The Japanese surprise attack on Pearl Harbor on December 7, 1941, came as a double shock to the United States. The people were outraged at Japan's striking without a declaration of war. The U.S. Navy was also astonished that a nation it had long dismissed as being incapable of producing anything more than second-rate copies of Western weaponry could have wrought such havoc.

The most vivid American image of Pearl Harbor is probably that of the battleship Arizona, which suffered the greatest single loss of life during the attack. Her much-publicized destruction by a single, high-level bombing attack has given excessive credence to the modified 1,760-pound armor-piercing artillery shell as a viable weapon. In fact, her loss was a fluke. High-level drops against the battleships California and Nevada missed their targets. Repeated drops against the paired West Virginia and Tennessee only yielded low-order detonations. They were equally ineffective against Maryland. The high-level units did not even attack Pennsylvania in dry dock, though she would have made a perfect target for such a weapon.

In actuality, the most extensive destruction to the U.S. Navy's battleships at Pearl Harbor was caused by Type 91, Modification 2 torpedoes.

After the war, the senior surviving Japanese officer involved in the Pearl Harbor attack, Commander Tadakazu Yoshioka, described his part in developing the torpedo and the special technique for launching it. Yoshioka, who had served at the First Naval Technical Arsenal near Yokosuka, said the shallow water within the harbor presented the Japanese designers with their greatest challenge.

"From March 1938 to April 1939, I conducted experiments on how high aerial torpedoes could be dropped from planes and still work," Yoshioka explained. "In September 1941, once the attack on Hawaii was planned, we ran new tests. We could not get the torpedoes to work even when they were dropped from the height of 20 meters. Then I remembered the torpedo devices that were used successfully in the earlier tests. When we attached these devices and experimented further, we were able to score 100 percent efficiency on the torpedoes."

The 18-inch-diameter aerial torpedo used was modified by the Mitsubishi Arsenal at
Nagasaki from a Type 91, Model 1 torpedo, and was produced by the Kure Naval Arsenal. Called the Model 2, it was a straight-run, mechanical impact-fired, air-steam powered torpedo. The propulsion system used a freshwater bottle that was fed to a light oil mixture to make the steam. Saltwater was used to cool the torpedo motor. Described as an “800-kilogram” torpedo in Japanese records, its real weight was 1,840 pounds. Its black-painted, 46-inch warhead powered torpedo. The propulsion system was a straight-run, mechanical impact-fired, air-steam powered torpedo. The initial up-down movement of the torpedo pendulum control settled to a small half meter of flutter during its 600- to 800-meter run. Motoki noted that a torpedo with a 4-meter setting might go as deep as six meters if launched too close to the target before the up-down flutter settled.

Torpedo classes began at the Kanoya and Omura air bases on October 31, 1941. Initially the raigeki (torpedo aircraft) practiced with their flaps and landing gear down to lower their speed, but the danger of their stalling led to that method being discarded as too dangerous for combat. Altimeters did not work at the low altitudes at which the torpedoes were launched, so the pilot had to estimate his height by comparison of wingtip to water. Too high an altitude and the torpedo went deep to hit the harbor floor; too low and it would broach or skip on the surface and could break up. Even the most minor banking movement could send the torpedo in a different direction. The weapon was most effective striking a ship’s hull at an approximately 90-degree line of impact. Penetration diminished as the angle changed. Therefore, the Nakajima B5N2 Type 97 torpedo-bomber pilots were the most highly trained of the attack force.

After the Japanese carriers launched their planes on the morning of December 7, the overall attack leader, Commander Mitsuo Fuchida, sighted Oahu’s northern tip at 7:40 a.m., and shot a single “black dragon” flare to signal that the attack sequence would be “Surprise.” When the leader of the Mitsubishi A6M2 Type 0 Zero fighters, Lt. Cmdr. Shigenori Itaya, did not respond to the new formation, Fuchida fired another black-tipped, yellow shell directly at them.

Lieutenant Commander Kakuichi Takashashi, overall leader of the Aichi D3A1 Type 99 dive bombers, saw the second black plume arcing across the sky. Two flares meant “Surprise Lost” and his unit would lead the attack against airfields prior to ship attacks. Fuchida knew that smoke from such attacks on the airfield in the midst of the harbor might obscure the targets for his high-level and torpedo bombers. The silent signals had gone awry.

Fuchida led his unit in an unplanned westerly direction along the north shore due to clouds over the Ko’olau mountain range. The overall attack leader, Commander Shigekiti Motoki, the aircraft carrier Soryu’s torpedo specialist, noted that the torpedo’s depth mechanism had 10 settings with 2-meter intervals, and could be set on the carrier. Kaga’s and Soryu’s depth settings were at 4 meters, while Akagi’s and Hiryu’s torpedoes were set at 6 meters. The depth was controlled by a pendulum and hydrostatic system. The initial up-down movement of the torpedo pendulum control settled to a small half meter of flutter during its 600- to 800-meter run. Motoki noted that a torpedo with a 4-meter setting might go as deep as six meters if launched too close to the target before the up-down flutter settled.

The Japanese aerial torpedoes used on December 7, 1941, were technological marvels—but it still took the aircrews to get them to their targets.

By David Aiken
Lieutenant Haruo Yoshino at Pearl Harbor

Who were the men who attacked Battleship Row at Pearl Harbor? In an interview with Jeffrey L. Ethell and Colin D. Heaton, Haruo Yoshino described his elation at being accepted at the naval academy at Era Jima in 1938, because, "The navy was considered the elite of the military forces, and to be a pilot was the highest honor, the greatest role of the samurai to us." Of his training, Yoshino said: "Physically and mentally it was brutal. We were trained from young boys to believe in duty and honor above all else, and this was our philosophy. We were trained in the martial arts; heavy exercise and discipline. We lived and died for the emperor and our nation, not alone. Many of the men were nervous, but an excited kind of nervous. I noticed no fear, none at all. We did speak about the possibility of a surprise attack and the fact that it was not honorable, but a carrier or a battleship. At low altitude, looking into the sun, Nagai recognized the unarmed ex-battleship turned target ship Utah but saw no true targets on the northwest side of Ford Island. He then spotted a battleship moored next to the 1010 dock, to the southwest. As Nagai banked slightly to the right toward this new target, Petty Officer 1st Class Juso Mon, pilot of the plane directly behind Nagai, watched as Shotaicho (flight leader) Lt. j.g. Nagai recognized the unarmed ex-battleship turned target ship Utah but saw no true targets on the northwest side of Ford Island. He then spotted a battleship moored next to the 1010 dock, to the southwest. As Nagai banked slightly to the right toward this new target, Petty Officer 1st Class Juso Mon, pilot of the plane directly behind Nagai, watched as Shotaicho (flight leader) Lt. j.g.
Tatsumi Nakajima led the last four planes in the formation off to the left to attack Utah.

"How silly," Mori thought to himself. "Can't they see that two of those ships are nothing but cruisers? It would be a crime to waste torpedoes on them when the battleships are right there in sight a bit further on?" But then Mori saw the two planes directly behind him break formation to follow Nakajima.

Nakajima's flight path was at an extreme angle to Utah and his torpedo passed forward of the ship to hit the light cruiser Raleigh.

At about the same time, his wingman, Airman 1st Class Karoku Fujiwara, flying to his right and rear, dropped his torpedo and struck Utah. On Nakajima's left and far rear, Petty Officer 1st Class Yasuo Sato and his wingman, Petty Officer 3rd Class Koji Kawashima, dropped their torpedoes. One hit the shoreline near the light cruiser Detroit. The other remains unaccounted for.

Bringing up the rear, Petty Officer 1st Class Masazumi Tadashi and Petty Officer 2nd Class Tadashi Kimura dropped their torpedoes. The first hit the shoreline a bit to the left of Raleigh, but the second hit forward on Utah.

Masumura dropped altitude and passed a sugar mill at Ewa. Rising smoke from a hangar fire on Ford Island blocked his view of the harbor, so he and his wingman turned hard right and flew down the channel entrance to approach Battleship Row, as the Akagi unit was doing. The next two B5N2s, not to be informed of where and how we would do this. It was only later we learned that this had not happened, and the pride of victory was lessened in some way by a sense of shame for some of us.

"We flew around Kaena Point, which was marked on our maps, and we had all maps showing our routes and photographs of the battleships in the harbor. However, we were under the impression that some of the carriers would be there also. These were the top priority targets.

"Individual pilots in my group did not have particular targets to hit, but we were to follow on the lead aircraft, and as soon as we came within range we were to choose a target within easy reach of our torpedoes. The flight was broken up into two groups of 12 aircraft each, which would give us a good chance of hitting anything at anchor as we were flying abreast. This proved quite effective.

"When we flew over, it was not until we passed over the high ground and banked left into the channel that we saw there were no carriers. The battleships were marked as secondary targets if they were still there, which they were, so those were what we and the dive bombers went after.... It would be some years later that I knew for certain that I had dropped the first torpedo into the West Virginia.

"I flew over the channel and looked at my other pilots beside me, although I was out front more than the others. At first I was amazed that there was no anti-aircraft fire at that time. I remember thinking that if they had been aware of a state of war existing between our nations, why were they not prepared for the attack? As I saw a large ship in front, I dropped the nose and fell from 500 meters to about 10 meters over the water. I lined up the sight and when the silhouette spanned the sight I released the torpedo. The weight of the heavy torpedo leaving the aircraft made it jump up, but I put the nose back down to see if it was running true. I knew it would strike the ship, so I pulled up and cleared the superstructure of the ship. I banked right and climbed, circling to see how the other planes were doing. By the time I came back around to form up for the return flight to Kaga the Americans had begun firing everything they had into us. I saw three planes, all torpedo bombers, smoking, and one just blew up and crashed into the water. I had some tracer ammunition go past me, but I was not hit. I noticed that all of the members of my flight had been successful and had grouped together. But I noticed that of the 12 aircraft in the second flight, five were missing before we even cleared the harbor."

Upon returning to Kaga, Yoshino said: "There was great excitement. Just before we left the islands the second wave took off, clearing the deck for us. After we landed we each took our sake and had a drink. We felt we had earned it."

Prior to 1941, Yoshino only knew about the United States from Japanese-dubbed motion pictures. "All most of us knew was what we were taught in school—the gaijin concept, which is a term used for an uncultured people," he said. "I never felt any hatred for Americans, or anyone. I can say that after the war when I met many American veterans, many from Pearl Harbor, my respect grew immensely. I like Americans, and I feel sad that we had to go through such a thing as the war."

"Yoshino added: "I would say that one must respect all people, never underestimate an enemy, and never forget that any enemy may become your friend."

Jeffrey L. Ethell and Colin D. Heaton
BBI-306 piloted by Petty Officer 3rd Class Takuro Yanagimoto and Airman 1st Class Sunao Urata in BII-322, missed the turn as they fixed their attention on Nagai’s approach to the battleship next to 1010 dock.

Just as Akagi leader Lt. Cmdr. Murata dropped the first torpedo onto Battleship Row on the south side of Ford Island, Soryu’s Lieutenant Nagai made his attack run. “His approach was perfect, for a small splash and white wake showed his torpedo was running straight toward the target,” Mori recalled. “I’ll make it two hits on that monster, I decided, and bore in behind him.” Nagai’s torpedo was still fluttering as it neared the target, which was in fact the paired light cruiser Helena and minelayer Oglala. It ran under Oglala to hit Helena.

“We had closed to less than 600 meters when it suddenly struck me that this was an odd-looking battleship,” Mori said. “Then I realized it wasn’t a battleship at all, but a cruiser. Nagai was as bad as Nakajima wasting his torpedo on such a small target.”

Mori decided to bank left toward Southeast Loch to attack a new target he spotted a little south of Battleship Row—the undamaged California.

Lieutenant Hiroharu Kadono was junior buntaicho in the fifth Hiryu bomber, BII-327, marked with two blue command stripes similar to Matsumura’s. He missed Matsumura’s turn, and Yanagimoto and Urata fell in behind Kadono as he began a counterclockwise circle over the town of Ewa. Shotaicho Petty Officer 1st Class Toshio Takahashi, flying BII-321, and Petty Officer 2nd Class Toshio Kasajima had found themselves in the circle following Yanagimoto and Urata instead of Kadono’s wingman, Petty Officer 1st Class Hachiro Sugimoto.

Kadono saw Nagai’s torpedo hit and led the six Hiryu aircraft against the same target, until he saw Mori peel off and then noted that the target was the paired Helena and Oglala, not a battleship. He and Sugimoto aborted their runs, but at that point, an American anti-aircraft (AA) shell passed through Kadono’s cockpit from the left wing and hit the fuel line. His navigator, Chief Petty Officer Masaji Inada, wrapped a rag around the spewing fuel line and held it until they returned to the ship.

The next four B5Ns from Hiryu were not as observant of the target as Mori and Kadono, probably due to the AA fire, and launched their torpedoes toward Helena and Oglala. In the tail end, Kasajima saw that AA fire had caused Takahashi’s torpedo to be launched incorrectly and it dived to the harbor bottom. Anti-aircraft fire from Pennsylvania or the destroyer Shaw, to his right, then focused on Kasajima. He made his drop at 200 meters, then immediately pitched up and to the right. At that point AA fire from Helena and Oglala struck his right wing. He later counted 29 holes in BII-326; one was about six inches in diameter.

One Hiryu torpedo hit the embankment under the dock and “sank” a power transformer station several feet below the ground. A third streaked toward Helena and Oglala, and is probably still stuck in the soil under 1010 dock. Two other Hiryu torpedoes hit the harbor bottom, where their still-running torpedo motors sent a froth to the surface.

“When we reached Hickam Field I asked my navigator if all of our aircraft followed us,” Lieutenant Matsumura later recounted in frustration. “Petty Officer 1st Class Takao Shiro replied that he could only see my wingman, Petty Officer 3rd Class Yasumi Oktu. Oktu’s plane, BII-302. I knew it was bad. Of course, I had nothing to do with it.”

Like Matsumura, Shiro and Oktu, Lieutenant Kadono and his wingman were heading toward Battleship Row, but by a slightly different path. In consequence, five B5Ns from Soryu and Hiryu plunged in the midst of the two dozen Akagi and Kaga torpedo aircraft as they headed for Battleship Row.

During attack planning the Japanese feared that anti-torpedo nets would ruin their attack, and confirmation had yet to arrive from the spy in the Japanese Consulate in Honolulu that none existed when their carrier planes took off. Lieutenant Commanders Murata and Fuchida had discussed the net problem. They agreed to torpedo the nets, and if that failed to eliminate them, they were prepared to crash their planes into them.

“As second shotai in AI-308,” reported Akagi’s Lt. j.g. Jinichi Goto, “I positioned myself about 100 meters to the left rear of Lt. Cmdr. Shigeharu Murata’s plane. At an interval of 500 meters, each raigeki of my shotai was thus also positioned about 100 meters to the left rear of the respective plane in Murata’s shotai.

“We passed above Barbers Airfield (Ewa Mooring Mast Field) at 500 meters altitude. On the field many small airplanes were put in order, that I remember clearly. We kept going south and we made a left turn after coming over the ocean to approach Hickam Field from the southwest. At this point our altitude was 50 meters.

“After we passed the airfield and the factory area on Pearl Harbor base, we made about a 90-degree quick left turn before a bay where the sub base [Southeast Loch] was, then lowered to 20 meters, using my eyes rather than the altimeter, which was ineffective at such altitude,” Goto continued. “Adjustment of speed (to 160 knots) and horizon was done by instruments.
When we headed for the row of battleships, altitude, speed and attitude of the plane were critical. Moreover, we were under a curtain of machine-gun fire. At this point we were able to see the row of battleships in front of our eyes several hundred meters away so that we had to launch our torpedo immediately.

Murata launched his torpedo at 7:57 Hawaii time and returned with one hit in his plane, AI-311. Goto's aircraft escaped damage. "The response of the U.S. Navy was outstanding," Goto exclaimed. "In spite of the surprise attack early on Sunday morning, Murata and I saw machine-gun bullets coming onto us before we launched our torpedoes!"

"Hikotachi Murata launched toward the USS West Virginia and to his left and at almost the same altitude I launched toward USS Oklahoma," said Goto. "I viewed two big water poles raised up slowly from both ships almost at the same time."

Behind Murata in B5N2 AI-313 came his No. 2 wingman, Airman 1st Class Fujuki Murakami, also aiming for West Virginia, with Goto's No. 2, Airman 1st Class Kazuo Ikumoto, on his left wing aiming for Oklahoma. Neither plane was hit, but Goto's No. 3 plane ran into trouble. "The gunners of the U.S. Navy calmed down by this time and their aiming was getting accurate," Goto reported. "I guess that this is the reason Airman 1st Class Tomoe Yasue was hit as many as 21 times." Both Yasue and Murata's No. 3 wingman, Airman 1st Class Sadasuke Katsuki, were aiming for Oklahoma when Katsuki veered left into Yasue's path. One of them—probably Yasue—jettisoned his torpedo and climbed for altitude. Despite the hits to his plane and his near midair collision, neither Yasue nor his crew were wounded, and both he and Katsuki returned to Akagi.

As Mori pulled up from his torpedo run on Helena and Oglala and banked left toward Southeast Loch, approaching from his right came the second Akagi buntai, led by Lieutenant Asao Negishi in a long string formation. The bombers were to maintain a nose-to-tail interval of 500 meters, but most flew at intervals of 1,500 to 1,800 meters because many crewmen knew the potential to hit the huge water pole from a previous strike. That worked in favor of the Soryu and Hiryu aircraft as they flew into the stream of Akagi and Kaga bombers. It also worked in favor of the American gunners, as they were able to get better target acquisition.

Viewing the action against Okinawa and West Virginia, Negishi chose a new target, California, off to the left from the main group of battleships. Both Negishi and his No. 2 wingman, Petty Officer 3rd Class Gunji Kaido, dropped their torpedoes. They almost hit a church launch from California crossing Southeast Loch from Merry Point.

Mori was still en route to California when he saw ground and ship AA gunners focus their attention on Negishi's No. 3 wingman, Airman 1st Class Keigo Hanai's Halibut-based B5N2 (at center) departs Battleship Row, while a Soryu plane approaches from the right.

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Behind Matsunura's B5N Bill-320, Oku was able to launch his torpedo at West Virginia.

Slowed somewhat by the interruption from Hiryu's planes, Suzuki's second and third wingmen, Petty Officer 2nd Class Isao Tateyama and Petty Officer 3rd Class Kouti Goto, continued their runs on Oklahoma without damage from AA fire. The second Hiryu bitniaicho, Lieutenant Kadono, and his wingman, Petty Officer 1st Class Hachiro Sugimoto, also dropped on Oklahoma. Matsunura made his 360-degree turn and got in line just as Kaga's string of 12 bombers, which had trailed Akagi's by three miles, entered Southeast Loch. "After confirming that our torpedo hit the target [West Virginia], we headed to the rendezvous point," he said.

Following Matsunura's guidance, Kaga shotaicho Lieutenant Ichiro Kitajima launched against West Virginia and escaped without damage. In the second plane, Alley 312, piloted by Petty Officer 3rd Class Kashiro Yoshikawa, gunner Petty Officer 2nd Class Takeshi Maeda stated: "Lowering in altitude, we kept flying to the east along the south coast of Hickam Field. I rotated in my seat to the left where I found Diamond Head and noted our course to Pearl Harbor. I moved my gun to the left and made some fire while passing over Hickam but could not hit what I aimed at as it was not in range.

"I could see many small and large naval vessels anchored at the east side of the harbor. We flew as low as 10 meters and launched the torpedo. Just prior to that very moment, the ship [West Virginia] had leaned toward the side [due to] the damage incurred from an earlier torpedo hit. Rapidly enlarging ripples, in a concentric circle over the crude oil-spilled water caused by the explosion of an earlier torpedo hit, came into view. There were some three launches frantically speeding around the scene also. At that time I heard a sound that my right wing was hit by a bullet.

"While I was accomplishing my task I felt no fear," Maeda concluded. "However, I still remember that I felt scared when my task was completed and was eager to return to our ship."

Hit four times by AA fire, the third Kaga bomber also aimed for West Virginia. The next shotaicho, Petty Officer 1st Class Shigeo Sato, changed to the easier target, Oklahoma, but was hit eight more times during his run. The B5N flown by Sato's No. 2 wingman, Petty Officer 1st Class Ichiji Nakagawa, was also hit eight times while following his guidance to drop on Oklahoma, and its gunner, Airman 1st Class Mitsu Kawasaki, was so badly wounded that he subsequently retired from the navy.

The third B5N2, piloted by Airman 1st Class Syuzo Kitahara, ran into the intense fire, and incendiary bullets hit vital fuel connections. Realizing the danger, he jerked the stick into his stomach and hit hard left rudder. Flames broke out, and Kitahara's gunner, Petty Officer 2nd Class Harno Onishi, deciding against death by fire, jumped from the smoking plane without a parachute, tearing off his ring in the process, and hit the water in the pier area near the heavy cruisers San Francisco and New Orleans. He was pulled alive from the water but died of his injuries a few minutes later.

Kitahara almost hit a huge hammerhead crane in his attempt to gain altitude. The ground observers noted that smoke became flames as the bomber headed southeast, paralleling 1010 dock. To lighten his plane, Kitahara jettisoned his torpedo, which landed on the beach near the dry docks. The hydraulics failed and the landing gear began to lower. The plane seemed to aim itself "directly towards the front of the main hospital building," wrote Captain Reynolds Hayden, a doctor. At the last second, Kitahara stood up in the cockpit and let go of the controls. "It swerved left, struck the corner..."
of the laboratory building and crashed between the laboratory and Chief Petty Officers quarters," Hayden continued. "The two Japanese aviators in the plane were dead."

Both crewmen were dismembered from the crash. A Marine recalled that one early arrival at the crash site was so angry that he had one leg from a crewman "...and was beating it on the ground screaming that he was going to kill him; when he realized what he was doing, he stopped and pulled the boot off the foot and declared that he had the first souvenir of the war."

While Kitahara was going down, Kaga Buntaicho Lieutenant Minori Suzuki led the last six torpedo aircraft into the waters of Southeast Loch—and found himself the next target of the warships’ AA fire. His bomber was just above the submarine pen when a lucky bullet hit his warhead. The concussion from the resulting explosion knocked down sailors on the submarine dock. The plane’s engine flew on, but Suzuki was instantaneously decapitated as everything forward of him disappeared. The plane hit the water near the southwestern tip of Kuahua Islet. The remains of Suzuki’s plane, AI-356, were subsequently recovered, along with the body of his navigator, Chief Petty Officer Tsunuki Morita. One of the sailors charged with delivery of the body to the morgue wanted Morita’s boots so badly that he saw the swollen feet off to gain more time to get the boots off. Suzuki’s B5N2, sans engine, gave the Americans their first look at Japan’s first-line carrier-based attack bomber.

Petty Officer 2nd Class Kazunori Tanaka, flying on Suzuki’s tail, was only hit twice in his attack on West Virginia. Meanwhile, Soryu’s Jozo Mori had completed his 360-degree counterclockwise turn and entered the stream of Kaga bombers. Concentrating on California, Mori descended to 15 meters and dropped his torpedo. "It’s running straight!" screamed Petty Officer 1st Class Toyonori Kato, as Mori banked right and reversed course. Then Kato yelled, "It’s a hit! Banzai!"

The shock of Suzuki’s midair torpedo explosion slowed the AA fire a little, giving Kaga pilot Petty Officer 2nd Class Kenichi Kumamoto a chance to see the undamaged battleships. With Mori ahead and to his right, Kumamoto deviated to his right, aiming for Nevada. He flew across Kuahua Islet and dropped the torpedo in the main channel. Battleship Row extracted revenge, however. As Kumamoto gained altitude his fuel tanks burst into flame. The crewmen were seen to pull back their canopies as the B5N came down just aft of its target. The drowned bodies of Kumamoto and his gunner, Petty Officer 2nd Class Nobuo Urmezu, were later recovered.

Meanwhile, downed Petty Officer 2nd Class Isamu Matsuda swam and drifted with the current until he was spotted coming ashore at Ford Island just starboard of Tennessee. He was shot by a Marine from Ford Island, and his Nambu pistol and stopwatch were taken as his personal souvenirs.

Leading the final three Kaga aircraft, Petty Officer 1st Class Hirotate Iwata, in AI-324, described his approach: "The U.S. fleet in the harbor came to our sight and there we could see a tall water column occurred in the middle of the line of anchored ships."

During the approach over Hickam Field we lost sight of the target because of smoke. Then I saw the Oklahoma and I aimed at it. When I approached at the distance of 750 meters, I launched the torpedo at the height of 10 meters. As soon as I finished, I pulled the control stick at full throttle and flew just over the mast of the target warship. The Oklahoma was already leaning and water was getting to the deck.

"At the same time, the raigeki in front of me was seen to fly to the right, falling with a fire. Turning to the left, I looked behind me and saw my number two wingman, Airman 1st Class Ohashi, who was hit while rising to the right, and then he was falling with smoke."

Mori saw Ohashi crash: "I saw one of our planes go down, his torpedo still unreleased. I was so close. Seemed as though I could touch him. Quickly, I realized where I was. He had been making a run on enemy battleships while I was moving directly away from them. Both of us were in the heaviest concentration of fire." Ohashi crashed just beyond Kuahua Islet in the main channel. His plane and torpedo have never been recovered.

Mori’s bomber was then hit in both wings and the cockpit by groundfire. The seat cushion of his radioman, Petty Officer 2nd Class Junichi Hayakawa, caught on fire, and an incendiary bullet went beneath his flight uniform to burn a furrow up his back without breaking the skin. The groundfire damage caused Mori’s right landing gear to fail, forcing him to belly land later next to a Japanese destroyer.

"My number three wingman, Petty Officer 1st Class Iizumi Nagai, was puffing smoke, jettisoned the torpedo and then lowered toward the water," Iwata reported. A shell burst had destroyed the forward sway brace holding the torpedo, along with heavier damage to the plane. The torpedo was thus ripped from the plane to land in a pile of lumber on the dock near the destroyer Bagley. Rid of its weight, Nagai was able to gain altitude, only to glide across the harbor channel and crash just north of Fort Weaver.

"After I saw our torpedo hit the target," Iwata continued, "I could not see anything as we got into the smoke from the flying boat hangar at Ford Island. After I got safely back to the Kaga we investigated our plane and found four bullet holes, which we did not notice at all while we were in action."

Iwata dropped the last torpedo onto Battleship Row. A photograph taken at 8:06 a.m. during the high-level bombing on Arizona by Kaga’s aircraft shows oil pouring from Nevada, from the second-to-last torpedo to be dropped. The absence of such oil pouring from Arizona proves that she was not hit by any torpedoes.

In the second high-level strike on the battleships, bombs dropped by aircraft from Hiryu bracketed the ship. One produced a water spout that crewmen aboard the nearby repair ship Vestal mistook for a torped. Continued on page 82
pedo hit. This was only a millisecond before the explosion from another bomb in the same group destroyed Arizona.

A mere 11 minutes had elapsed since the ferocious attack began. For most of those involved, that was a lifetime. And for that host of men whose lives it had cost, it was literally an eternity.

Helena entered dry dock immediately and returned to duty in June 1942. Raleigh's crew worked fast and managed to prevent the cruiser from rolling over. Their brave efforts aided her quick return to duty in July 1942. Ogala's hull was split wide open from the hit on Helena, and was not fully repaired until February 1944.

Three torpedo hits sent California to the bottom, but she nevertheless came back to the fleet in May 1944. West Virginia almost capsized from nine torpedo hits, but returned to duty in July 1944. Nevada had only one torpedo hit, but it gutted the ship. She was run aground after the sortie and returned to duty in December 1942. In 1943, Nevada's No. 1 turret guns were replaced with those from Arizona's turret No. 2. She fired those guns in anger at Normandy on June 6, 1944, and would later support the American invasions of Iwo Jima and Okinawa in 1945.

Oklahoma never recovered from the nine hits she suffered. Iwata's final torpedo came in and exploded at the point when the ship was leaning, which kicked her over. She was sold for scrap after the war, but sank en route to the mainland.

Iwata bowed his head to relate: "In 1955 and again in 1992, I paid a visit to Oahu and called at the USS Arizona at Pearl Harbor. I prayed for both U.S. and Japanese sailors who lost their lives at that time."

There are still Japanese torpedoes in the harbor that are fully armed. One, which became stuck in the harbor to the left of Oklahoma (see photo on P. 52), was dredged up in May 1991, serving as a reminder that too many had died on that "date which will live in infamy."

Utah still serves as a cemetery. Message pennants are sent to all "defending ships still on duty" each Pearl Harbor Day that say, "All Ships: Well Done." The only response is globules of oil rising to the surface.

For 35 years David Aiken, a director for the Pearl Harbor History Associates, Inc., has researched the Pearl Harbor attack to locate, identify and recover the Americans and Japanese airmen missing in action. Further reading: Day of Infamy, by Walter Lord; East Wind Rain, by Stan Cohen; and Broken Seal, by Ladislas Farago.