during which her planes severely damaged the Japanese carrier *Shokaku* and her guns shot down many Japanese aircraft). *Meteora*, the goddess of weather, had other ideas. *Petrel* had very sophisticated tools for tracking weather and sea states. The autonomous underwater vehicle (AUV) could be launched and operate in almost any weather, but the manned Zodiac boat necessary to retrieve it when it surfaced could not be operated safely in the predicted

conditions. The weather in the area of *Wasp*'s sinking was only marginally better, but expected to improve sooner, so Robert Kraft made the decision to go for *Wasp* first (no plan survives contact with the enemy).

Wasp was a one-of-a-kind aircraft carrier, with her tonnage limited by treaty restrictions. She carried about the same number of aircraft (70-80) as the previous *Yorktown*-class (*Yorktown* (CV-5), *Enterprise* (CV-6), and *Hornet* (CV-8)), but was smaller, with less redundancy and less compartmentation to save weight. She was the first carrier to have a deck-edge elevator. Upon the outbreak of World War II, the less capable *Wasp* was intended to operate in the Atlantic, while *Yorktown* and *Hornet* were transferred to the Pacific. During this period, *Wasp* conducted two aircraft ferry missions, flying off British Spitfire fighters to bolster the defense of beleaguered Malta in the Mediterranean (and recovering one Spitfire—not a carrier aircraft—aboard that had engine trouble after launch, with a few feet to spare). However, with the loss of *Lexington* (CV-2) at Coral Sea and *Yorktown* at Midway, *Wasp* was rushed around to the Pacific.

At the time of the U.S. landings on Guadalcanal on 7 August 1942, *Wasp* provided air support, along with *Enterprise* and *Saratoga* (CV-3), while *Hornet* defended Pearl Harbor from potential Japanese attack. During the Battle of the Eastern Solomons on 24 August 1942, *Wasp* was out of position, having been ordered to go south to refuel, and missed the battle. *Enterprise* was badly damaged in the battle and had to return to Pearl Harbor for repairs and was replaced by *Hornet*. On 28 August, *Saratoga* was hit by a Japanese submarine torpedo (for the second time in the war) from I-26 and put out of action for several months, leaving *Wasp* and *Hornet* as the only two operational U.S. aircraft carriers in the Pacific. (I-26 would later sink the light cruiser *Juneau* on 13 November 1942.)

For the first weeks of September 1942, *Wasp* and *Hornet* operated south of Guadalcanal, close enough to provide support to the Marines ashore on short notice if necessary, but outside the range of land-based Japanese bombers. The Japanese countered by flooding that operating area with at

least nine submarines. On 15 September, Task Force 18 (TF 18), centered on *Wasp*, and TF-17, centered on *Hornet*, were providing air cover to a convoy transporting the 7th Marine Regiment (about 4,000 Marines) to reinforce the Marines already on Guadalcanal.

At about 1445, just after *Wasp* completed a launch and recovery cycle of aircraft and a particularly vulnerable time, the Japanese submarine *I-19* penetrated *Wasp*'s escort screen undetected and fired all six of her bow torpedoes at the carrier from the relatively short range of just under 1,000 yards. At least two and possibly three of the torpedoes struck *Wasp* on her starboard side forward, immediately igniting an intense conflagration and causing a 15-degree starboard list. Among other things, the explosions knocked out the fire mains, so the crew had no effective means to fight the fires that immediately spread.

The U.S. Navy had learned numerous hard lessons in damage control from the loss of *Lexington* at Coral Sea (such as filling aviation fuel lines with inert gas) and these lessons had been incorporated and had initially saved *Yorktown* at Midway, despite multiple bomb and torpedo hits, until she was later sunk by a Japanese submarine *I-168*, and they had saved *Enterprise* during the Battle of Eastern Solomons. Unfortunately, many of these preventive measures required warning of an inbound air strike in order to implement. In the case of *I-19*'s torpedoes, there were only a few seconds of warning.

Wasp was quickly rocked by secondary explosions from stored bombs and fuel (the third torpedo hit may or may not have actually been a secondary explosion). These were followed by a massive explosion at 1500 and within about 20 minutes it was apparent that saving the ship was impossible. Captain Forrest Sherman gave the order to abandon ship. It took about 40 minutes for the crew to go over the side and Sherman was the last living person to go into the water. (Sherman would be awarded a Navy Cross and a Purple Heart for his efforts to save his ship.)

Following the massive explosion on *Wasp*, Rear Admiral Norman Scott, embarked on *San Francisco*,

assumed command of TF-18, believing that Rear Admiral Leigh Noyes on *Wasp* would likely have been killed, so violent was the explosion. Noyes was only burned, but with all radio communication destroyed on *Wasp*, Scott's decision was correct. (One of the most famous photos of *Wasp* on fire was taken from *San Francisco*.) Noyes would be relieved of command and criticized, somewhat unfairly, for operating the carriers for too long in the same vicinity, increasing the risk of submarine attack. Fortunately, the burning *Wasp* remained afloat for hours, which enabled a relatively orderly abandonment, and the great majority of *Wasp*'s 2,247-man crew were rescued by the carrier's escorts, including the *Laffey* (DD-459), *Landsdowne* (DD-486), and other destroyers. Those who were killed included 25 officers, 150 men (including 4 Marines and 42 aircraft squadron personnel), and one war correspondent, Jack Singer (last seen sitting at his typewriter) for a total of 176 dead plus about 175 wounded. Captain Sherman's original report, filed in December 1942, gave a total of 193 killed (plus the journalist) and that number has been used in almost every account since, although one account (Richard Frank's very well-researched *Guadalcanal*) gives 173 (plus the journalist). However, very recent research by NHHHC historian Bob Cressman confirms 176 (including the journalist)—Frank's account missed two Marines. This just goes to show there is always something new to learn in history.

Survivors included Rear Admiral Noyes and Captain Sherman, who went on to be the youngest Chief of Naval Operations (CNO) at that time (1949-51), and, unfortunately, the youngest to ever die in office (of a heart attack). Benedict Semmes, Jr., went on to serve as a vice admiral and president of the Naval War College in the 1970s. Lieutenant David McCampbell, a landing signal officer (LSO) on *Wasp*, jumped into the water from the LSO platform and went on to be the U.S. Navy's all-time leading "ace," with 34 Japanese downed aircraft to his credit (a record 9 of them in one mission.)

Meanwhile, one of the torpedoes that missed *Wasp* passed directly under *Landsdowne* (DD-486) without exploding, and *Landsdowne* radioed a warning as the torpedo headed for the *Hornet* Task Force. At least three of the torpedoes that missed *Wasp*

travelled about five miles into *Hornet's* screen, one passing too close to the carrier for comfort. Another passed directly under the destroyer *Mustin* (DD-413) without exploding before hitting the new fast battleship *North Carolina* (BB-55,) killing five Sailors and blowing a 32 by 18 foot-hole in the ship, which necessitated the forward ammunition magazine be flooded as a precaution. Although still capable of making 25 knots, *North Carolina* required extensive repair and was out of action for two months. One of *Hornet's* escorting destroyers, *O'Brien* (DD-415), successfully dodged one of the torpedoes only to be hit in the bow by another. Although no crewmen were killed, the damage was severe enough that *O'Brien* broke apart and sank a month later after transiting over 2,800 miles attempting to reach Pearl Harbor for repair; her entire crew was rescued.

Hitting three ships with at least four of six torpedoes fired in a single spread makes Lieutenant Commander Takakazu Kinashi's attack arguably the most effective by a submarine of all time. *Wasp's* escort destroyers dropped 30 depth charges on *I-19*, but she escaped, only to later be sunk with all hands by destroyer USS *Radford* (DD-446) in November 1943.

For many years, the torpedo hits on *North Carolina* and *O'Brien* were attributed to a second submarine,



I-15; however, Japanese records confirm *I-19* fired all six. *I-15* did, however, witness the destroyer *Landsdowne* as she was ordered to scuttle *Wasp* with a spread of torpedoes at 2100 on 15 September. (Of interest, both *I-15* and *I-19* were of a class of submarines that was equipped with a hangar and a float plane, and a plane from sister

submarine *I-25* bombed Oregon twice with incendiary bombs in September 1942, the only air attacks on U.S. soil by foreign aircraft.)

The loss of *Wasp* left *Hornet* as the only operational aircraft carrier in the U.S. Pacific Fleet for over a month, until a repaired *Enterprise* arrived just in time to face four Japanese carriers (two fleet carriers, one medium carrier, and one light carrier) in the Battle of the Santa Cruz Islands on 26 October 1942, during which *Enterprise* was damaged again and *Hornet* was lost. The absence of *North Carolina* and *O'Brien* (which had been upgraded with additional anti-aircraft capability) from *Hornet's* escort screen was a significant factor in the number of Japanese aircraft that were able to penetrate the *Hornet* Task Force's anti-aircraft defenses and inflict mortal damage on the carrier. Although the damaged *Enterprise* remained in the area, her significantly impaired capability gave the Japanese a window of opportunity to attempt to reinforce and resupply their troops on Guadalcanal, setting the stage for the costly night surface battles off Guadalcanal on 13, 14, and 15 November 1942.

Petrel has a very sophisticated geospatial display capability. Paul Mayer had amassed every bit of positional data from every ship operating in the vicinity of the *Wasp* at the time she was hit and the time she sank, which was displayed on the big screen. The first thing that was apparent was the positions were quite literally "all over the map." My first thought was to comment that I had taken celestial navigation and it was a real (expletive), and nobody was shooting at me while trying to do a sight form. Instead I came up with something more mundane about the challenges of open-ocean navigation in the days before GPS, or even Loran and Omega. Nevertheless, there was a general clump and one significant outlier. The outlier

USS Hornet (CV-8) dead in the water with a destroyer alongside, 26 October 1942. Note the oil slick surrounding the carrier (80-G-304514).

happened to be the position recorded by the navigator of *Landsdowne*, the ship that had actually scuttled *Wasp*, about 25 nautical miles from the rest of the positions. *Wasp's* navigator had been rescued by *Landsdowne* and was aboard the destroyer when

she sank the *Wasp*. He recorded a position for where the WASP went down that was about 20 nautical miles different from the one recorded by *Landsdowne's* navigator, which was somewhat perplexing. I recommended going with *Wasp's* navigator's position as it was likely he had more experience—plus, it was basically the centroid of mass for the other recorded positions.

On the first attempt to send the AUV down to search, it decided to be a bit too autonomous and spontaneously aborted after a few minutes for reasons that were a bit of a mystery to the technicians. The second attempt also aborted after a few hours (a normal mission for the AUV would be about 18 hours to search roughly 40 square miles). By contrast, once the AUV was recovered, exploiting that data and searching the area on computer only took about ten minutes to. By this time, the weather that was supposed to be getting better had gotten worse, and 15-foot swells made Zodiac operations unsafe. Finally, on 5 January, the AUV got in a full search, and located a debris field that stood out quite clearly against what was essentially a flat, featureless mud desert 14,000 feet down. Since the wind was recorded as coming from the southeast, it was assumed that *Wasp* would have drifted to the northwest, and the next search was programmed accordingly, which resulted in a little more debris, but no ship. The next two attempts, postulating even more northwesterly drift, also came up as a "zonk."

After four attempts, with nothing to show except some photos of spectacular sunsets and blurry pictures of oceanic whitetip sharks (the species in *Indianapolis's* nightmare), one of the crew developed acute abdominal pain, which rightly led *Petrel* to make best speed (12 knots) for the 30-hour return transit to Honiara for medical attention beyond that which could be provided by *Petrel's* clinic. While waiting for the prognosis from the hospital ashore (which turned out well), Robert Kraft asked if there were any wrecks in Iron Bottom Sound I would like to take a look at with the remotely-operated vehicle (ROV). On a previous expedition, *Octopus* had mapped out over 40 wrecks or potential wrecks in Iron Bottom Sound, some of which had first been located and explored by Bob Ballard on his expedition in 1991–92. I asked to see

the destroyer *Laffey* (DD-459), even though it was a site previously located by Ballard, and the *Petrel's* team obliged.

The reason I wanted to see *Laffey* was because a painting of her is on my standard NHHC briefing cover slide and another print hangs on the bulkhead behind my chair in the command conference room. The painting depicts *Laffey* in a close-quarters duel with the Japanese battleship *Hiei*. During the pre-dawn hours of 13 November 1942, *Laffey* was second in a line of 13 U.S. ships (five cruisers and eight destroyers) that plowed head-on into a roughly circular formation of two Japanese battleships, one light cruiser, and 11 destroyers. The result was akin to a multi-car freeway pile-up in the fog that quickly degenerated into a hellacious no-quarter free-for-all. Naval historian Samuel Eliot Morison described it as being like "minnows in a bucket." A survivor described it as being like "a barroom brawl after the lights had been shot out." The mission was to prevent the Japanese battleships from bombarding Henderson Field, which Captain Young on *San Francisco* assessed as "suicide," sentiments with which Rear Admiral Callaghan agreed, but said they had no choice. Young's assessment was correct.

At one point early in the melee, *Laffey* passed directly ahead of *Hiei's* on-rushing bow emerging from a smoke screen, with a CPA (closest point of approach) of 20 feet. *Laffey* sprayed *Hiei* with every weapon she had, including the side-arms of officers on the bridge. The destroyer pumped numerous 5-inch shells into *Hiei*, hits that were described as "instantaneous impact"; most of them bounced off the battleship's thick armor plate. Nevertheless, *Laffey's* 1.1-inch and 20-mm anti-aircraft guns fired rounds into *Hiei's* bridge, wounding Rear Admiral Abe and *Hiei's* captain, and killing Abe's chief of staff and other officers on the bridge. After the battle, Abe remembered nothing of what had happened, and his ability to command and control the battle had been gravely impaired. In addition, *Laffey's* shells caused *Hiei's* pagoda-like superstructure to catch fire (described as "a burning high-rise apartment building" steaming through the battle), which then drew fire from numerous other

U.S. warships. *Laffey* also fired torpedoes at *Hiei*, but at too close a range for them to arm.

As *Laffey* drew away from *Hiei*, she came under concentrated fire from three Japanese destroyers and the battleship *Kirishima*. Hit by several 14-inch battleship shells and numerous smaller-caliber rounds from the destroyers, *Laffey* lost speed before her stern was blown off by a torpedo from another Japanese destroyer. Shortly after *Laffey*'s skipper, Lieutenant Commander William E. Hank, gave the order to abandon ship, a massive explosion killed him and many others. Chunks of the ship rained down on the destroyer *O'Bannon* (DD-450), which otherwise went through the thick of the battle miraculously without any casualties. *Laffey* suffered 57 killed and 114 wounded, and Hank would be awarded a second Navy Cross, this one posthumously; *Laffey* was awarded a posthumous Presidential Unit Citation.

As bad as the battle was for *Laffey*, she didn't get the worst of it. Three other destroyers were sunk: *Cushing* (72 killed), *Barton* (165 killed), and *Monssen* (145 killed). The light cruiser *Atlanta* was lost with 170 killed, including Rear Admiral Norman Scott (who had survived the sinking of the destroyer *Jacob Jones*—DD-61—in World War I), who was killed by "friendly fire" from *San Francisco* in the chaos. Scott would be awarded a posthumous Medal of Honor. *San Francisco* survived, with 86 dead, plus 24 killed the day before when a crippled Japanese torpedo bomber deliberately flew into the cruiser's anti-aircraft guns that had inflicted the mortal damage to the aircraft. *San Francisco*, in turn, would hit *Hiei* in a critical location, knocking out her steering, as the two ships steaming on opposite courses fired broadsides into each other at a near point-blank range of just over a nautical mile. Only the fact that *Hiei*, having been caught by surprise by the presence of the U.S. force, was still firing mostly shore bombardment rounds and incendiaries likely saved *San Francisco*, but not Callaghan or Young.

The next morning, the gravely damaged light cruiser *Juneau* was torpedoed by Japanese submarine *I-26* and blew up, killing all but about 100 or so of her crew, of whom all but 10 died over the course of ten days in the water due to exposure, salt-ingestion,

and shark attack. All five Sullivan brothers were lost on *Juneau*. Including the *Juneau*, 1,439 U.S. Sailors died in this battle, making 13 November 1942 the bloodiest battle at sea in U.S. naval history. Fifty-seven U.S. Naval Academy graduates died in this one battle alone.

As the ROV reached the seabed and approached the wreck of the *Laffey*, it was once again a deeply emotional experience knowing how many men had gone down with this ship in such a desperate battle. The damage to the ship was appalling. The descriptions in various accounts paled compared to the reality of seeing it. The bow area had taken at least one major caliber shell hit, and was crunched so the hull number could not be seen in the crumpled folds. The entire superstructure was perforated like the bridge wing at the *San Francisco* memorial, yet, through the zoom lens, the engine-order telegraph on the bridge could plainly be seen, intact. The two forward 5-inch turrets looked like they had been blasted open from the inside, the No. 2 turret trained aft as far as it would go. Both funnels had been blasted off and a huge gaping hole led to the engineering spaces. Reports said the stern had been blown off aft of the aftermost turret (No. 4). The stern was indeed missing, so no name could be seen, but everything after where the aft funnel should have been was completely mangled.

As the ROV carefully inched its way along each side of the ship, uncertainty began to mount among *Petrel*'s crew as to whether this wreck could be confirmed as *Laffey*. There were enough features still visible that I could identify it as a *Benson*-class destroyer. I asked the ROV operator to take a close look at the forward 5-inch gun director, as *Barton* (lost in the same battle) had a newer type fire-control radar. However, this one matched *Laffey*, so I was convinced, although others were still suffering lingering doubt. As the ROV was about to end its search, one of the operators spotted some sort of rectangle on the bulkhead at the quarterdeck. Using the powerful zoom optics of the ROV, the rectangle proved to be the builder's plaque, and "U.S.S. *Laffey*" could be seen through the marine growth. The sight of this ship, which had gone down fighting so heroically, evoked intense emotions in me that I

can only liken to a religious experience. The ship herself was the only marker her crew had.

After the doctors ashore worked their magic, it wasn't long before *Petrel* was back underway, heading southeasterly from Guadalcanal to resume the search, quickly rejoined by the oceanic whitetips in the five to six-foot range, whether the same or different group as before there was no way of knowing. Like the first set, these were not timid at all, getting right in with the Zodiac as the crew hooked a cable to the AUV so it could be hoisted out of the water. Like the two previous ones, two more search attempts came up totally empty. On the sixth dive, the AUV started taking on water, and the search effort was halted while repairs were made. The search area that had been covered now looked like a large rectangle and future searches would start adding to the perimeter. The question was, which direction? *Petrel* had a commitment to return to Guadalcanal on 16 January to pick up CBS correspondent Mark Philips and a TV news crew. Ed Caesar had to get off, and although the *Petrel's* great connectivity had enabled me to stay in touch with my office and keep up with work, I really did need to get back to Washington. Time for further searches was running out. The *Petrel* could return to the *Wasp* site later, but I could not.

While the AUV was being tinkered with, Kraft sent the ROV down to check out the debris field located on the first search. It turned out to consist of dozens of World War II-era helmets and a variety of other miscellaneous metal fragments, nothing of which looked like it definitely could have come from an aircraft carrier. Kraft and Mayer scrubbed and rescrubbed the after-action reports and the positional data. The question was whether or not to possibly use our last shot on *Landsdowne's* outlying position or to continue to search to the north and west of the debris field.

We were all convinced by now that the debris field was not from *Wasp*. It was possible the debris was from the torpedo hits on O'Brien or *North Carolina*, although how that would have produced a field of helmets was mystifying. Now working under the assumption that the debris field was from the hits on the ships in *Hornet's* group, *Petrel's* team tried to

determine the relative direction of *Hornet's* group from the *Wasp* when she was hit. Although the distance, roughly five miles, was well recorded, the navigational fixes from *Hornet's* group were as varied as those of *Wasp's*. The famous photo that shows O'Brien being hit by a torpedo as *Wasp* burns several miles in the background was about the only clue, using the direction of smoke pouring from *Wasp* as a reference. The chicken bones suggested a search to the southwest of where we had been looking.

After about another 18 hours of searching, the AUV surfaced at about 0300 on 14 January. The data card was pulled from the AUV and took about 20 minutes to load onto the computer. The search of the data was only a matter of minutes before the wreck of *Wasp* could be seen sticking out like a lighthouse against the barren backdrop of the bottom. The carrier was sitting upright and mostly intact. The sonar shadow clearly showed the island superstructure, and it was apparent there were large holes in the flight deck other than the elevators. The resolution of the side-scan sonar was such that from the first instant there was absolutely no doubt that this was an aircraft carrier, and the only one it could possibly be was *Wasp*.

The first view of *Wasp* was accompanied by a very long period of silence in the operations room. There was relief that we had found her, but the sight of an aircraft carrier at the bottom of the ocean is incredibly sobering. Like *Laffey*, knowing that this ship represented the final resting place of 176 Americans actually made it very somber for me and everyone else in the room (at the time, I still thought it was 194 Americans). Eventually, however, I admit that excitement set in. It turned out that *Wasp's* actual position was 11 nautical miles from the closest U.S. Navy navigational fix, and 23 nautical miles from that of *Landsdowne*.

Petrel is equipped with very precise GPS station-keeping ability, and took a position just off the port beam of *Wasp* and lowered the ROV into the water. Through the multitude of video and still cameras on the ROV, at least two sharks were observed to follow the ROV down to about 1,000 feet before they broke off. It took about an hour for the ROV to

descend to about 14,000 feet, arriving just off the bottom (but not touching it) only about 50 yards from the carrier. It could have been lowered closer with considerable precision, but Kraft wanted to take absolutely no chance of either hitting the ship or the ROV.

As the ROV cautiously approached the WASP, it became apparent that the ship had settled in deep mud almost to the normal waterline, which meant that finding exact locations of torpedo impacts would not be possible, although observed upward blast damage on catwalks along the flight deck gave indication of where torpedoes had exploded. The first part of *Wasp* to come in view was the innovative (and standard thereafter) deck-edge aircraft elevator, which could take planes from the hangar deck to the flight deck without creating a "hole" in the flight deck. At first it looked as if the flight deck was ringed by icicles; these proved to be chains that had served as lifelines along the catwalks that had come loose and were hanging from the stanchions. As the ROV slowly worked its way aft, 20-mm and 5-inch guns came into view. At the stern, the flight deck "round-down" had come loose and fallen at a diagonal across the last few frames of the ship, which caused the very aft end of the fantail to separate and resulting in the stern nameplate being buried in the mud and not visible.

As *Petrel* periodically re-positioned to ensure the umbilical cable would not come in contact with the ship, the ROV slowly worked its way forward along *Wasp's* starboard side. In the area of the island, the quad 1.1-inch anti-aircraft mounts were remarkably intact. Through the zoom lens, the interior of the bridge was a shambles and extensive material from the overhead had collapsed on to the deck. Just forward of the island, the ship was cleaved athwartships as if cut by a knife, mostly likely caused when the ship came to rest on the bottom, but probably originating in torpedo damage that was not visible in the mud. After rounding the bow, finding an anchor, and then crossing the flight deck to observe the port side of the island, which showed evidence of intense heat, the survey of the ship ended. Although 45 aircraft had gone down with the ship, none were observed on the flight deck nor through openings into the hangar bays.

The *Petrel's* team then navigated the ROV through the debris fields surrounding the ship, which contained such things as fire-control radars from the gun directors and other unidentified, but sometimes large, pieces of metal. About eight or nine badly damaged aircraft were located in the debris field. One was definitely an F4F Wildcat fighter, one was probably an SBD Dauntless dive bomber based on the dive brakes, and the rest were TBF Avenger torpedo bombers. In some cases, wings had been blasted away from fuselages, but in every case the tail assembly had been obliterated (no sign of horizontal or vertical tail surfaces were observed anywhere and had presumably been buried in the mud). The phenomenon precluded any identification of aircraft by bureau number or other ship or squadron markings.

With the survey complete and everyone satisfied, except for maybe the sharks, *Petrel* commenced a return voyage to Guadalcanal. Ed Caesar had gotten more "drama" for his article on the search than he had expected. I notified the Chief of Naval Operations and Vice Chief of Naval Operations of the find, and noted that the *Petrel* Group wished for no publicity until the *New York Times Magazine* had the opportunity to break the story, which finally occurred online on 13 March and in the Sunday magazine on 17 March. While anchored offshore Guadalcanal, CBS correspondent Mark Philipps conducted an extensive interview with me on *Petrel's* deck, as I pointed out the battles in Iron Bottom Sound, none of which made it on the air (this kept alive my perfect record with CBS; in 2006 Scott Pelly interviewed me for 45 minutes for a *60 Minutes* piece, and it all ended up on the cutting-room floor). Nevertheless, the *Wasp* and *Hornet* stories did make it onto CBS morning and evening national broadcasts.

My head of underwater archaeology, Bob Neyland, boarded *Petrel* after I disembarked. *Petrel* then went out and found *Hornet* on the first dive, so no drama for Bob. CBS broke the story on *Hornet* first, even though she had been found after *Wasp*. *Petrel* would then go on to locate and positively identify the Japanese battleship *Hiei*, which had been unable to steer after the "Achilles heel" hit by *San*

San Francisco. Hit over 85 times during the night battle, the stubborn ship finally succumbed the next day to multiple waves of air attacks from *Enterprise*, and from Henderson Field, whose airplanes had been saved by the sacrifice of Callaghan's force preventing a Japanese bombardment, at staggering cost.

I have been asked on occasion why the Navy would want publicity about shipwrecks. Don't sunken ships represent defeat? Actually, in the case of the U.S. Navy, most ship losses were in the course of victory, and victory has a price. Many of those ships lost in defeat were lost in acts of unbelievable courage in the face of overwhelming odds. Even in the worst of defeats, there are almost always numerous extraordinary acts of valor and sacrifice by American Sailors that deserve to be remembered. Even Rear Admiral Gunichi Mikawa, who inflicted the worst at-sea defeat of the U.S. Navy in the Battle of Savo Island, lauded the courage displayed by the northern group of U.S. cruisers, especially USS *Quincy* (CA-39), before all three were sunk. Mikawa commented that with five minutes more warning for the U.S. forces, the outcome of what should have been an evenly matched battle might have been completely different. Even at Pearl Harbor, the Japanese were astonished at how quickly U.S. ships were able to put up an intense anti-aircraft barrage—it was the weapons that were ineffective, not the U.S. Sailors who manned them. And at Pearl Harbor, those officers and sailors earned 15 Medals of Honor and 51 Navy Crosses for acts of extreme valor in the face of catastrophe. Such courage deserves to be remembered.

From the very beginning, American sailors have paid a very high price for the freedom of this nation. The Battle of Penobscot Bay (a defeat) *Bonhomme Richard* (John Paul Jones) versus HMS *Serapis*, and *Randolph* (Nicholas Biddle) versus HMS *Yarmouth*, were all in the top eight bloodiest battles of the American Revolution on land or sea, with over 300 killed in each. Their sacrifice deserves to be remembered.

Sadly, memorials dedicated to the sacrifice of American Sailors during the battles for Guadalcanal are few and far between. Besides the *San Francisco*

memorial, the USS *South Dakota* memorial in Sioux Falls honors the three destroyers lost in the battle of 14–15 November (*Preston*, *Walke* and *Benham*), and the museum ship *The Sullivans* (DD-573) in Buffalo has a room dedicated to *Juneau*, aboard which all five Sullivan brothers were lost after the battle of 13 November. The Sailors who fought at Guadalcanal were still mostly pre-draft volunteer professionals, many of whom had endured years of austere budgets, slow promotions, neglect, and even disrespect. They went to war in a Navy with equipment that was not the best in the world, even though it was thought so, and yet they still did their duty to the utmost, even in some cases against insurmountable odds and the knowledge that they would not survive. They bought time with their lives for this nation to mobilize the industry and manpower to achieve ultimate victory, for which this nation should always be grateful. To have the story of *Hornet* and *Wasp*, ships whose courageous crews held the line during the darkest days of the war, reach a wide national and international audience is in my view a "win" for the U.S. Navy.

There are still ships to be found, such as the destroyer USS *Jarvis* (DD-393). Her loss on 9 August 1942 with all 233 hands somewhere southwest of Guadalcanal was overshadowed by the disaster at Savo Island the night prior. Badly damaged by a Japanese aerial torpedo and saved by the heroic damage control efforts of her crew, *Jarvis* was limping alone toward Australia for repair when she came under a 31-plane Japanese air attack. It is known from Japanese records that the crew of *Jarvis* put up a valiant fight, downing several aircraft before being overwhelmed. For Lieutenant Commander William W. Graham, Jr. (USNA '25), and the crew of *Jarvis*, there are no Medals of Honor, no Navy Crosses, no Presidential Unit Citation because there were no witnesses. Only the ship herself, wherever she may be, serves as a memorial to the crew's valor and ultimate sacrifice. That wreck, and every other Navy wreck, is hallowed ground deserving of the utmost respect, and the lives of their crews deserve to be remembered.

Additional details on the battles around Guadalcanal can be found in H-Grams 009, 010, 011, 012, 013, and 015.

(Sources include: Guadalcanal: The Definitive Account of the Landmark Battle by *Richard B. Frank*, Random House, New York 1990; History of U.S. Naval Operations in World War II, Vol. V. The Struggle for Guadalcanal by *Samuel Eliot Morison*, Little, Brown and Co. Boston, 1949; Neptune's Inferno: The U.S. Navy at Guadalcanal by *James D. Hornfischer*, Bantam Books, New York, 2011; *Naval History and Heritage Command Dictionary of American Fighting Ships [DANFS]* for individual ship histories; and *combinedfleet.com* for Japanese ship histories.)