



# H-Gram 029: Exercise Tiger Debacle, the "Deep Sea 129" Shootdown, and the USS *Iowa* Explosion

8 May 2019

## Contents:

- 75th Anniversary of World War II: Exercise Tiger, 28 April 1944
- 50th Anniversary of the Loss of EC-121 "Deep Sea 129," 15 April 1969
- 30th Anniversary of the USS *Iowa* Turret Explosion, 19 April 1989

The poet T. S. Eliot wrote that "April is the cruellest month." Although the next H-grams will be replete with U.S. Navy victories (Great Marianas Turkey Shoot, Battle of the Philippine Sea, Operation Neptune—the Normandy landings—and capture of U-505), it turned out that this one is a litany of disaster. This H-gram covers Exercise Tiger (the tragic rehearsal for the Utah Beach D-Day landings in 1944); the shootdown of EC-121 "Deep Sea 129" by North Korea in 1969 and other U.S. Navy aircraft losses during the Cold War; and the turret explosion on USS *Iowa* (BB-61) in 1989 and a history of previous U.S. Navy gun, ammunition, and powder accidents. If there is any moral/lesson learned to these, it's that no matter peace or war (or in-between), training or operation, the Navy is always an inherently dangerous business. As a reminder, "back issue" H-grams may be found here [<https://www.history.navy.mil/about-us/leadership/director/directors-corner/h-grams.html>].



"Attack on Slapton Sands," painting, watercolor on paper, by Dwight C. Shepler, 1944 (88-199-DZ).

## 75th Anniversary of World War II: Exercise Tiger, 28 April 1944

On 5 August 1944, Rear Admiral Don Pardee Moon shot himself in the head on board his flagship USS *Bayfield* (APA-33) in the Bay of Naples, Italy, leaving behind a suicide note. Secretary of the Navy James Forrestal announced that Moon's death was the result of combat fatigue. Other reports indicate Moon suffered a serious head injury during darkened ship, resulting in constant severe headaches that impaired his judgement, which were described in Moon's note. Others suggested the stress of planning for the rushed impending landings in southern France contributed to Moon's decision to take his life. Yet others believed that a sense of guilt over what happened during Exercise Tiger, held in Britain that April—or at least concern that a

court of inquiry might be convened— was a motivating factor.

Exercise Tiger was intended to be a full-dress rehearsal for the landings on Utah Beach, scheduled for June 1944 on the coast of Northern France. Instead, the rehearsal cost more lives (over 650) than the actual landings at Utah on D-day, 6 June 1944 (Omaha Beach was another story) and an example of what might have been on D-day had it not been for Adolf Hitler's shortsighted navy policies, which left the Germans with a paltry naval capability to defend the Normandy beaches. Nevertheless, on the night of 27/28 April, nine German S-boats (Schnellboote—the Allies called them E-boats) got in among a convoy of eight fully loaded tank landing ships (LST) en route to the practice landing and hit three of them with torpedoes, sinking two (one going down in only six minutes) and blowing the stern off a third, with heavy loss of U.S. Army (at least 441) and U.S. Navy (198) life. There was no known damage suffered by the S-boats to Allied fire.

The LST convoy was part of a much larger "Assault Force U," which was under the command of Rear Admiral Moon. Moon was an officer of stellar reputation, and the reality was that there is not much of anything he could have done that would have made a big difference in the outcome. Nevertheless, to preside over such a debacle weighed heavily on him. Other senior officers held him responsible, at least in an informal sense, and the fact that the first rehearsal landings were a succession of foul-ups didn't help (including reported deaths by "friendly fire"). Moon, however, put those lessons to good use, and the actual landings on Utah Beach under his command were executed significantly better than on any of the other beaches, for which he is a hero, and his untimely death a tragedy as well.

That the actual D-Day landings didn't suffer the same fate as Exercise Tiger was due to several factors. The principle one was Supreme Allied Commander General Dwight D. Eisenhower's bold decision to launch the invasion in the face of adverse weather forecasts; the S-boats were in port when the Allied invasion fleet crossed the English Channel as the Germans assumed that no one in their right mind would invade in those conditions. Second, even if they had come out, there weren't anywhere near enough S-boats to make more than a dent in the massive Allied invasion fleet. Third, the extraordinary Allied deception effort had the

Germans, including what naval forces they had, expecting the invasion in the wrong place. For more on Exercise Tiger, please see attachment H-029-1.

## **50th Anniversary of the Loss of EC-121 "Deep Sea 129," 15 April 1969**

On 15 April 1969, four months after the release of the crew of USS Pueblo (AGER-2), the North Koreans celebrated dictator Kim Il-Song's 57th birthday by deliberately shooting down a U.S. Navy EC-121M Warning Star four-engine intelligence collection aircraft well out in international airspace over the Sea of Japan, killing all 31 crewmen aboard. This was the largest loss of life in any U.S. aircraft shot down during the Cold War and the largest loss of life in any single U.S. Navy aircraft ever.

The EC-121, call sign "Deep Sea 129," commanded by Lieutenant Commander James H. Overstreet, was downed by an AA-2 Atoll air-to-air missile fired by a North Korean MiG-21 Fishbed F fighter, which had flown a course timed to minimize time of flight to the EC-121, flying along a standard track that by then was well-known to the North Koreans. In a discussion the next day with the Soviet ambassador, the North Korean Deputy Foreign Minister stated that "they [the Americans] have not drawn the proper lessons from the incident with the Pueblo." His statement was more true than he knew, because the shootdown of the EC-121 displayed much of the same convoluted command and control, ambiguous mission, national- and fleet-level confusion, slow crisis response, inadequate rapid operational response plan in the event of trouble, unreliable communications, and naïve belief that the North Koreans had any respect for international law that had characterized the capture of the Pueblo in January 1968. This time, however, it was the Nixon administration that had to grapple with the crisis response, but, like the Johnson administration before it, came up with much the same response: a massive show of naval force (four aircraft carriers, a battleship, and numerous other escorts) that steamed around furiously, but in the end did nothing.

Like the Pueblo, the EC-121 mission had been assessed as "minimal threat," once again underestimating the audacity of the North Koreans. This assessment was reached despite the fact that North Korean Mig-17 fighters had badly shot up a U.S. Air Force ERB-47H over the Sea of Japan, 80 miles off the North Korean

coast, on 27 April 1965, and despite significantly increased North Korean provocations along the Demilitarized Zone (DMZ) that had resulted in the deaths of 43 U.S. soldiers between 1967 and 1969. This wasn't even the first U.S. Navy aircraft attacked by the North Koreans. On 16 July 1959, a P4M-1Q Mercator electronic intelligence collection flight was attacked and badly damaged by two North Korean Mig-15 jet fighters 40 miles off the North Korean coast, but made a successful emergency landing in Japan with a wounded tail gunner. However, by 1969, the lessons of 1959 had been long forgotten. In fact, during the early Cold War, U.S. Air Force and Navy intelligence collection and reconnaissance aircraft had been fired on over 40 times, mostly by the Soviet Union and People's Republic of China, and at least 16 had been shot down. These losses included eight U.S. Navy aircraft (a PB4Y-2 Privateer—Navy version of B-24 four-engine bomber—four P-2V Neptune twin-engine ASW aircraft, a PBM-5 Mariner sea plane, a P4M-1Q Mercator ELINT collection aircraft, and an AD-5W Skyraider) with a total of 69 air crew lost.

The early Cold War was hotter than most people remember. A U.S. Navy fighter shot down a Soviet twin-engine A-20 torpedo bomber that approached too closely to U.S. Navy forces before the *Inchon* landings during the Korean War. At least four Soviet Mig-15 fighters were lost as a result of an overwater engagement with U.S. Navy carrier-based F9F Panther fighters in November 1952 (a future H-gram), and the tail gunner of one P2V Neptune also downed a Soviet Mig-15 that attacked the P2V near Vladivostok. For more on the EC-121 shootdown and a survey of U.S. Navy Cold War aerial engagements, please see attachments H-029-2 and H-029-3. For more on Pueblo, please see H-grams 014 and 025.

### **30th Anniversary of the USS Iowa Turret Explosion, 19 April 1989**

On 19 April 1989, while conducting an exercise main battery gun shoot in the North Puerto Rico Operations Area, the re-commissioned World War II battleship USS Iowa (BB-61) suffered an explosion, followed by two more, in the center gun of her Number 2 16-inch gun turret that killed all 47 crewmen in the turret. The subsequent investigation would prove to be one of the most contentious and controversial in U.S. Navy history (regrettably, there

are other contenders). The initial investigation conducted by Rear Admiral Richard Milligan was hampered by a failure to record and preserve evidence. It would also be grossly hampered by premature leaks of investigation information to the press by Navy officials. The investigation also identified numerous procedural, record-keeping, material, training, safety, and other deficiencies, to include unauthorized experimentation with different powder configurations for the guns, but could not identify any of these deficiencies as being the initial cause of the first blast. The blast instead was determined to probably be the deliberate suicidal act of the gun captain of the center gun. Although there were grounds for suspicion of the gun captain, there were also mitigating factors against this theory. Nevertheless, this conclusion would result in a public relations debacle, in which the Navy was accused by some family, press, public and Congress of scapegoating a dead sailor in a premature rush to judgement, and engaging in a cover-up of the serious deficiencies.

As a result of public pressure, Congress directed that the Government Accounting Office (GAO) conduct an independent investigation, which it did with the aid of Sandia National Laboratory. Sandia experiments determined that it was possible that under certain circumstances that an "over-ram" of the powder could cause an explosion, but could not prove exactly how such an over-ram would have occurred. The Navy then conducted a second investigation that still could find no "accidental" cause for the explosion, but also conceded there was no proof it was "deliberate" either. After two years and 25 million dollars, the Chief of Naval Operations publically stated that the cause of the explosion could not be determined and issued a statement of regret to the family of the sailor initially accused. For more on the USS Iowa explosion, please see attachment H-029-4.

Besides the Iowa turret explosion in 1989, there have been multiple major turret and gun accidents aboard U.S. Navy ships during the course of history. These accidents include the heavy cruiser USS Newport News (CA-148) in 1972 off Vietnam with 20 killed; the heavy cruiser USS Saint Paul (CA-73) in 1952 off Korea with 30 killed; the battleship USS Mississippi

*(BB-41) in 1943 off Makin Island with 43 killed; the light cruiser USS Trenton (CL-11) in 1924 with 14 killed; the battleship USS Mississippi (BB-41) in 1924 off San Pedro, California, with 48 killed; the protected cruiser USS Charleston (Cruiser No. 22) in 1910 with eight killed; the battleship USS Missouri (BB-11) in 1904 with 36 killed; the battleship USS Massachusetts (BB-2) in 1903 with nine killed; and the screw steamer USS Princeton in 1844 with only six killed, but that included the Secretary of the Navy and the Secretary of State.*

*In addition to turret explosions, other U.S. Navy ships and shore stations have suffered ammunition and powder explosions, a number of them catastrophic. These accidents aboard ship include the destroyer escort USS Solar (DE-221) in 1946 with seven killed; the transport USS Serpens (AK-97) obliterated off Guadalcanal in 1945, killing 255; the ammunition ship USS Mount Hood (AE-11) obliterated in Seeadler Harbor in 1944, killing 372 on multiple ships; the West Loch, Pearl Harbor, disaster in 1944 that destroyed six tank landing ships (LST) and killed more than 163; the destroyer USS Turner (DD-648) off New York City in 1944 that sank the ship and killed 138; the cargo ship SS Florence, with a 17-man U.S. Navy armed guard detachment aboard that exploded and sank in Quiberon Bay, France, in 1918, killing 41; the battleship USS Maine in Havana Harbor in 1898, sinking the ship and killing 266 (although this might have been due to hostile action); the cruiser USS Boston in 1892 at Mare Island, California, killing 15; and the steam-powered mobile battery USS Fulton in 1829 that killed 30.*

*Major U.S. Navy shore installation ammunition accidents included the massive explosion at Port Chicago, California, in 1944 that killed 320 (most of them African-American U.S. Navy stevedores) and led to the "Port Chicago Mutiny." The other was an explosion, triggered by a lightning strike, at the Naval Ammunition Depot Dover, New Jersey, in 1926 that killed 19 people (that explosion was one of the largest non-nuclear explosions ever). For more on the history of U.S. Navy ordnance accidents please see attachment H-029-5.*



# H-029-1: The Exercise Tiger Debacle, 28 April 1944

*H-Gram 029, Attachment 1*

*Samuel J. Cox, Director NHHC*

*April 2019*

The Allied Invasion of northern France was finally set for late spring 1944, after much prodding by the U.S. Joint Chiefs and pressure exerted by Soviet dictator Josef Stalin finally overcame Allied reluctance to launch an invasion at that point. 1944. In hindsight, the British position in particular seems unjustified, but the American experience on the Western Front in World War I was only a fraction of the horror the British had encountered—the memory of the first day of the Battle of the Somme (20,000 British dead in one day in exchange for a few yards) was deeply embedded in the British psyche.

(Even that couldn't compare to the bloodbath taking place on the Eastern Front between German and Soviet armies, which is why Stalin was so aggravated by the delay in opening a second front in Europe. In terms of deaths and destroyed armies and divisions, Normandy and the Western Front was a sideshow compared to the Eastern Front.)

U.S. General Dwight D. Eisenhower had been named Supreme Allied Commander in Europe, but British General Sir Bernard Montgomery was responsible for much of the planning for the Allied invasion on the Normandy coast of France. Three British and Canadian divisions were planned to go ashore at Gold, Juno and Sword Beaches, to the



*Rear Admiral Donald P. Moon, USN, circa 1944 (80-G-302423).*

east of the U.S. beaches. Somewhat belatedly, Montgomery added a requirement for a second U.S. division to go ashore (at Utah Beach) in addition to the one already planned. As a result, "Assault Force U" was hastily formed to execute the transport and landing of the U.S. 4th Infantry Division on Utah Beach, which lay between Omaha Beach to the west and the British/Canadian beaches to the east.

Rear Admiral Don P. Moon was named commander of Assault Force U (TF 125.) Moon had been near the top of his class at the U.S. Naval Academy (fourth, although some accounts say first.) He was an officer with a great reputation and was responsible for numerous innovations and technical advancements, particularly in the field of gunnery.

He was also a perfectionist who drove himself hard, sleeping only about four hours a day. He had combat experience earlier in the war on the Murmansk Run and in North Africa and had survived service on Chief of Naval Operations Admiral Ernest J. King's staff well enough to be promoted to rear admiral and then to be given command of Force U.

Although the planned Allied landings on the north coast of France were covered by a massive deception effort to conceal the exact place and time, it was no secret to the Germans that U.S. and British forces were conducting numerous large-scale rehearsal landings on British beaches in preparation for the invasion. These preparations had begun in earnest as early as January 1944. Because of its late formation, Force U was behind the power curve in preparation for the invasion, but by late April Force U was ready enough to commence large-scale rehearsals. The location selected was Slapton Sands, a beach at Lyme Bay on the south coast of England, due to its close resemblance to Utah Beach, on the other side of the Channel.

Operation Tiger was a full-dress rehearsal for the Utah Beach landings and was scheduled for 22 to 30 April 1944. The first five days were allocated for loading and embarkation, with the landing of the first echelon (with assault troops) set to take place on 27 April and the landing of a second echelon (with support troops) scheduled for 28 April. Other echelons to follow. Under the command of Rear Admiral Moon, embarked on *Bayfield* (APA-33,) Force U and embarked troops and gear were to participate. These would conduct an extended transit in order to precisely simulate—sea sickness and all—the cross-Channel voyage for the troops. The ships were fully loaded, as were the vehicles on the ships—with fuel and ammunition (far more than was required for the training evolution, but again the intent was to hew as closely as possible to the real operation). As an aside, one of the crewman on the flagship *Bayfield* was Gunner's Mate Lawrence Peter Berra, who would later be known as legendary New York Yankees' manager "Yogi" Berra.

Almost the entire Force U participated, including 21 tank landing ships (LST), 28 large utility landing craft (LCU[L]) 65 tank landing craft (LCT) and nearly 100

smaller vessels. Although it was mostly an American force, British and other Allied ships participated. The mixed nature of the force (and other D-day forces) was viewed with great skepticism by CNO King and other senior U.S. Navy leaders, who assumed that mixing U.S. ships with other navies would lead to communications problems and other foul-ups (and they were right.) However, such concerns had been rejected by the senior Allied naval commander for the D-day invasion, British Admiral Sir Bertram Ramsey.

The first-echelon landings on 27 April were marked by significant confusion and delays. The landings were accompanied by Allied ships bombarding the beach with live ammunition in order to make the exercise as realistic as possible, but delays and communications problems resulted in some troops being landed into the live fire, resulting in deaths. The number of "friendly fire" deaths remains uncertain to this day. Some accounts claim as many as 450 were killed. However, these numbers appeared to be based on after-the-fact recollections of local civilians, who had been evacuated from the area at the time, and are probably conflated with the deaths as a result of the disaster that occurred at sea that night. U.S. Army records do not indicate landing deaths anywhere near those numbers, which naturally cause some writers to allege a "cover up." In one case, Rear Admiral Moon ordered an hour delay only five minutes before execution, and not surprisingly many units did not get the word. General Eisenhower was an observer to the exercise and although his assessment is not known, members of his staff were reported to have been depressed and disillusioned by the result. Then things got worse.

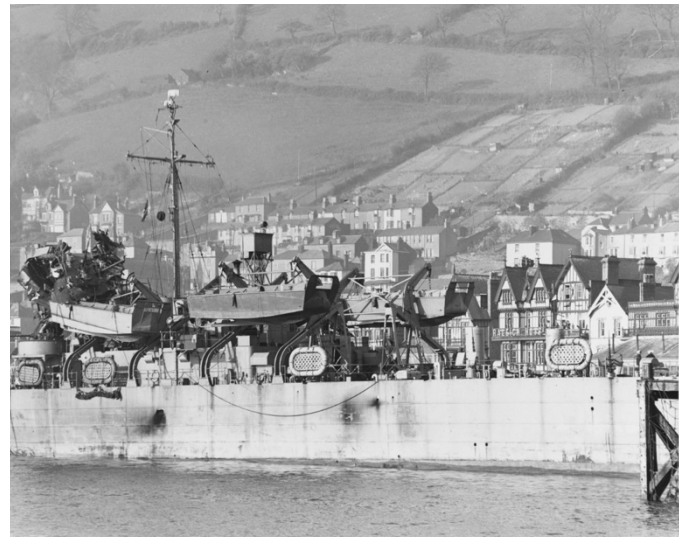
Elements of the Second Echelon force departed British ports for a night transit to the landings scheduled for the morning of 28 April. These included Convoy T-4 departing Plymouth, Brixham, and Portsmouth under the command of U.S. Navy Commander Bernard Skahill, initially consisting of eight U.S. LSTs escorted by the British destroyer HMS *Scimitar* and the British corvette HMS *Azalea*. However, *Scimitar* and another vessel collided (some accounts say it was with a ninth LST in the convoy) and had to return to port. Although Skahill

saw *Scimitar* heading off in an unexpected direction, the combination of the requirement to maintain radio silence, coupled with the fact that the U.S. convoy through some snafu (as feared by King) weren't on the correct British radio frequency, meant that Skahill did not realize that he had lost his most capable escort. (*Azalea* was a WWI-vintage corvette with limited speed and armament, although the LSTs were even slower.) The destroyer HMS *Saladin* was dispatched to replace *Scimitar* but Skahill didn't know that, and she would get there too late anyway. Worse, by monitoring the wrong frequency, the U.S. convoy did not receive broadcast warnings when British radar detected a force of German S-boats (fast torpedo boats) approaching the English coast from Cherbourg.

A force of nine German S-boats, under the command of *Korvettenkapitän* Bernd Klug departed Cherbourg in search of targets in the English Channel, which on this night turned out to be full of them. The S-boats (*Schnellboot*—"fast boat") were referred by the Allies as E-boats ("Enemy" boats). They were similar to U.S. PT-boats, except for being bigger, faster, with a longer range, and more sturdily constructed, with less flammable fuel (diesel vice gasoline) and, although German torpedoes could be cantankerous, they were generally more reliable than those employed by the U.S. Navy. PT-boat torpedoes (which were generally armed with leftover early vintage aerial torpedoes). Each S-boat was armed with four 21-inch torpedoes (two tubes with reloads), and usually a 37-mm cannon (or a 40-mm Bofors gun) and three 20-mm (one twin mount and one single). The biggest drawback to S-boats operations was that the Germans didn't have enough of them.

The German S-boats detected the convoy T-4 as *Azalea* led the eight LSTs in a straight line with no zigzagging. (Due to the LSTs slow speed, it wouldn't have made much difference if it had been zigzagging.) The S-boats remained undetected by *Azalea* or the LSTs as they circled around to attack the rear of the convoy from behind.

The first sign of trouble was after 0100 when a scraping noise was heard underneath LST-507—probably the sound of a German torpedo passing



just underneath the shallow draft amphibious vessel. The skipper of LST-507 ordered general quarters and noted tracer fire (which apparently didn't hit the

*LST-289 enters Dartmouth Harbor, England, after being torpedoed by German S-boats during invasion rehearsal operations off Slapton Sands, England, on 28 April 1944. Note LCVs still on the ship's davits (80-G-283501)*

ship) but assumed it was part of realistic training. For whatever reason, it was almost an hour before the Germans re-attacked, possibly regrouping after seeing no discernable result from the first attack (torpedoes may have gone under other LSTs without being properly identified.)

At 0207 a German torpedo struck *LST-507* amidships in the auxiliary engine space, knocking out power and communications. The hit was devastating, starting a massive conflagration in the main cargo area as vehicles full of gasoline ignited, creating a blast furnace effect within the ship. Many of the more than 400 Army troops on board died in the flames. A second torpedo hit the ship and she began to sink. Eleven minutes later, two torpedoes in quick succession hit *LST-531* and perhaps more mercifully sent her to the bottom in only six minutes.

The skipper of *LST-289*, Lieutenant Henry A. Mettler, saw torpedoes inbound in enough time to put the helm hard over and avoid a broadside hit. One torpedo hit the stern, which had crews' living spaces. The burning stern broke off and then sank, but the main part of the LST was spared, and the crew was able save the forward part of the LST from going down, thus keeping hundreds of soldiers out

of the water. By this time, however, chaos had gripped the force. LSTs were firing on each other in the dark and at least one was hit. Skahill gave the order for the convoy to scatter and return to port. Azalea reversed course when the trail LSTs started getting hit, but her crew could not tell which direction the attack was coming from. Being unable to communicate with the LSTs didn't help. The skipper of Azalea, Commander George C. Geddes, RN, didn't dare launch illumination rounds for fear of silhouetting the rest of the convoy and aiding the German attack. In the end, Azalea never had the chance to fire a shot, not that she had any hope of running down an S-boat. The soldiers on the LSTs that went down were from the 557th Quartermaster Railhead Company and 3206th Quartermaster Service Company. These were support troops that never expected to be in front-line combat. They did not have Navy kapok life jackets, but had been issued an inner-tube device, for which they had not been adequately trained, that when worn incorrectly would flip the soldier over and drown him. Many soldiers perished in exactly that manner, before they died of hypothermia.

As the convoy scattered, which was standard procedure for such an event, there was initially no attempt to rescue survivors, which was also standard procedure, as doing so would only invite more ships to be sunk by torpedoes. Nevertheless, as Skahill's flagship, *LST-515*, drew away from the scene there was a borderline mutiny. The skipper of *LST-515*, Lieutenant John Doyle, argued with Skahill to go back for survivors, knowing that it would not take long for anyone in the water to die from the cold. Skahill initially refused and Jones put the question to his crew for a "voice vote" about going back, and the crew responded with a rousing affirmative. Skahill gave in and *LST-515* returned to the scene along with HMS *Saladin* and rescued several hundred soldiers and sailors, many badly burned, and most with advanced hypothermia.

Exactly how many U.S. Soldiers and Sailors were lost that night remains contentious even today, as initially there were over 100 missing, including ten officers who had "Bigot" clearance (i.e., knowledge of the D-Day invasion details). An extensive search was made until all ten were accounted for as being

dead. The number 198 for U.S. Navy dead appears to be generally accepted, which is higher than the number of U.S. Navy killed during the D-Day landing on 6 June 1944. Some sources give Army dead as 441. Others say 441 dead plus 110 missing for a loss of 551, and a total of 749 U.S. personnel (which also happens to be the number on the monument in Weymouth, England to the disaster). Another source says that the 749 figure only counts Army and that adding the Navy's death toll raises the total to 947. Yet other sources assert that all these numbers are grossly undercounted as there was supposedly a massive cover-up after the fact. The moral of this story is don't believe everything you read on the internet. There was definitely a lid of secrecy and censorship clamped on the event in the immediate aftermath so as to prevent the Germans from knowing what they accomplished. However, by July, general descriptions of what had happened had already appeared in *Stars and Stripes*, so I don't consider the massive conspiracy to cover-up stories very plausible.

The next day, Rear Admiral Moon went aboard Rear Admiral Alan G. Kirk's flagship, *Augusta* (CA-31) to explain what had happened. Kirk was the commander of U.S. Navy forces involved in the D-day landings, and the (mostly U.S.) Western Naval Task Force, which included Assault Force U (TF 125) for Utah Beach and Assault Force O (TF 124) for Omaha Beach. (All of this fell under the overall naval command of British Admiral Ramsey.) Moon's reception by Kirk was frosty, and downright hostile by Kirk's chief of staff, Rear Admiral Arthur Struble, who insinuated that Moon had been derelict in his duty. There was no question that as commander of Force U, Moon bore responsibility for what happened, but on that night the enemy got the deciding vote. Nevertheless, from the debacle came numerous lessons learned (such as ensuring soldiers were properly trained in the use of lifebelts), which Moon rapidly implemented before the D-Day landings. Force U's performance during the actual invasion was exemplary, and Moon handled the force very adroitly. Weaker German resistance at Utah Beach, especially compared to Omaha Beach, was a significant factor as well, but the resistance at Utah Beach was still very stiff, and Moon deserved much credit for overcoming it.)



It is quite possible that, perfectionist that he was, Moon didn't deal well with the numerous foul-ups during the rehearsal and as were inevitable in combat. It is also quite likely that the loss of so many men under his command troubled him greatly. Talk about the possibility of him being held to account by a court of inquiry or even court-martial, as some senior Navy officers seemed to desire, probably didn't help his state of mind. His constant lack of sleep was well known. All may have been factors when Moon took his own life on 5 August 1944 with a .45 caliber pistol in his stateroom aboard *Bayfield* off Naples on the eve of the invasion of southern France. I do place credence in reports from *Bayfield's* crew that Moon suffered a bad head injury during darkened ship, which resulted in constant and severe headaches. His suicide note states that "the mind is gone. I am sick, so sick," but also describes the fear that he might black out at a critical time during the invasion and cost more men their lives. Instead of asking to be relieved, he took his own life, leaving behind a wife, four children, and many heartbroken shipmates.

Sources: There are a number of articles on Exercise Tiger, some with wildly conflicting casualty estimates and some hyping the "cover-up" of the debacle. The one I think is best is "Exercise in Tragedy: Practice for the D-Day Landings" by Craig Symonds, in *World War II Magazine*, 15 February 2017. Another good one is "We're Gonna Die!" by Joseph Balkoski, 28 April 2014 (<http://liberationtrilogy.com/the-road-to-d-day/were-gonna-die/>). For background on Rear Admiral Moon, see Stephen Sussna, *Defeat and Triumph: The Story of a Controversial Allied Invasion and French Re-birth* (2008), and, of course, Rear Admiral Samuel Eliot Morison, *History of U.S. Naval Operations in World War II*, Vol. XI: *The Invasion of France and Germany* (1957).



A sister aircraft to "Deep Sea 129": A U.S. Navy Lockheed EC-121K from VAQ-33 "Firebirds" in formation with a Douglas EA-4F Skyhawk and a McDonnell F-4B Phantom II off the coast of Virginia, April 1973 (Naval Historical Center).

## H-029-2: The EC-121 "Deep Sea 129" Shootdown

*H-Gram 029, Attachment 2*

*Samuel J. Cox, Director NHHC*

*April 2019*

(Before anyone panics, all discussions of communications intelligence are sourced from the National Security Agency's declassified and redacted "The National Security Agency and the EC-121 Shootdown," *United States Cryptologic History*, Crisis Collection Vol. 3. Office of Archives and History NSA/CSS, originally produced in 1989 in classified form, which can be found on NSA's website.)

On 28 March 1969, two North Korean Mig-21 Fishbed F fighters (North Korea's latest and greatest) of the 1st Fighter Division deployed from their home airfield of Pukchang-ni to Hoemun Airfield, site of the North Korean Air Force Air School's jet training element, on the east coast of North Korea. This flight was detected by U.S. national intelligence sources and was noted as the first time Fishbeds had deployed to Hoemun, and therefore unusual. This deployment was not known to the crew of the EC-121 on the ill-fated 15 April 1969 mission, although it probably wouldn't have made any difference as the deployment was assessed to be "training related." A U.S. Navy EC-121M intelligence collection aircraft, call sign "Deep Sea 129," would be shot down in international airspace off the coast of North Korea by one of these two aircraft.

The EC-121 Warning Star was a modified Lockheed Super Constellation, a four-engine passenger airliner in wide use for long-range air travel until the advent of the much faster Boeing 707 and Douglas

DC-8 jet passenger airliners. The military variant, which served in both the U.S. Navy and Air Force, was originally designed as an airborne early warning platform to supplement the Distant Early Warning (DEW) Line, which guarded against Soviet bombers crossing over the north polar region. The aircraft was introduced in the U.S. Navy in 1954, with 142 being procured, and originally designated WV1, WV2, and WV3 (based on variant), and nicknamed "Willie Victors" before being designated as EC-121 in the late 1950s. Most of the AEW variants were out of service by 1965, although a number were converted to a "Batcat" configuration and used to monitor sensors emplaced along North Vietnamese supply and infiltration routes into South Vietnam during the Vietnam War. All but one of the Navy EC-121s was out of service by 1978. During the service life of the aircraft, 20 were destroyed in accidents with a total loss of 113 air crew.

In the late 1950's, 13 WV-2 variants were converted to EC-121M electronic and communications intelligence collection configuration (and another nine were converted to weather reconnaissance "hurricane hunter" configuration). The EC-121M had a large radome on top to collect target radar signals and antennae on the underside to collect communications signals. Loaded down with about six tons of electronic equipment, the EC-121M only had a top speed of about 220 knots and maximum altitude of 20,000 feet. Normal crew complement was in the range of 10 to 15 personnel depending on the mission. Unlike previous aircraft used for intelligence collection missions, such as the P-2V Neptune, the EC-121 was unarmed and it did not have any defensive electronic countermeasures (DECM) capability to jam threat radars.

In the western Pacific, EC-121M's were flown by Fleet Air Reconnaissance Squadron ONE (VQ-1) based at Naval Air Station Atsugi, Japan (VQ-1 also flew the EA-3B "Whale" carrier-based intelligence collection aircraft). Specialized intelligence collection personnel that flew on the aircraft were stationed nearby at Naval Security Group Activity, Kamiseya (USN-39).

The primary purpose of the Navy's EC-121M was "fleet support," and the Navy, with some degree of

reluctance, allocated flights to participate in the Peacetime Aerial Reconnaissance Program (PARPRO) in effect since the early 1950s. PARPRO flights used service assets to conduct stand-off (i.e., in international airspace) intelligence collection against "denied area" countries such as the Soviet Union, People's Republic of China, and the Democratic People's Republic of Korea (North Korea) to obtain Intelligence of national significance. Those PARPRO missions that included communications intelligence (COMINT) were tasked by the National Security Agency (NSA), which by then had consolidated control of all U.S. COMINT activity. Electronic Intelligence (ELINT), which then mostly consisted of identifying and monitoring radar activity, was still pretty balkanized among the services and national intelligence agencies (and to a lesser degree still is).

Navy PARPRO flights by EC-121Ms were termed by the Navy to be "Beggar Shadow," to the consternation of NSA, as Beggar Shadow connoted a nationally tasked and controlled (by NSA) mission for the primary purpose of COMINT collection. NSA's objection was that Navy EC-121M Beggar Shadow flights were not tasked by them or under their control, but were rather Navy missions to meet fleet requirements (vice national requirements) under Navy operational control, in this case of Commander U.S. Seventh Fleet. At the time, it was anathema to the Navy for any assets to be "controlled" by any agency outside the Navy.

The Navy's desire for "independence" (NSA's view), as well as shortage of funding, was such that Navy aircraft lacked the equipment to participant in an advisory warning system set up by NSA for reconnaissance aircraft, which by then had become standard on USAF intelligence collection aircraft as a result of the near-shootdown of a USAF ERB-47H in international airspace off eastern North Korea in 1965. The lack of this system would make it impossible to verify whether Deep Sea 129 received any of the warning messages sent prior to the shootdown, and would result in a serious delay in initiation of search-and-rescue operations (which, however, would have been fruitless, but that was certainly not known at the time.) The difference between "nationally tasked" and "service tasked"

PARPRO missions still sometimes results in confusion even today.

The process of determining a threat assessment for EC-121M missions flown against North Korea was as flawed as that for the USS *Pueblo* (AGER-2) before she was captured by the North Koreans in January 1968. Despite being termed Beggar Shadow, the missions were not tasked by NSA and NSA did not participate in the threat assessment process, which was the responsibility of the U.S. Navy. Both Pacific Fleet and Seventh Fleet determined that the missions against North Korea were "minimal" threat, because numerous Navy and Air Force missions had been flown since 1965 with no incident. Despite the capture of the *Pueblo*, there was a completely unjustified assumption that the North Koreans would respect international airspace (North Korea claimed 12 nautical miles at the time, at least officially). Numerous USAF missions had flown without being attacked, and the Navy had flown 14 EC-121M Beggar Shadow flights against North Korea since November 1968, at a rate of about two to three per month, also without incident.

Nevertheless, a history of North Korean hostile responses to reconnaissance and intelligence collection flights would suggest more concern was warranted. Very shortly after the armistice was signed in 1953, North Korea shot down a U.S. Army L-20 Beaver observation aircraft near the Demilitarized Zone (DMZ) on the Korean peninsula on 19 January 1955. On 16 June 1959, two North Korean Mig-17 Fresco fighters attacked a U.S. Navy VQ-1 P4M-1Q Mercator flying an electronic intelligence collection mission 50 nautical miles east of Korea over the Sea of Japan. The two MiGs made multiple firing passes with guns. The Mercator's starboard engine was badly damaged and the tail gunner wounded, but the aircraft was able to escape by diving right to below 50 feet above sea level and eventually making a forced landing in Japan. (The Martin Mercator was a competitor to Lockheed P-2V Neptune ASW aircraft, originally conceived during World War II as a high-speed minelaying aircraft for the invasion of Japan. Although it was 100 knots faster than the P2V, it was much larger, heavier, and much more difficult to maintain. The Navy only procured 19 of them, eventually converting 18 of

them to an electronic intelligence collection configuration.) Then, on 27 April 1965 a USAF ERB-47H Stratojet, subordinate to the 55th Strategic Reconnaissance Wing, was attacked by two North Korean MiG-17's with guns over the Sea of Japan, 80 nautical miles off the east coast of North Korea. The aircraft was badly shot up, with major structural damage and loss of two turbojet engines (of six), although the tail gunner shot down one of the MiG-17s, but was able to make an emergency landing at Yokota (some sources do not mention, or do not confirm, the shootdown of the MiG).

The geopolitical-military situation on the Korean Peninsula was cause for significant concern as well. With the U.S. deeply engaged in the war in Vietnam, North Korean dictator Kim Il-Song thought that would be an opportune time to drastically increase the number of provocations and firing incidents along the DMZ, which resulted in the deaths of 43 U.S. soldiers, 299 South Korean soldiers and about 400 North Korean soldiers over the next three years, while at the same time tripling North Korea's defense budget, and obtaining newer, more capable weapons, such as Mig-21 fighters. In January 1967, North Korean coastal artillery sank the South Korean patrol boat ROKS *Dangpo* (PCEC 56) (ex-USS *Marfa*) near the DMZ killing 39 of 79 crewmen.

Well over a thousand armed North Korean agents infiltrated into South Korea during this period, including a 31-man detachment infiltrated into Seoul on 21 January 1968 in an almost-successful attempt to assassinate the South Korean president. This "Blue House Raid" resulted in a running gun battle in the streets of the city in which 3 U.S. soldiers and 26 South Koreans were killed, along with 28 of the North Korean team (plus one captured and two unaccounted for). This raid was followed by the brazen attack on, and capture of, the U.S. intelligence collection ship USS *Pueblo* (AGER-2). It was also noted that the usual din of North Korean belligerent rhetoric increased significantly in 1969 (which was briefed to Deep Sea 129's crew as an item of concern). During the 1968 election campaign, Richard Nixon had dismissed North Korea as a "fourth rate" military, but that under-

estimation appeared prevalent in senior levels of the U.S. military as well.

Deep Sea 129 took off from Naval Air Station Atsugi, Japan at 0700 local on Tuesday 15 April (2200Z on 14 April) for a "Beggar Shadow" electronic reconnaissance mission off the east coast of North Korea, with orders to approach no closer than 50 nautical miles, and with the intent to recover at Osan Air Base, South Korea. Under the command of Lieutenant Commander James H. Overstreet, the aircraft had 31 crewmen aboard—8 officers and 23 enlisted, significantly more crewmen than was required for the mission (normally between 10 and 15 were carried). The extra crewmen were trainees who would get the bonus of liberty in South Korea. Among the crew were ten aviation electronics technicians and nine cryptologic technicians (including one Marine). Scheduled for an eight-and-a-half-hour mission, Deep Sea 129 was to fly to a point near the North Korean/Manchurian (PRC) border (no closer than 50 nautical miles) and then fly two and a half orbits along a 120-nautical mile elliptical track parallel to the east coast of North Korea.

At 1330 local (0430Z), the two North Korean MiG-21s that had been deployed to Hoemun launched. The launch was timed so that the MiGs would have the shortest time of flight to intercept Deep Sea 129's track, a track that by then the North Koreans were completely familiar with, and indicating the event was planned. Initial reflections of the launch were detected by U.S. signals intelligence (SIGINT) assets at 1335 local (0435Z.) One of the MiGs set up an overwater defensive patrol (DEFPAT) approaching no closer than 65 nautical miles to Deep Sea 129, while the other MiG continued directly toward Deep Sea 129 and, at 1338 (0438Z), was noted within 50 nautical miles of the EC-121 and closing fast. Warning was issued by U.S. SIGINT sites, but it is unknown if Deep Sea 129 received it. At 1344 (0444Z), SIGINT and radar reflections of the two tracks merged and the shootdown probably occurred at 1347 (0447Z) by one, possibly two, AA-2 Atoll infrared-seeking air-to-air missiles (Soviet version of AIM-9 Sidewinder) fired by the MiG-21 in a position approximately 80 nautical miles from the

North Korean coast. (Of note, previous attacks had been with guns.)

Standard procedure for an EC-121 under threat was to dive toward the deck, so when Deep Sea 121 disappeared from radar at 1251 (0451Z), it did not necessarily mean it had been shot down, so there was a significant period of uncertainty amongst radar and SIGINT sites in South Korea and Japan about what happened. There was no message from Deep Sea 129 indicating it was under attack. Nevertheless, at 1345 (0445Z), in response to the North Korean reaction to Deep Sea 129, the U.S. Air Force commanding general at Osan Air Base had ordered the launch of two F-102 fighters to take a combat air patrol (CAP) station in a position 140 nautical miles off the South Korean coast along Deep Sea 129's planned track, about 100 nautical miles south of the incident location. The two aircraft actually launched at 1404 (0504Z) to await the arrival of Deep Sea 129 or to assist if the aircraft was in trouble, but by then it was already too late.

At 1400 (0500Z,) NSGA Kamiseya (USN-39) made a normal hourly comms check, except this time there was no answer from Deep Sea 129. This was the first indication USN-39 had that something was wrong. (Of note, the NSA history differs significantly from what was in press reports at the time or in Wikipedia and other sources now.) Due to a message addressee issue, which was a byproduct of the Navy not having the newer NSA threat advisory system, USN-39 did not receive three warning messages, and it is uncertain whether Deep Sea 129 did either (this also differs significantly from press reporting). The U.S. Fifth Air Force in Japan was also unaware, and was alerted only after querying Osan why CAP had been launched.

Concern over Deep Sea 129 began to mount when after about ten minutes after disappearing from radar, Deep Sea 129 neither re-emerged nor communicated. Even so, it was not until 1444 (0544) that a U.S. SIGINT site issued a CRITIC message (essentially a flash override message in NSA comms channels) to NSA indicating the aircraft might have been shot down. At 0558Z (middle of the night DC time), NSA lateralled the CRITIC to the White House, and other key JCS and service watch centers. Only



when USN-39 was finally notified was a search-and-rescue (SAR) effort commenced, almost an hour after the event, at which time an HC-130 was launched from South Korea with F-106 fighters as protection.

At 1555 Korea time (0655), the U.S. Foreign Broadcast Information Service (FBIS) monitoring North Korean radio broadcasts noted that North Korea announced that a U.S. aircraft had been shot down (with a "single shot") at 1350 (0450Z) after intruding deep into North Korean airspace. North Korea lauded the attack as a "brilliant achievement" and warned that retaliation would be met with "hundredfold revenge."

Upon learning of the missing aircraft, the commander of U.S. Seventh Fleet, Vice Admiral William F. Bringle, embarked on USS *Oklahoma City* (CLG-5), directed the destroyer leader USS *Dale* (DLG-19, later CG-19) and destroyer USS *Henry W. Tucker* (DD-875) to get underway from Sasebo, Japan, to conduct a SAR. Meanwhile, at a very high government-to-government level, the U.S. requested Soviet assistance for the SAR, and two Soviet destroyers, the *Kotlin*-class *Vodokhnovenny* (DD-429) and DD-580 promptly responded and arrived in the area. The first debris were spotted the next morning by a P-3 Orion, and the Soviet destroyers began picking up debris. *Dale* and *Tucker* arrived later that afternoon and also began picking up debris. On 17 April, *Tucker* located and retrieved the bodies of two crewmen, the only ones found. The Soviets also granted permission for U.S. aircraft to overfly their ships to take photos of debris on deck. On 18 April, *Tucker* rendezvoused with *Vodokhnovenny* and cross-decked debris from the Russian destroyer. Subsequent analysis of recovered debris indicated shrapnel perforation consistent with at least one air-to-air missile like the AA-2 Atoll carried by the Mig-21s.

In anticipation of national direction, the commander in chief, U.S. Pacific Command, Admiral John S. McCain, Jr. (whose son was a prisoner of war in North Vietnam), ordered the activation of Task Force 71 at 0342Z on 16 April, consisting of three attack carrier strike groups centered on the nuclear carrier

USS *Enterprise* (CVAN-65), which had recently completed repairs from her serious fire in January 1969 (see H-Gram 025), in company with the reactivated battleship *New Jersey* (BB-62), *Ticonderoga* (CVA-14), and *Ranger* (CVA-61). In addition, TF-71 included an ASW carrier group centered on *Hornet* (CVS-12), and an air defense group led by *Chicago* (CG-11), a surface action group including *Oklahoma City* (CLG-5) and the heavy cruiser *Saint Paul* (CA-73), and numerous other escorting destroyers and support ships.

Although President Nixon had declared that there would be "no more *Pueblos*," he found himself in much the same quandary as President Johnson when *Pueblo* was seized—with no good options. The National Security Council met on 16 April and split between those favoring aggressive military action and those favoring a more cautious diplomatic approach. Nixon also received conflicting advice from key senators. Although Nixon and National Security Advisor Henry Kissinger favored more aggressive action, with public and political support for the war in Vietnam dropping rapidly, the last thing Nixon needed was another war. Some in the media would claim that the shootdown was an accident, or at least there was no proof it was deliberate. As tragic as the shootdown was, it should also be noted that in 1969 the U.S. was losing over 500 servicemen killed every month in Vietnam. Also, although North Korean rhetoric was as bellicose as ever, all indications after the shootdown were that North Korea military actions were defensive in nature and there were no signs of an imminent North Korean offensive. And, there was always the problem that South Korean capital of Seoul, with millions of civilians, was hostage to North Korean rocket and artillery fire, and the realization that any war on the Korean peninsula would be a bloody affair.

After much deliberation, Nixon opted only to send TF-71 into the Sea of Japan as a massive show of military force, and to resume intelligence collection flights against North Korea within a week to demonstrate that the U.S. would not be intimidated. Nixon finally addressed the American public on 18 April, during which he revealed detailed intelligence information that NSA at least wished he hadn't.

Nixon promised that the North Koreans would “never get away with it again.”

Although the U.S. Navy units that entered the Sea of Japan engaged in substantial planning to achieve air superiority over North Korea, using aircraft and/or surface-to-air missiles, and bomb key targets, or to initiate a blockade (or some combination thereof), it all came to naught. Although Soviet naval units continually shadowed the U.S. Navy forces, there was no reaction by the North Korean Navy. By 26 April, TF-71 units began to depart, mostly to resume combat operations off Vietnam. By 1 May, only the destroyer leader *Sterrett* (DLG-31, later CG-31) and destroyer *Rowan* (DD-782) remained off the east coast of Korea.

Vice Admiral Bringle directed that a Naval board of inquiry be convened, which it did at Atsugi commencing 20 April 1969. After extensive deliberation the board came up with two primary recommendations. The first was to overhaul the process for determining threat levels and for providing timely warning to reconnaissance and intelligence collection aircraft. The second recommendation was for the Navy to procure a better aircraft than the EC-121. (The program for the EP-3E Aries I was already underway, with the first of 12 aircraft delivered in 1969, although the recommendation also sparked a comparatively brief flurry of interest in using drones to conduct intelligence collection, which would be resurrected two decades later.) A special subcommittee of the House Armed Services Committee, charged with investigating the incident was quite critical of the command and control of the missions (especially by the Navy; the NSA study is also extremely critical of the Navy).

The tragedy of Deep Sea 129 did lead to significant improvements in how Navy PARPRO missions were approved, tasked, briefed, and supported. Although there were numerous intercepts of U.S. Navy intelligence collection flights since the shootdown of Deep Sea 129, none were fired on or lost until 1 April 2001, when a Peoples Liberation Army Naval Air Force (PLANF) J-8 Finback II fighter collided with an EP-3E Aries II of VQ-1 in mid-air after conducting dangerous maneuvers during an intercept off

Hainan Island, China. The PRC pilot ejected from his damaged jet, but was never found. The seriously damaged EP-3E with 24 crewmen aboard made an emergency landing at Lingshui (a PRC fighter base on Hainan Island). The crew was returned to the United States on 11 April, and the disassembled aircraft returned in July, after the Chinese no doubt gained everything of intelligence value they could from it.

As to what it was the North Koreans learned from the shootdown of Deep Sea 129, it was that “they will never get away with it again” was mostly meaningless U.S. rhetoric, although for the most part, the North Koreans limited their periodic outrages at the South Koreans rather than the United States. An exception was the killing of two U.S. soldiers by North Korean soldiers in an attack known as the “Axe Murder Incident” on 18 August 1976. It didn’t take long before the North Koreans were at it again, when in December 1969, North Korean agents hijacked a Korean Air YS-11 to Pyongyang, returning only 39 of the 46 passengers and 4 crew. Beginning in 1974, the first of four infiltration tunnels that the North Koreans had dug under the DMZ were discovered, each capable of moving a regiment per hour, including heavy artillery, into the rear of South Korean forces. (North Korea claimed they were abandoned coal mines—I’ve been in one, not a chance it’s a coal mine.)

North Korean provocations intensified again in the 1980s prior to the 1988 Seoul Olympics. In October 1983, North Korean agents narrowly missed assassinating South Korean President Chun Doo-hwan with a command-detonated bomb in Rangoon, Burma; the bomb failed because the president was delayed in traffic and the South Korean version of “Hail to the Chief” was played prematurely. The bomb killed 21 and injured 46. Among the dead were four senior South Korean cabinet ministers, including the foreign minister, and 14 other South Koreans. In September 1986, North Korea agents set off a bomb in South Korea’s Gimpo International Airport, killing five. In November 1987, North Korean agents planted a bomb on Korean Air Lines flight 858, which detonated over the Andaman Sea, killing all 115 aboard.

On 15 September 1996, a North Korean *Sang-o* midget submarine ran hard aground in South Korean waters after putting a three-man reconnaissance team ashore on the country's east coast. The rest of the reconnaissance team (wearing South Korean uniforms) first executed the 11-man crew of the submarine and then went ashore, resulting in a 49-day manhunt, during which 13 North Korean infiltrators and 8 South Korean soldiers were killed in firefights (and 4 more South Korean soldiers in accidents). Only one North Korean infiltrator is believed to have made it to North Korea. The *Sang-o* is now up on blocks in a park on the east coast of South Korea (I've been inside that, too). On 22 June 1998, a North Korean *Yugo*-class midget submarine was exfiltrating North Korean agents from South Korea when it became entangled in fishing nets in South Korean waters. While being towed by a South Korean corvette, the four North Korean agents executed the five submarine crewmen and then committed suicide, and the submarine sank, but was subsequently raised by the South Koreans. In December 1998, South Korean navy vessels sank a North Korean I-SILC semi-submersible just west of Chinhae.

Between 1997 and 2002, there were multiple skirmishes between the North and South Korean navies along the Northern Limit Line off the west coast of South Korea, including the First Battle of Yeonpyeong in 1999 (one North Korean torpedo boat sunk with 17 to 30 KIA and three patrol boats severely damaged) and the Second Battle of Yeonpyeong in 2002 (one ROKN patrol boat sunk with six KIA and one North Korean patrol boat severely damaged with 13 KIA). This was followed by the Battle of Daechong in 2009, in which one North Korean patrol boat was damaged with eight KIA. The series of naval engagements culminated on 26 March 2010, when a North Korean *Yono*-class midget submarine sank the ROKN corvette *Cheonan* with a wake-homing torpedo in a surprise attack in South Korean territorial waters, killing 46 of *Cheonan*'s crew (58 were rescued). The United Nations condemned the attack without naming North Korea as being responsible. (I led the international multi-national intelligence team in Seoul assisting with the South Korean investigation—

a future H-gram). It's been almost ten years since the *Cheonan* sinking, and, like the Mercator incident in 1959, most people have forgotten, so we are probably overdue for another example of North Korean bad behavior.

Sources consulted: For the EC-121 section, the primary source is the recently (2015) released National Security Agency's declassified and redacted "The National Security Agency and the EC-121 Shootdown," *United States Cryptologic History*, Crisis Collection Vol 3., Office of Archives and History NSA/CSS, originally produced in classified form in 1989, and which can be found on NSA's website. Other sources include: "By Any Means Necessary: America's Secret Air War in the Cold War," William E. Burrows, 2003. "The EC-121 Shoot Down and North Korea's Coercive Theory of Victory" by Van Jackson 13 April 2017, at wilsoncenter.org. "Lessons from the Capture of the USS PUEBLO and the Shootdown of a U.S. Navy EC-121, 1968-1969" by Richard A. Mobley, *Studies in Intelligence*, Vol. 59, No 1., 2015. There are a number of lists of aircraft shot down during the Cold War of varying degrees of accuracy. Although the site by David Lednicer ([http://sw.propwashgang.org/shootdown\\_list.html](http://sw.propwashgang.org/shootdown_list.html)) does not appear to have been maintained for a while, it is the most comprehensive list I have found, and my spot checks of research indicates it is very thorough and accurate.



*Lockheed P2V Neptune being serviced at Naval Air Test Center, Patuxent River, Maryland, mid-1950s (NH 101816-KN).*

## **H-029-3: A Brief History of U.S. Navy Cold War Aviation Incidents (Excluding Korea and Vietnam)**

*H-Gram 029, Attachment 3*

*Samuel J. Cox, Director NHHC*

*April 2019*

Due to the high level of secrecy accorded to intelligence collection flights in the early Cold War, difficulty in finding reliable sources, and ambiguity

caused by "cover stories," this list may not be complete (and some subject to continued revision). At the Tehran Conference in November 1943, Soviet dictator Joseph Stalin agreed to join with the Allies in the war against Japan three months after the defeat of Germany. True to his word almost to the day, Stalin's armies invaded Japanese-occupied Manchuria on 9 August 1945 and rapidly crushed the Japanese Kwantung Army. (This Soviet invasion was made possible by the massive supply of U.S. munitions transported in neutral ships via the North Pacific during the war, with which the Japanese did not interfere. This will be a future H-gram.) Between Tehran and the surrender of Japan (officially on 2 September 1945) U.S. enthusiasm for Soviet entry into the war had diminished considerably. As U.S. Navy forces under the Seventh Fleet moved to

accept the surrender of Japanese forces in Korea and China, there were multiple clashes between 2 and 16 September when Soviet fighters fired on U.S. Navy aircraft in Manchurian (Chinese) airspace, by then occupied by the Soviets and not the Japanese. There were no reported losses from these encounters.

- On 15 November 1945 Soviet fighters attacked a U.S. Navy PBM-5 MARINER seaplane off Darien (formerly Port Arthur), Manchuria. I don't know if the aircraft was damaged.
- On 26 February 1946, a VP-26 PBM-5 Mariner seaplane operating from Tsingtao, China, got lost and flew over Darien, Manchuria. A Soviet fighter fired warning shots with no damage.
- On 8 April 1950, the PB4Y-2 Privateer (Navy variant of B-24 four-engine bomber) "Turbulent Turtle" of VP-26 Detachment A, based at Port Lyautey, French Morocco, staged from Wiesbaden, West Germany, for a Baltic Sea reconnaissance mission. The Soviets claimed the Privateer was over Soviet-occupied Latvia when four La-11 fighters shot it down (although the aircraft crashed 3-7 miles off the coast of Latvia). All ten crewmen were missing and presumed dead and were not recovered, although parts of the plane were.
- On 11 May 1950, the Soviets claimed to have downed a USAF B-24 Liberator (which may have been a U.S. Navy PB4Y Privateer), but I can't find any other confirmation.
- On 4 September 1950, ten days before the Inchon landings during the Korean War, Ensign Edward V. Lancey, flying an F4U-4B Corsair (VF-53) from USS *Valley Forge* (CV-45), shot down a Soviet naval aviation Douglas A-20 Box over the Yellow Sea, southeast of Soviet-occupied Port Arthur naval base in China and west of the North Korean coast. The A-20 was a U.S.-built twin-engine medium bomber provided to the

Soviet Union during World War II under Lend-Lease. Two A-20s, subordinate to the 36th Mine-Torpedo Aviation Regiment of the Red Banner Pacific Fleet, were on an armed reconnaissance mission when they were intercepted by four Corsairs from *Valley Forge*. One of the A-20s turned away, but the other continued to press toward U.S. ships. The dorsal (top) turret gunner on the A-20 opened fire, and the Corsairs returned fire, with Lancey receiving credit for downing the A-20. The Americans recovered the body of one crewman, which was returned to the Soviets in 1956.

- Sometime between October and December 1950, a VP-6 P2V Neptune twin-engine ASW aircraft was intercepted at night off the Soviet coast near Vladivostok by four Soviet MiG-15 Fagot (NATO code name) jet fighters. The Neptune's tail gunner fired a short 20-mm warning burst when the MiGs got too close, and one of the MiGs exploded. The Neptune dove for the deck and successfully escaped without damage.
- On 6 November 1950, a U.S. Navy aircraft with a crew of 12 disappeared over Strait of Formosa. The fate of this aircraft is unknown, but shooting incidents between U.S. Navy aircraft and communist Chinese aircraft and surface vessels in the Formosa Strait would become fairly common.
- On 6 November 1951, two Soviet La-II Fang fighters shot down a VP-6 P2V-3W Neptune conducting a reconnaissance mission near Vladivostok. The Soviets claimed to intercept the aircraft 7-8 miles from shore and it crashed 18 miles from shore. All ten crewmen were missing and presumed lost. The U.S. claimed at the time that the aircraft was conducting a weather reconnaissance mission for the United Nations Command in Korea.
- On 31 July 1952, two People's Republic of China (PRC) MiG-15 jet fighters attacked an Iwakuni-based U.S. Navy PBM-5S2 Mariner



seaplane over the Yellow Sea. Two crewmen were killed and two wounded, but the seriously damaged Mariner was able to recover in South Korea.

- On 20 September 1952, a U.S. Navy PB4Y-2S Privateer of VP-28 was attacked by two PRC MiG-15s off the coast of China, but was able to recover on Okinawa.
- On 18 November 1952, three U.S. Navy F9F-5 Panther jet fighters of VF-781 embarked on USS *Oriskany*(CV-34) engaged a force of at least four and as many as seven Soviet MiG-15 jet fighters after being attacked overwater in the Sea of Japan south of Vladivostok. At least four Soviet pilots appear to have been lost as a result of the engagement, and one badly damaged F9F successfully recovered aboard *Oriskany*. Although there were numerous engagements during the Korean War between U.S. pilots and Russian pilots flying Mig-15s with North Korean or Chinese markings overland North Korea, and flying from bases in China, this engagement is unique in that these were Soviet aircraft, with Soviet pilots, flying from a base in the Soviet Union under Soviet ground controlled intercept (GCI) control, and over water. Although some details of the engagement became public fairly quickly, that the engagement was with Soviet aircraft (rather than generic "enemy" aircraft) remained secret for many years. (This will also be a future H-gram.)
- On 23 November 1952, another VP-28 PB4Y-2S Privateer was attacked, but not damaged by PRC Mig-15s off China.
- On 18 January 1953, a VP-22 P2V-5 Neptune, based at Atsugi, Japan, was seriously damaged by Chinese anti-aircraft fire from a small island near Swatow, PRC, and the burning aircraft was forced to ditch in the Formosa Strait. A U.S. Coast Guard PBM-5 Mariner seaplane landed in 8 to 12-foot swells and rescued 11 of the Neptune's 13-man crew while being fired upon by Chinese coastal artillery, but crashed while attempting to get airborne. Ten of the 19 men aboard the Coast Guard Mariner (including five from the Neptune) were rescued by the destroyer USS *Halsey Powell* (DD-686), three of them during a daring nighttime rescue in shallow water just off the Chinese coast. (*Halsey Powell* survived a kamikaze hit off Okinawa while alongside the carrier USS *Hancock*—CV-19—in March 1945.) During the search for more survivors, a VP-40 PB-5M Mariner was fired upon by small-caliber machine guns and the USS *Gregory* (DD-802) was fired on by PRC shore batteries. Six of the Neptune's crew were lost.
- On 23 April 1953, two PRC MiG-15's attacked a U.S. Navy Martin P4M-1Q Mercator long-range electronic reconnaissance aircraft. The Mercator returned fire, but neither the MiGs nor the Mercator were hit.
- On 19 Jun 1953, a VP-46 PBM-5S2 Mariner was fired upon by PRC surface ships in the Formosa Strait, and, on 28 June, a P-2V Neptune of VP-1 was also shot at by PRC surface ships. Neither aircraft was damaged. On 8 July 1953, a VP-1 P2V-5 Neptune was fired on by PRC anti-aircraft guns near Nantien, China, but was not damaged.
- On 2 October 1953, a VP-50 PBM-5 Mariner was intercepted by two PRC Mig-15's 30 nautical miles east of Tsingtao, China, and was hit twice in the tail by 37-mm rounds (during 12 firing passes), but was able to recover safely.
- On 7 November 1953, a PBM-5A Mariner was lost over Yellow Sea. The PRC claimed to have shot down a U.S. aircraft over the Yellow Sea on 10 November 1953, and it is possible it was the same aircraft, but with the wrong date. The Mariner's entire crew of 14 were lost.

- On 18 November 53, two PRC MiG-15's attacked a VP-50 PBM-5 Mariner near Shanghai, which was not damaged.
- On 4 January 1954 (after the Korean War Armistice), an Iwakuni-deployed VP-2 P2V-5 Neptune flew a night "combat reconnaissance mission" that included sensitive intelligence collection along the west coast of Korea. It was VP-2's first such mission after relieving VP-7. As the aircraft approached the PRC border, it reported engine difficulty, and a rapid descent, which might have been the result of hostile attack. (There were later attacks on U.S. Air Force and Allied aircraft in the same area, and it was the logical place to be attacked by PRC aircraft.) The aircraft crashed while trying to reach an airfield in South Korea, all ten aboard were declared missing (and later, missing in action), although three may have been recently accounted for by the Defense POW/MIA Accounting Agency (DPAA). There is a report that it may have been mistakenly downed by a U.S. Navy AD-4B Skyraider on night patrol (I am not certain of this report, as the AD-4B was developed as a nuclear bomber, not a night fighter—dropping a nuclear bomb from a single-engine piston aircraft doesn't sound like a high-probability-of-survival mission). At the time, this was reported as a loss due to mechanical problems, but such missions were at the time kept quite secret.
- On 12 March 1954, two USN AD-4 Skyraiders of VA-145 and VC-35 Det F flying from the carrier USS *Randolph* (CVA-15) were conducting a simulated attack on a West German airfield when they were attacked near the Czechoslovakian border by a Czech MiG-15. One of the Skyraiders suffered damage to its tail.
- On 9 April 1954, a VP-2 P2V was attacked by a PRC MiG-15 over the Yellow Sea, in the same area where a VP-2 P2V had reported engine trouble on 4 January 1954. The MiG made three firing passes and the Neptune returned fire, but there was no damage to either aircraft. (On 27 January 1954, a U.S. Air Force RB-45 Tornado, with an escort of F-86s, was attacked by eight PRC MiG-15s in the same area, and one MiG was downed in the engagement.)
- On 26 July 1954, two PRC La-7 piston fighters attacked two Navy VF-54 AD-4 Skyraiders from USS *Philippine Sea* (CVA-47) near Hainan Island in the South China Sea. The Skyraiders were searching for survivors of a Cathay Pacific Airlines DC-4 flying from Bangkok to Hong Cong, which had been shot down by PRC La-9 Fritz fighters near Hainan, with 18 passengers and crew aboard (including six Americans). Ten people aboard the airliner were killed. Other VF-54 fighters and an F4U-5N Corsair of VC-3 joined in the fight, and both Chinese La-7's were shot down. A PRC gunboat also fired on U.S. aircraft, but there was no damage.
- On 4 September 1954, two Soviet MiG-15s attacked a VP-19 P2V-5 Neptune 40 nautical miles off the east coast of the Soviet Union. The Neptune was forced to ditch and one crewman was lost. The other nine were rescued by the prompt arrival of a USAF SA-16 amphibious plane.
- On 9 February 1955, a USS *Wasp* (CVA-18)-embarked AD-5W Skyraider of VC-11 Det H was covering the evacuation of Nationalist Chinese from the Tachen Islands, when it was hit by PRC AAA fire and forced to ditch. Nationalist Chinese patrol boats rescued the three-man crew.
- In February 1955, a P2V Neptune was damaged in the wing by PRC AAA over the Formosa Strait.
- On 22 June 1955, two Soviet MiG-15 fighters attacked a Kodiak-deployed VP-9 P2V-5 Neptune over the Bering Strait, setting an engine on fire. The Neptune successfully crash-landed in an open area on St. Lawrence Island and the 11-man crew

survived, although 4 had been injured by gunfire and another 6 in the landing.

- On 22 August 1956, a VQ-1 P4M-1Q Mercator electronic intelligence aircraft from Iwakuni airfield, Japan, was attacked at night by a PRC fighter 32 miles off the PRC coast. There were no survivors among the 16-man crew. The destroyer USS *Dennis J. Buckley* (DDR-808) recovered two bodies, and the Chinese recovered two, which were returned to the U.S.
- On 12 June 1957, four VA-145 AD-6 Skyraiders from USS *Hornet* (CVA-12) overflew the coast of the PRC. One aircraft was damaged by PRC AAA fire.
- During the period 1959–67, the CIA operated three P-3 Orion aircraft, known as “black” P-3s, from Taiwan, conducting low-altitude night intelligence collection missions in the PRC. These aircraft replaced P2V-7U/RB-69A Neptunes operated by the CIA, acquired in 1954, that conducted the same mission. The black P-3s were armed with AIM-9 Sidewinder IR air-to-air missiles. There were unconfirmed reports that sometime between 1964 and 1967 one of the P-3s shot down a PRC fighter. These aircraft were returned to the Navy and converted to EP-3B and then to EP-3E Aires intelligence collection aircraft, until being retired in the 1980s.
- On 25 May 1968, a Soviet TU-16 Badger bomber buzzed the carrier USS *Essex* (CVS-9) and her escorts off northern Norway. After a very low pass on *Essex*, the wingtip of the Badger clipped a wave and the plane cartwheeled into the sea with no survivors.
- On 4 October 1973, a Soviet TU-16 Badger bomber flew over the USS *John F. Kennedy* (CVA-67) in the Norwegian Sea and collided with an F-4 Phantom II. The F-4 was able to recover at Bodo, Norway, and the Badger made it back to the Soviet Union.

- On 1 April 2001, a VQ-1 EP-3E Aries II suffered a mid-air collision with a Peoples Liberation Army Naval Aviation (PLANAF) J-8 Finback II jet fighter off Hainan Island in the South China Sea. The PRC claimed the EP-3 had maneuvered into the Chinese fighter, which is the exact opposite of what occurred. The pilot of the PRC jet ejected, but was never found. The EP-3E made an emergency landing at PRC military airfield on Hainan Island. The 24-man crew were ordered off the aircraft while the Chinese conducted intelligence exploitation. The crew was returned to the United States on 11 April and the disassembled aircraft was returned via heavy-lift aircraft in July 2001.

### ***Major U.S. Air Force losses during the Cold War (excluding Korea and Vietnam):***

- On 13 June 1952, an RB-29 Superfortress was shot down by Soviet fighters over the Sea of Japan (12 dead).
- On 7 October 1952, an RB-29 Superfortress was shot down by Soviet fighters over the Kurile Islands (8 dead).
- On 12 January 1953, a B-29 Superfortress dropping leaflets over Manchuria was shot down by Soviet fighters (3 dead, 11 captured and returned in 1956).
- On 29 July 1953, an RB-50G Superfortress was shot down by Soviet fighters near Vladivostok. The sole survivor of 18 crewmen was rescued by the destroyer USS *Pickering* (DD-685).
- On 7 November 1954, an RB-29 Superfortress was shot down by Soviet fighters near Hokkaido, Japan. The 11-man crew bailed out and ten were rescued.
- On 17 April 1955, an RB-47E Stratojet was shot down by Soviet fighters near Hokkaido, Japan. The three-man crew were all killed.

- On 27 June 1958, a C-118 flying from Weisbaden, West Germany, to Karachi via Cyprus and Iran flew into what was then the Soviet Republic of Armenia and was shot down by Soviet fighters. Five crew members bailed out and four survived the crash landing, and all were captured by the Soviets. The aircraft was reportedly the plane assigned to Director of the CIA Allen Dulles and had been used to transport CIA VIPs.
- On 2 September 1958, a C-130A Hercules flying an intelligence collection mission was shot down by Soviet fighters near the Soviet Republic of Armenia. All 17 aboard were killed.
- Although not a USAF mission, on 1 May 1960, a CIA U-2 high-altitude intelligence collection aircraft flown by Francis Gary Powers was shot down by an SA-2 Guideline surface-to-air missile near Sverdlovsk, Soviet Union. Powers was captured and later released in an exchange for Soviet spy Rudolf Abel. A Soviet missile fired at the U-2 accidentally shot down a Soviet MiG-19, killing the pilot.
- On 1 July 1960, an ERB-47H Stratojet was shot down by a Soviet fighter over the Barents Sea near the Kola Peninsula. Four crewmen were killed, but two survived and were captured by the Soviets and returned in 1961.
- During the Cuban missile crisis, a USAF U-2 was shot down on 27 October 1962 over Cuba by an SA-2 Guideline surface-to-air missile, killing the pilot.
- On 28 January 1964, a T-39 Saberliner on a training flight was shot down about 60 nautical miles inside Communist East Germany, killing the three crewmen.
- On 10 March 1964, an RB-66 Destroyer (Air Force version of the "Whale") strayed outside the air corridor to West Berlin and was shot down by Soviet MiG fighters. The three crewmen parachuted from the plane, were captured and later released.
- On 21 October 1970, an RU-8 Seminole observation aircraft was lost over Soviet Republic of Armenia, and the crew of four was rescued.



*USS Iowa (BB-61) fires a full broadside of nine 16-inch/50-caliber and six 5-inch/38-caliber guns during a target exercise near Vieques Island, Puerto Rico, 1 July 1984. Note concussion effects on the water surface, and 16-inch gun barrels in varying degrees of recoil (DN-ST-85-05379).*

## H-029-4: The USS *IOWA* Tragedy

*H-Gram 029, Attachment 4*

*Samuel J. Cox, Director NHHC*

*April 2019*

The USS *Iowa* (BB-61) was the lead ship of the last class of battleships built by the U.S. Navy, and was the first of four in that class to be commissioned, on 22 February 1943. Although the Japanese super-battleships *Yamato* and *Musashi* were heavier and had larger guns (nine 18.1-inch) the *Iowa*-class (*Iowa*, *New Jersey*, *Missouri*, and *Wisconsin*) were

without doubt the most sophisticated battleships ever built, with a primary armament of nine 16-inch guns in three triple turrets.

*Iowa*'s first brush with potential disaster occurred on 14 November 1943 as she was transporting President Franklin D. Roosevelt, Secretary of State Cordell Hull, and the entire Joint Chiefs of Staff (Admiral Leahy, General Marshall, Admiral King, and General Arnold) across the Atlantic to attend the Tehran Conference to meet with British Prime Minister Winston Churchill and Soviet dictator Josef Stalin. During the course of several anti-aircraft and other battle drills, the destroyer USS *William D. Porter* accidentally fired a live torpedo at *Iowa*. After several attempts via flashing light, *Porter*'s skipper, Lieutenant Wilfred A. Walter, broke radio silence to



warn *Iowa*, which took evasive action and opened fire on the torpedo, exploding it 3,000 yards in *Iowa's* wake. (*Porter* has been credited with a number of other incidents and accidents while escorting *Iowa*, at least some of which appear to be apocryphal, and, contrary to legend, her skipper was not relieved after being suspected of trying to assassinate the President: Walter retired as a rear admiral. What was true, however, is that when meeting up with other ships, *Porter* would be routinely greeted by "Don't shoot. We're Republicans" [FDR was a Democrat.] *Porter* was sunk off Okinawa in June 1945 when she shot down a Japanese kamikaze and the plane's bomb exploded directly under the ship. Although there were no deaths among the crew, the ship could not be saved despite three hours of valiant damage control.)

During the surface action off the Japanese stronghold at Truk on 16 February 1944 (see H-Gram 026), *Iowa* and her sister *New Jersey* (with Vice Admiral Raymond Spruance embarked) assisted in sinking the Japanese light cruiser *Katori* and dodging several Japanese torpedoes in the process. She wasn't quite as lucky during a bombardment of the bypassed Japanese-held island of Mili in the Marshall Islands in March 1944, when she was hit by two 4.7-inch shells from a plucky Japanese shore battery, but damage was negligible. *Iowa* suffered minimal damage during Typhoon Cobra in December 1944 and, near the very end of the war, bombarded steel mills on the Japanese home islands of Honshu and Hokkaido. *Iowa* also served as the flagship for Admiral William F. Halsey during the formal Japanese surrender in Tokyo Bay on 2 September 1945. *Iowa's* skipper, Captain John McCrea, had a dog named Vicky (short for Victory), credited with being the first American dog to go ashore in Japan after the surrender.

*Iowa* was decommissioned in 1949 during the precipitous U.S. post-World War II drawdown (the Navy's budget was cut by over 75 percent). However, upon the North Korean invasion of South Korea in June 1950, *Iowa* was brought out of reserve and re-commissioned on 25 August 1951. She then served in the Korean War, firing over twice as many shells at North Korean and Chinese positions (in Korea) as she had during World War II. She was

decommissioned again in 1959. However, with the Reagan administration's plan (led by Secretary of the Navy John Lehman) to build back up to a 600-ship Navy (reversing the post-Vietnam War drawdown), all four *Iowa*-class battleships were brought out of mothballs and upgraded with Harpoon anti-ship missiles, Tomahawk land-attack cruise missile, Vulcan-Phalanx close-in-weapons systems (CIWS), and other upgraded radar, communications, and electronics. The battleships still retained their three triple 16-inch main battery turrets and most of the secondary 5-inch/38-caliber dual purpose mounts.

*Iowa* was re-commissioned on 28 April 1984, the second of the four to do so (*New Jersey* had been re-commissioned briefly during the Vietnam War—1968-69—and had a head start). Nevertheless, the years had taken their toll, and *Iowa* had numerous challenges being brought back into service. The required board of inspection and survey (INSURV) inspection was delayed for two years, and when it did take place in March 1986, the lead inspector, Rear Admiral John D. Bulkeley (World War II Medal of Honor PT-boat skipper), identified so many material deficiencies that he recommended that *Iowa* be taken out of service immediately. Secretary Lehman overruled the recommendation, but directed that the discrepancies on *Iowa* and her sisters be fixed. Lessons from *Iowa's* re-commissioning definitely aided those of *Missouri* and *Wisconsin*.

On 10 March 1988, Captain Fred Moosally assumed command of *Iowa*. *Iowa's* master chief fire controlman and the gunnery officer convinced Moosally to allow experimentation with long-range gunnery shoots. Such experimentation had been authorized by an individual at Naval Sea Systems Command who was not authorized to do so, the fact of which Moosally was misled. In January 1989, in one of the experiments off Vieques, Puerto Rico, a 16-inch shell fired from *Iowa* achieved a distance of 23.4 nautical miles, ostensibly a record for a conventional 16-inch shell. The turret officer in Turret 1 reportedly considered these experiments to be unsafe and Turret 1 refused to participate, a fact of which Moosally was also unaware.

Captain Moosally was in command when *Iowa* departed Norfolk on 13 April 1989 to participate in FLEETEX 3-89, with Commander Second Fleet Vice Admiral Jerome Johnson embarked. At 0930 19 April 1989, *Iowa* was located 260 nautical miles northeast of Puerto Rico in the open ocean for a main battery gun shoot. According to plan, Turret 1 was to fire first, but suffered a misfire. Moosally then ordered Turret 2 to load and fire a three-gun salvo, which was not in accordance with SOP that the misfire should be resolved first. The left and right guns on Turret 2 reported being ready to shoot, but a series of communications via phone circuit indicated that there was an undetermined problem with the center gun and that it was not ready. There are quotes of what was said that can be found in different sources on the web; however, they are not contained in the official investigation reports.

The following description of what happened are excerpts taken verbatim from the third endorsement to the investigating officer's report, signed by Chief of Naval Operations Admiral Carlisle Trost on 31 August 1989:

"On 19 April 1989 a rapid series of three explosions within turret II aboard USS IOWA (BB 61) resulted in the instantaneous deaths of 47 American Sailors. A Judge Advocate General's Manual investigation was convened immediately. Every conceivable source of ignition and every aspect of USS IOWA's condition and shipboard routine that might have bearing on the incident were evaluated: procedures, training, safety, manning, and personal conduct. Since the primary explosion was determined to have occurred within the center gun room, the focus of the investigation was properly directed to that location. The tragic loss of personnel within turret II and adjacent ammunition handling spaces precluded a precise causal determination since the personnel most knowledgeable of actions and intentions were those who lost their lives....

"The initial explosion was caused by premature ignition of five bags of smokeless powder contained within the center gun with the breech open. The point of ignition was most probably between the first and second bags. Exhaustive technical tests have ruled out the following possibilities which

constitute the most logical inadvertent causes: burning ember, premature primer firing, mechanical failure, friction, electromagnetic spark, propellant instability, and personal procedural error. Although deficiencies in training documentation, weapons handling procedures, and adherence to safety procedures were found within the weapons department, the exhaustive tests and duplication of the type of blast that occurred have conclusively demonstrated that these shortcomings did not cause the explosion....

"Confronted with evidence that brought into question a possible wrongful act, the Naval Investigative Service (NIS) conducted an exhaustive investigation into the backgrounds and recent behavior of not only the center gun room personnel but of all relevant USS IOWA crewmembers....

"Additional hard factual evidence such as the position of the projectile/powder rammer and the subsequent delay in retracting the rammer to allow closing the breech provides credibility to the theory that an intentional human act caused the ignition of the powder charge. The critical controlling station within turret II to allow the aforementioned factors to occur was the center gun captain. These factors, when combined with circumstantial evidence associated with the individual manning that gun captain position at that the time of the explosion, strongly suggest that an intentional human act most probably caused the premature ignition.

"The combination of these factors leads me reluctantly to the conclusion that the most likely cause of the explosion was a detonation device, deliberately introduced between the powder bags that were rammed into the breech of the center gun. This caused premature detonation and subsequent disastrous explosions aboard USS IOWA on 19 April 1989, resulting in the deaths of 47 sailors, including GMG2 Clayton Hartwig. I further concur with the investigating officer and subsequent endorsers that the preponderance of evidence supports the theory that the most likely person to have introduced the detonation device was GMG2 Hartwig."

The CNO's endorsement included discussion of an analysis by the FBI of trace foreign material found in

the center gun barrel of Turret 2, which the Navy investigation assessed to be evidence of an electrical igniter/timer of a type that could be purchased at an electronics store. Although the CNO's letter described the FBI analysis as "inconclusive," the FBI had actually determined that the elements were not consistent with an electronic igniter, but were probably from the "Break-free" solvent used to help dislodge the projectile from the barrel. In addition, on 28 August 1989 (two days before the CNO's endorsement), technicians at Naval Weapons Support Center, Crane, confirmed the FBI's analysis that no electrical timer, batteries, or primer were involved. The Navy's theory then shifted to the use of a chemical igniter, which was also, much later, disproven.

The CNO's endorsement also cited testimony obtained from an *Iowa* sailor under intense Naval Investigative Service (NIS, now NCIS) interrogation that implicated Gunners Mate (Guns) 2nd Class Hartwig in the explosion, but was subsequently recanted by the sailor, a fact of which CNO was possibly unaware, as that testimony was used in multiple subsequent hearings without acknowledging it had been recanted.

The second endorsement to the investigating officer's report, signed by Commander in Chief U.S. Atlantic Fleet Admiral Powell F. Carter on 11 August 1989, included the statement, "Exhaustive testing and evaluation has virtually ruled out any of these discrepancies as directly causing the deaths of the 47 crewmembers in Turret II. Nevertheless, the number and egregiousness of the discrepancies create an impression of laxity and disregard that will cloud the investigation in the minds of non-expert critics for the foreseeable future." Admiral Powell's concerns were exactly on the mark.

Shortly after the explosion, Commander Naval Surface Forces Atlantic Vice Admiral Joseph S. Donnell appointed Rear Admiral Richard D. Milligan to conduct a Judge Advocate General Manual Investigation (JAGMAN) of the event. Milligan was a former commanding officer of *Iowa*'s sister ship, *New Jersey*. The choice of a JAGMAN investigation proved to be a problem, once it became apparent that a criminal act might have

been the cause of the initial explosion, something for which a JAGMAN is not intended, since a JAGMAN allows such things as unsworn testimony. Rear Admiral Milligan went aboard *Iowa* on 20 April 1989 to commence his JAGMAN investigation as recovery operations were continuing in Turret 2. Unfortunately for Milligan's investigation, the location of bodies and body parts had not been accurately recorded or photographed before they were removed, and much damaged material from Turret 2 had already been discarded over the side with no record, which effectively compromised what would become a "crime scene." One discrepancy that would occur between official Navy reporting and other reporting was the location of where the body of the gun captain (Hartwig) of the center gun was found.

In Milligan's report, he also states that, "The investigation into and the analysis of all potential causes of this tragic explosion have been complicated by the issue of improperly loaded munitions in the center gun (NALC D881 projectile with five full charge bags from NALC D846 vice six), lack of an effective and properly supervised assignment and qualification process, and poor adherence to explosive safety regulations and ordnance safety. While none of these factors have been determined to be the cause of the explosion, or provide an ignition source, they cast the proper operation of gunnery systems in USS IOWA (BB 61) in a very poor light and generate doubt."

What the above means is that the center gun in Turret 2 (and the other guns as well) were firing an unauthorized non-standard load. The projectile was a 2,700-pound shell (NALC D881). D-846 powder (NALC D846) was powder from 1943-44 that was designed and intended for use with 1,900-pound shells. In fact, the D-846 powder bags were marked, "Warning: Do not use with 2,700 LB projectiles."

Among other things, Milligan would discover that all the gun turrets were significantly undermanned, and of those many were significantly lacking in experience. Of 51 positions in Turret 2 that called for PQS- (personnel qualification standard) qualified personnel, only 13 were manned by PQS-qualified personnel (and Turret 2 was in better shape than the

other two turrets in this regard). Of the four personnel manning the center gun, all but the gun captain lacked experience, and the rammer man had never done a live gun shoot before, nor did he have any experience ramming a non-standard powder load. Hartwig had been taken off the watch bill due to his impending change of station orders, and was only ordered back on the watch bill as center gun captain the night before due to concern about the lack of experience of the center gun crew.

Milligan also discovered that the ram in the center gun had been over-extended by 21 inches, but it was not possible to confirm the speed with which this had been done. (The ram had a higher speed for ramming the projectile and slower speeds for ramming the powder bags.) This would become a factor in later investigations.

Milligan's report would further state, "Despite extensive testing, no anomalies which could have served as an accidental source of ignition have been found in either hardware or ammunition components. There is strong evidence however, to support an opinion that a wrongful intentional act caused this incident." In the "Opinions" section of Milligan's report, he states in Opinion # 56, "wrongful intentional act was most probably committed by GMG2 Hartwig."

Suspicion fell on Hartwig very quickly after his family informed Navy and political leaders that he had taken out a \$50,000 double indemnity life insurance policy (pays \$100,000 in the event of an accident) with the beneficiary being another sailor on *Iowa* who was a friend. Not mentioned in Milligan's report (or any of the endorsements) was that the policy had been taken out more than two years before the event. Nevertheless, this launched a formal NIS investigation of Hartwig and other *Iowa* crewmen. NIS was initially reluctant to do so, since mixing a formal criminal investigation with an "informal" JAGMAN investigation was problematic, but the Vice Chief of Naval Operations, Admiral Leon "Bud" Edney, gave the go-ahead.

The NIS investigation of Hartwig gave some additional cause for suspicion. Besides the life insurance policy, Hartwig possessed a couple

magazines (such as *Get Even: a Guide to Dirty Tricks*) which reportedly included information on how to make explosive devices, and he had experimented with explosive devices and detonators in the past. He also reportedly frequently talked about different ways of dying, had a fascination with ship disasters, had had a falling out with his close friend, had attempted suicide in high school, and had discussed in the weeks before the accident that he wanted to die in the line of duty and be buried at Arlington National Cemetery. NIS also enlisted support from the FBI, which produced a document called an "equivocal death analysis," which cast further suspicion on Hartwig's mindset. (Hartwig's family and some of his friends would dispute some of these allegations, such as Hartwig being suicidal.)

Although the official Navy documents do not mention "homosexual affair," the series of leaks to the media from Navy sources that began in early May 1989 certainly did. According to the leaks (and subsequent reports on NIS lines of questioning), the working assumption was that Hartwig had deliberately placed an electronic device between the first and second powder bags (the origin of the first explosion) as a suicidal act due to a homosexual affair (with the life insurance beneficiary) gone bad. However, no actual evidence of a homosexual affair was found. One *Iowa* sailor, under intense NIS questioning, implicated Hartwig, but then recanted his testimony as soon as he was asked to sign. (Nevertheless, this recanted testimony shows up in later documents and congressional testimony without reference to it being recanted.) By the time Milligan submitted his JAGMAN report on 15 July 1989, this "theory" had been reported in multiple media stories sourced by the press to leaks from Navy officials.

The commander of Naval Surface Forces Atlantic (COMSURFLANT), Vice Admiral Joseph Donnell, endorsed Milligan's report on 28 July 1989. Donnell recommended against judicial action or detachment for cause with respect to the commanding officer and executive officer, but that the numerous deficiencies would be documented by way of special reports of fitness.

In paragraph 10 of Donnell's endorsement, he states "No living human being will ever know with unassailable certainty what happened in Turret II to initiate the tragedy, but the sheer weight of evidence leads in only one direction...direct and deliberate human intervention during the loading process." Donnell's endorsement also stated that "strong forensic evidence exists" to support human intervention as the cause. This forensic evidence would subsequently be challenged. All of the endorsements to Milligan's report (SURFLANT, CINCLANTFLT, and CNO) expressed profound shock and incredulity that a deliberate human act could have been the cause of the explosion, yet all expressed the opinion that all other possible causes had been studied and exhausted and, therefore, a deliberate human act was, regrettably, the only conclusion.

On 7 September 1989, Milligan and the Vice Chief of Naval Operations, Admiral Edney, briefed reporters on the results of the investigation, laying out key elements of the case against Hartwig including displaying the two publications, *Getting Even* and *Improvised Munitions Handbook* that had been in his possession. The VCNO acknowledged that there was no proof of homosexual relations and denied that leaks to the press had come from Navy sources. The briefing included the announcement that the investigation had determined that the *Iowa*-class battleships were safe to operate, and that the powder was stable and safe to use. Things went downhill from there.

Some of the press accused the Navy of scapegoating a dead man to cover up serious operational and safety deficiencies in the *Iowa*-class battleships, which were being rushed into service. Many family members of the dead sailors took issue with the Navy's findings, not the least of which was the family of GMG2 Hartwig. Many news stories were extremely negative, and criticism from congressional quarters rapidly increased and led to several congressional inquiries and hearings, with the first commencing in November 1989. In particular, Senator John Glenn of Ohio (former U.S. Marine pilot and Mercury astronaut) requested that the Government Accounting Office (GAO) conduct an independent review of the Navy's findings. On 11

December 1989, Captain Moosally testified that he believed the initial explosion was intentional, but he disagreed with Milligan's conclusion that Hartwig was the perpetrator (in his later retirement speech, Moosally would slam the investigation as having been in a rush to judgment to blame an individual and thereby let the Navy off the hook for the numerous manning and material shortfalls that plagued his ship). Senator Sam Nunn announced that the Sandia National Laboratory in New Mexico had agreed to a GAO request to assist in the independent investigation. In early March 1990, the House Armed Services Committee issued a report, "USS IOWA Tragedy: An Investigative Failure," which was not surprisingly highly critical of the Navy.

The Sandia independent technical inquiry commenced on 7 December 1989. Sandia determined that the "strong forensic evidence" that a chemical igniter had been used (which became the leading theory after the electronic timer/igniter theory had been rejected) was extremely doubtful, and that the chemical traces used as evidence were actually a by-product of normal salt-water corrosion. It also quickly came to light that the Navy's previous "over-ram" tests had not used actual powder bags, but rather bags of wooden pellets with powder at both ends. Sandia then proceeded to conduct drop tests of actual powder bags to simulate an over-ram scenario and, on the 18th test (24 May 1990), the powder exploded, destroying the test apparatus. Some Navy technical experts argued that the drop tests were irrelevant and did not accurately simulate a true over-ram scenario (or explain exactly how such an over-ram would have occurred).

However, because of the test explosion, Admiral Frank Kelso, the new CNO, ordered on 30 June 1990 that a second Navy investigation be conducted, led by Captain Joseph Miceli of Naval Sea Systems Command (NAVSEA) working in cooperation with Sandia. There were "conflict of interest" objections to Miceli's appointment due to his significant involvement in the first investigation (and for having been in command of Naval Weapons Center, Crane, where the powder had been stored and prepared for use), but Admiral Kelso ruled that Miceli's particular expertise was compelling.



Over-ram tests continued using actual powder and full scale mock-ups in June and July of 1990. In one test, an explosion occurred in the breech. Additional over-ram tests produced four more powder explosions. In November 1990, the un-fired projectiles from Turret 2's left and right guns were finally found, after they had been inexplicably lost during the first investigation. Tests on the missing shells revealed the same iron fibers and chemicals as were found on the center gun projectile, further negating the chemical igniter theory.

On 3 July 1991, Miceli briefed the NAVSEA Technical Oversight Board, reaffirming the conclusion of the first Navy investigation that no "accidental" cause for the initial explosion could be found. This conclusion appeared to be reached based on very technical discussions that centered on the position of the ram in the center gun. The Sandia tests appeared to show that a high-speed over-ram of 24 inches could produce an explosion in some bags of powder, but the ram was found over-extended at 21 inches. There was no good explanation for how such an over-ram might have occurred (unless it too was deliberate). There had been reports of rams in Turret 2 "taking off" (i.e., an uncontrolled ram event), which produced sparks, but Milligan's previous investigation could find no record of such events in *Iowa's* maintenance logs (although given the confirmed incompleteness of other *Iowa* documentation related to Turret 2, it is difficult to imagine that this would have been taken as definitive proof that such events had not occurred). Sandia submitted their final report to the Senate in August 1991. The GAO concluded that an over-ram-caused explosion was a "previously unrecognized safety problem."

On 17 October 1991, Admiral Kelso held a press conference in the Pentagon. Kelso noted that the Navy had spent \$25 million and almost two years on the two investigations. Kelso stated, "The initial investigation was an honest attempt to weigh impartially all the evidence as it existed at the time. And indeed, despite the Sandia theory and almost two years of subsequent testing, a substantial body of scientific and expert evidence continue to support the initial investigation that no plausible accidental cause can be established." Kelso added that the

Navy had also found no evidence the explosion had been caused intentionally. There was no "clear and convincing proof" that GMG2 Hartwig was to blame. Kelso offered "sincere regrets" to the family of Hartwig and apologies to those who died "that such a long period has passed, and despite all efforts no certain answer regarding the cause of this terrible tragedy can be found."

*Iowa's* Number 2 turret was sealed and not used for the duration of her service. She was decommissioned on 26 October 1990, as by then Secretary Lehman was gone, and the battleships had been deemed too expensive to man and operate, especially since the fall of the Soviet Union suggested a 600-ship Navy was no longer needed. Nevertheless, *Wisconsin* and *Missouri* deployed to the Arabian Gulf for Operation Desert Storm and, during January and February 1991, the two battleships fired 1,182 16-inch rounds at Iraqi targets without mishap. (Numerous procedural improvements resulting from the *Iowa* investigation had been incorporated before Desert Storm.) However, by the time of the CNO's comments in October 1991, *Iowa*, *New Jersey*, and *Wisconsin* were already decommissioned, and *Missouri* would be in several months.

Primary source for this H-gram is the official U.S. Navy Investigation and endorsements by SURFLANT, CINCLANTFLT, and CNO, which can be found here [<https://www.jag.navy.mil/library/investigations/IOWA%2019%20APR%2089%20PT%201.pdf>] and here [<https://www.jag.navy.mil/library/investigations/IOWA%2019%20APR%2089%20PT%202.pdf>]. (I find it intriguing that the official reports posted at jag.navy.mil redact the names of the CNO, CINCLANTFLT, COMSURFLANT, and the lead JAGMAN investigator—which are all a matter of public record—and many others, yet mentions the names of those sailors who were accused or questioned during the investigation.) Also consulted was the GAO Report to Congressional Requestors of January 1991, "Battleships: Issues Arising from the Explosion Aboard the U.S.S. *Iowa*." Numerous contemporary news accounts were also consulted. Alternative non-official views that are highly critical of the U.S. Navy investigation include *A Glimpse of Hell: The Explosion on the USS Iowa and its Cover-*

up by Charles C. Thompson (1999) and *Fall From Glory: The Men Who Sank the U.S. Navy*, by Greg Vistica (1997).

Gunboat 146 blew up due to a magazine explosion, killing nine crewmen. (Of note, during the engagement between the Continental Navy frigate *Randolph* and the British ship-of-the-line HMS *Yarmouth* on 7 March 1778, in total darkness, *Randolph* blew up and sank with the loss of 301 of her crew including Captain Nicholas Biddle. Only four survived. The exact cause of the explosion is unknown but was either due to British fire or an accident involving the powder magazine during the battle.)

For many years the most notorious ordnance accident on board a U.S. Navy ship was the explosion of a newly designed 12-inch gun called the "Peacemaker" aboard the screw steamer *Princeton*, with President John Tyler

## H-029-5: A Brief History of Major U.S. Navy Ordnance Accidents

H-Gram 029, [Attachment 5](#)

Samuel J. Cox, Director NHHC

April 2019

Although the explosion aboard the *Iowa* (BB-61) on 19 April 1989 was the last major U.S. Navy ordnance accident, it was unfortunately far from unique. During the 1800s, "ordnance accidents" were very common but usually killed only individuals or small groups of crewmen. It was the advent in the late 1800s of armored turrets, designed to protect the guns and their crews from incoming enemy fire, that caused ordnance accidents to become more lethal, as the explosions and fires would be confined within the turret. These explosions and fires frequently killed the entire gun and handling crews inside—unless the ammunition magazine blew up, in which case the entire ship would be lost.

The first major recorded ordnance accident in U.S. Navy history occurred on 23 August 1814 when



and 400 guests embarked, on 28 February 1844 on the Potomac River near Mount Vernon. When the gun burst, it killed the Secretary of the Navy, the Secretary of State, the President's enslaved servant, and three others, and injured 20 more. By luck, President Tyler was below deck and was not injured.

### A Reverse Chronology

- 1989, *Iowa* (BB-61), turret explosion, off Puerto Rico. See attachment H-029-4 for more.

- 1972, *Newport News* (CA-148): On 1 October 1972, the heavy cruiser *Newport News* suffered a high-order, in-bore explosion in the center gun of her number two 8" gun turret, killing 20 and injuring 38. While conducting shore bombardment near the demilitarized zone (DMZ) on her third Vietnam combat deployment, a projectile detonated almost immediately upon firing, due to a defective auxiliary detonating fuse, which blew the gun barrel forward, vented mostly back into the turret, and ignited fires within the turret. These burned more than 700 lbs. of powder in all three hoists, causing extensive damage to the center gun mount and necessitating the flooding of the forward ammunition magazines. The investigation determined that had the flames gone a few more feet down the hoists, the ship likely would have suffered a catastrophic magazine explosion, yet why the flames did not go further was undetermined. The damaged gun was removed, the port plated over, and the turret sealed. *Newport News* then continued her Vietnam deployment until December 1972. (Of note, on her first Vietnam deployment in 1967-68, *Newport News*, as part of Operation Sea Dragon, expended a record 59,241 rounds of high explosive ammunition, sinking 17 logistics craft, damaging 14 more; hitting 325 North Vietnamese coastal defense sites; and destroying bunkers, bridges, barges, trucks and roads. She came under North Vietnamese fire 17 times and was straddled by over 300 enemy rounds but never suffered a direct hit.)
- 1952, *Saint Paul* (CA-73): On 21 April 1952, the heavy cruiser *Saint Paul*, while conducting a shore bombardment during her second Korean War deployment, suffered a serious fire in her forward 8" gun turret that killed 30 Sailors (This was the most casualties suffered by any U.S. ship during the Korean War, including any cause.) The left gun in the turret was loaded, but the breech was open. It is believed that the gun captain mistakenly thought the gun had been fired and therefore ordered another shell rammed into the breech. This caused the gun to explode, detonating two other powder bags in the hoist and killing everyone in the turret. Before returning to Japan for repairs, *Saint Paul* conducted gunfire strikes on railroad targets near Songjin (today's Kimchaek), North Korea and later in the deployment returned to the gun line. With eight battle stars in Korea and nine in Vietnam, *Saint Paul* was one of the most combat decorated ships in the Navy. She arrived in the Pacific in World War II just in time to have the distinction of firing the last major salvo of the war (at the Kamaishi Iron and Steel Works on 9 August 1945) and on her third Korean War deployment had the distinction of firing the last shell of the war (autographed by Rear Admiral Harry Sanders), timed to impact on an enemy gun emplacement just before the armistice took effect. She made five Vietnam War deployments and was hit once by enemy shore fire, on 1 September 1967, but suffered no casualties. (She'd also been hit once during the Korean War.) She was even the star of the 1965 John Wayne movie *In Harm's Way*.
- 1946, *Solar* (DE-221): On 30 April 1946, the destroyer escort *Solar* was offloading ammunition at the Naval Ammunition Depot at Earle, New Jersey. One report claims a Sailor dropped a hedgehog ASW projectile, which set in motion a series of three explosions starting near her number two upper handling rooms. Her Number 2 gun mount was destroyed; the bridge, main battery director, and mast were blown aft and to starboard. (Actually, from the photo, it looks as if everything forward of the bridge is completely mangled.) Both sides of the ship were opened to the sea, and a major conflagration broke out on deck. Nevertheless, the ship remained afloat and was eventually repaired well enough to be towed out to sea and sunk. Seven Sailors were killed and another 30 injured, along with about 90 dockyard workers. The skipper of *Solar* was Lieutenant Commander Gene La Rocque, who went on to be a rear admiral, before retiring in 1972 and becoming a very

prominent critic of the Vietnam War and U.S. nuclear policy.

- 1945, *Serpens* (AK-97): On 29 January 1945, the cargo ship *Serpens* (AK-97) exploded and sank off Lunga Point, Guadalcanal. *Serpens* was a Liberty Ship that had been taken into the Navy and commissioned in May 1943 but was manned by a U.S. Coast Guard crew. Three of her holds had been converted for ammunition stowage. The massive blast killed 196 Coast Guardsmen, 57 U.S. Army stevedores, one Public Health Service doctor, and a Soldier ashore hit by shrapnel. Somewhat miraculously, two crewmen on the ship survived. This was the largest loss of U.S. Coast Guard life in a single incident in history. Initially the explosion was thought to be due to enemy action, but after the war it was determined to have been an internal cause.
- 1944, *Mount Hood* (AE-11): On 10 November 1944 in Seeadler Harbor, Manus Island, Admiralty Islands (near New Guinea), the new ammunition ship *Mount Hood* (AE-11) spontaneously exploded with 3,800 tons of ordnance aboard, obliterating the ship and every one of her over 300 crewmen. The largest piece of the ship found was 16 by 10 feet, and no human remains were recovered. All personnel topside on the nearby repair ship *Mindanao* (ARG-3) were killed and the ship was perforated by shrapnel, killing 82 of her crew. Twenty-two small craft and boats were sunk. Eighteen larger ships were damaged to some degree, including the escort carriers *Saginaw Bay* (CV-82), *Petrof Bay* (CVE-80), a destroyer, and four destroyer escorts. In total, 372 were killed (including 327 missing) and 371 were injured. The board of inquiry was unable to determine an exact cause. The only survivors of *Mount Hood's* crew were a shore party of 14 men (a different report says 18) and another six men who left by boat shortly before the explosion. Two of these men were being taken to the brig ashore for court martial; their charges were dropped.
- 1944, U.S. Naval Magazine, Port Chicago, California: On 17 July 1944 a massive explosion on pier #1 at the U.S. Naval

Magazine, Port Chicago, California (on Suisun Bay northeast of San Francisco Bay) obliterated the Liberty Ship *E.A. Bryant* (which had about 4,600 tons of explosives on board) at the pier, tore apart and sank the Liberty Ship *Quinault Victory* on the other side of the pier, and destroyed the U.S. Coast Guard fire barge. The huge blast killed 320 people and injured 390. The dead included 241 Navy personnel, one Marine, five Coastguardsmen (on the fire barge) and 73 civilians. Most of the Navy personnel killed were enlisted African-American stevedores (202), as were 233 of the wounded.

The Navy board of inquiry was unable to determine a cause of the blast yet exonerated the white officers of any blame (there were no black officers then), implying that somehow the accident was the fault of the black enlisted stevedores. With the cause unknown, and no new safety procedures implemented, the black stevedores were ordered to resume ammunition loading. Several hundred (initially 328, then 258) of them balked in what came to be known as the Port Chicago Mutiny. Eventually, 50 of the Sailors were convicted of mutiny at court martial (initially receiving sentences of 15 years' hard labor, which were significantly reduced on appeal and with the end of the war). Serious questions about the fairness of the trial were raised at the time (some by NAACP lawyer Thurgood Marshall, who went on to be the first black U.S. Supreme Court Justice) and the entire proceeding remains controversial to this day. The disaster did spur U.S. Navy leadership (led by CNO Admiral Earnest J. King) to accelerate the integration of blacks into more and more jobs in the Navy, including at the officer level. The incident (along with the West Loch disaster in May 1944) also resulted in massive overhaul of procedures and training for ammunition handling.

- 1944, West Loch, Pearl Harbor: On Sunday afternoon 21 May 1944, 34 ships were in West Loch, Pearl Harbor, loading ammunition and supplies in preparation for Operation Forager, the invasion of Marianas Islands. Most of the ships were tank landing ships (LSTs), 29 of them tied up beam-to-beam in several groups,

most of them already fully loaded with supplies, fuel and ammunition. At about 1508, an explosion occurred on *LST-353* that set off a chain reaction of explosions and mass conflagration among the nested LSTs. Over the course of several hours, six LSTs would be sunk, and two more so badly damaged they could not participate in the Marianas operation. Three tank landing craft (LCTs) and 17 LVT tracked amphibious vehicles were destroyed aboard the LSTs, with many other small craft sunk or damaged. By one point, more than 200 men had been blown into the water, and some of the fires were not extinguished for over 24 hours.

A tight lid of secrecy was clamped over the event to keep the Japanese from knowing (despite the fact that many thousands of Pacific Fleet personnel at Pearl Harbor could see the massive pall of smoke). As a result, casualty figures and estimates vary widely. The official Navy figure for casualties was 163 killed and 396 wounded, but this does not appear to account for Marines or Army stevedores who were present. Different reports for the number of Marine deaths range from about 80 to 299 (some of the Marine deaths may have been rolled into Marianas casualty numbers). There appears to be no accurate Army stevedore count (or any count at all, for that matter). The Naval Board of Inquiry was unable to determine the exact cause but reached the conclusion that a mortar shell had gone off on *LST-353*, either because it had been dropped or because a gasoline fire had set it off. Mortar shells were in fact being offloaded from the LCT—piggy-backed on *LST-353* (because the mortars on the LCTs had proved in training to be wildly inaccurate) and a number had been dropped by the inexperienced stevedores (who had received no special training), although none had exploded. There were also containers of high-octane gasoline on the LST decks. (Some of the containers were open, as gasoline was being used by Marines to protect weapons from salt corrosion.) There was also welding going on, as well as credible reports of careless smoking—i.e., the whole thing was a disaster waiting to happen, and it did. Nevertheless, the surviving LSTs departed for the Marianas operation only one day late;

additional LSTs were scrounged, and Operation Forager went ahead as planned and on schedule.

- 1944, *Turner* (DD-648): On 3 January 1944, while anchored off Ambrose Light, New York Harbor, the destroyer *Turner* suffered a series of devastating internal explosions just after dawn. She quickly took on a 15-degree starboard list while continuing explosions in the ammunition stowage areas wracked the ship. After about an hour of this, a catastrophic explosion caused her to capsize and sink with 15 officers and 123 crewmen still on board. A U.S. Coast Guard Sikorski HNS-1 helicopter flew two cases of blood plasma lashed to the helo's floats, which saved the lives of many of the 60 injured crewmen. (This was the first use of a helicopter in a life-saving role.) The investigation never determined the cause of the initial blast, other than that munitions were being handled below decks.
- 1943, *Mississippi* (BB-41): On 20 November 1943, the battleship *Mississippi* (BB-41) commenced a pre-landing bombardment of Makin Island when an explosion in the number two 14" turret killed all 43 men and wounded 19 more. The cause was determined to be a flare-back when the gas ejection system was turned off too soon during an attempt to re-load. *Mississippi* had won the gunnery Battle "E" numerous times and had a reputation as the fastest-firing battleship in the fleet. She would be back in action within two months. This was *Mississippi's* second fatal explosion in turret number two.
- 1926, Naval Ammunition Depot, Dover, New Jersey: On 10 July 1926, a lightning strike at the Naval Ammunition Depot, Dover (Lake Denmark) detonated 600,000 tons of explosives in one of the most massive explosions ever in the United States, destroying over 200 structures within a half mile radius, debris landing as far as 22 miles away. Smaller explosions and fires continued for several days. At least 19 people were killed (some sources say 21) and 39 or more injured. The dead included two Navy officers, two Sailors, an Army officer, twelve Marines, and

two civilians. The Naval Depot was part of the larger Picatinny Arsenal, which stored massive quantities of ammunition left over from World War I. The explosion did have the one positive outcome of forcing the U.S. government to get serious about explosives safety.

- 1924, *Trenton* (CL-11): On 20 October 1924, the new light cruiser *Trenton* was conducting gunnery drills off Norfolk when powder bags in her forward 6" turret exploded and started a fire. Every member of the gun crew was killed or injured. Ensign Henry Clay Drexler and Boatswain's Mate First Class George Cholister were awarded posthumous Medals of Honor for attempting to dump powder charges in the immersion tank before they exploded, but Drexler was killed when the charge exploded and Cholister was overcome by fumes and fire and died the next day.
- 1924, *Mississippi* (BB-41): On 12 June 1924, the battleship *Mississippi* (BB-41) suffered the first of two fatal turret explosions (the second was in 1943). During gunnery practice off San Pedro, California, hot gas that had not been properly ejected in a gun that had just fired ignited powder that caused a flash fire in the turret and asphyxiated all 44 members of the turret crew (and observers). When *Mississippi* was back in the roadstead and the turret was entered to remove the dead, one of the other guns was accidentally fired, with the shell narrowly missing the passenger ship *Yale*, killing four of the response team, and maiming several others. The turret captain, Lieutenant Junior Grade Thomas E. Zellars, USNA '21, was found with his hand on the flood control lever, having closed the doors to the ammunition hoist and flooding the magazine, saving the ship from a catastrophic explosion with his last act.

A plaque, emplaced by Zellars's classmates, in Dahlgren Hall at the U.S. Naval Academy, states, "Flaming death was not as swift as his sense of duty and his will to save his comrades at any cost to himself. His was the spirit that makes the service live." The Sumner-class destroyer, *Zellars* (DD-777) was named in his honor, earned five battle stars in World War II

and Korea, survived a kamikaze hit off Okinawa, and was transferred to the Iranian Navy as *Babr* in 1973. The original memorial marker to the explosion, which had fallen into disrepair in San Pedro, is now preserved aboard the museum ship *Iowa*, next to the ship's number 2 turret, in which 47 crewmen were killed in an explosion in April 1989. Before he died, Captain W. D. Brotherton (skipper at the time, and found accountable by the court of inquiry) asked to be buried next to a victim of the explosion at Point Loma.

- 1918, *Florence K*: On 17 April 1918, the merchant ship *Florence K*, anchored in Quiberon Bay, France, with a cargo of ammunition and a 17-man U.S. Navy Armed Guard detachment on board, blew up and sank. Of the ship's 75-man crew, 34 survived, many badly burned. Two U.S. Sailors assigned to USS *Stewart* (DD-13) were awarded the Medal of Honor for their efforts in rescuing survivors; the two were Ship's Cook First Class Jesse Whitfield Covington and Quartermaster Frank Monroe Upton.
- 1910, *Charleston* (Cruiser No. 22): On 27 March 1910, the breech block of the #3 3-inch gun blew out on the protected cruiser *Charleston*, killing eight crewmen.
- 1904, *Missouri* (BB-11): On Friday 13 April 1904, the battleship *Missouri* suffered a turret accident during gunnery training off Pensacola that killed 36 men (including one Marine.) A flareback in her port 12" gun in her rear turret ignited three propellant charges in the turret, asphyxiating most of the gun crew. Three crew members were awarded the Medal of Honor for preventing the fire from reaching the magazines and destroying the ship, including Chief Gunner's Mate Robert E. Cox, Chief Gunner's Mate Mons Monssen, and Gunner's Mate First Class Charles S. Schepke.

When she was new in 1903, *Missouri* held the record as the world's fastest battleship. William F. Halsey, recently graduated from the U.S. Naval Academy, was on the bridge of the *Missouri* during the fire and as a result developed a severe dread of Friday the 13th,



which as a captain and admiral affected when he would order ships to get underway (or not, if it happened to be Friday the 13th.)

- 1903, *Massachusetts* (BB-2): On 16 January 1903, the battleship *Massachusetts* (BB-2) suffered a powder explosion in an 8-inch secondary gun turret, which killed nine crewmen. During the Spanish-American War, she missed the Battle of Santiago. She had been ordered to Guantanamo Bay to re-coal. She also ran aground twice and was eventually scuttled in shallow water off Pensacola, in 1921. The ship is now a popular dive site.
- 1898, *Maine*: On 15 February 1898, the battleship *Maine* blew up and sank in Havana Harbor, an event that was blamed on the Spanish (by U.S. press) and which was a factor leading to the Spanish-American War. The explosion killed 260 crewmen on the spot, and six more died from their wounds. Of 89 survivors, 54 were wounded. An explosion of the forward magazine was responsible for the loss of the ship, although whether the trigger was external or internal has not been conclusively proven, despite multiple investigations. However, the preponderance of evidence suggests it was an internal accident. (For more on the loss of *Maine*, please see H-Gram 015.)
- 1892, *Boston*: On 13 June 1892, 15 crewmen of the protected cruiser *Boston* were killed in a black powder explosion while the ship was undergoing extensive refit at Mare Island Navy Yard. *Boston*, commissioned in 1887, was one of the "ABCD" ships of the "New Navy" that brought the U.S. Navy out of the post-Civil War decline.
- 1860s: Numerous "ordnance accidents" were recorded in the 1860s, particularly during the Civil War, but these generally only killed individuals or small groups, and were due to a wide variety of causes.
- 1844, *Princeton*: On 29 February 1844, a new 12-inch gun (the "Peacemaker") burst during a demonstration firing aboard the new screw steamer *Princeton* on the Potomac River near

Mount Vernon. The explosion killed Secretary of the Navy Thomas Gilmer, Secretary of State Abel P. Upshur, Representative Virgil Maxey of Maryland, Representative David Gardiner of New York, Captain Beverly Kennon (Chief of Bureau of Construction, Equipment and Repairs), and President John Tyler's valet, a Black slave named Armistead. Approximately 20 others were injured, including Senator Thomas Hart Benton of Missouri, and *Princeton's* commanding officer, Captain Robert F. Stockton. President John Tyler was below decks and was not injured. (He was socializing with Julia Gardiner, daughter of Representative Gardiner, killed in the explosion. Julia Gardiner later became President Tyler's much younger second wife.)

*Princeton* was the latest and greatest in the U.S. Navy, designed by John Ericsson (who later designed the ironclad *Monitor*) and was the first warship with screws and machinery located entirely below the waterline to avoid vulnerability to enemy gunfire, as well as many other innovations, including an iron hull. The ship was initially armed with twelve 42-pound carronades along the hull, as well as one 12-inch long gun (designed by Ericsson and named the "Oregon" but made in England) that could swivel from side-to-side. However, Captain Stockton (the commissioning CO) wanted a second long gun and commissioned one to be made in Philadelphia, which when complete was named the "Peacemaker." Both guns fired the same 12-inch 225-pound shot, but were manufactured differently; the Peacemaker was bigger, more impressive, but as it turned out, weaker.

On the day of the accident, *Princeton* departed Alexandria, Virginia, with President Tyler and about four hundred guests on board, including former First Lady Dolly Madison. The Peacemaker was fired three times on the down-river trip. On the up-river trip, it was loaded to provide a salute to George Washington when passing Mount Vernon, and burst on one side when Stockton pulled the lanyard. The aftermath was an ugly series of recriminations between Ericsson and Stockton, although the Navy Court of Inquiry

whitewashed everything. The disaster did lead to major improvements in gun manufacturing technology (eventually leading to the "Dahlgren Gun") but also had a profound effect on the course of U.S. history, as the replacement of Upshur as Secretary of State by South Carolina politician John C. Calhoun, a vociferous advocate of slavery, helped set the U.S. on a path to the Civil War.

Enemy Action," and NHHHC *Dictionary of American Navy Fighting Ships* (DANFS) entries.

- 1829, *Fulton*: On 4 June 1829 the catamaran steam frigate *Fulton* (also known as *Demologos*) was destroyed at the Brooklyn Navy Yard when her magazine exploded, killing 30 men (48 including shipyard workers), wounding many others, and completely destroying the ship. *Demologos* was designed as the first steam warship in the world, by inventor Robert Fulton, who also invented the first commercially successful steamboat, *Clermont*. *Demologos* was a paddlewheel catamaran designed to be a floating, self-propelled battery to defend New York Harbor during the War of 1812. The hulls were five feet thick, and the paddlewheel was between the two hulls, where it was protected from enemy fire; the steam engine was protected below the waterline. *Demologos* was completed after Fulton's death, when it was re-named *Fulton*, and made successful trial runs in 1815.

As soon as the War of 1812 ended, however, the Navy decided not to put her into service. She was being used as a receiving ship at the time of the explosion. In many respects the ship was both ahead of its time and a technological dead end. Nevertheless, aspects of her design (double-hull protected steam powered paddlewheel) were incorporated in Union ironclad river gunboats during the Civil War. Her first commander was Captain David Porter and her only operational service was to take President James Monroe on a tour of New York Harbor.

Principal source is Naval History and Heritage Command document, "Casualties: US Navy and Marine Corps Personnel Killed and Injured in Selected Accidents and Other Incident Not Directly the Result of