PANAMA IN WORLD WAR 2

LOSS OF THE SUBMARINE S-26

While, despite prewar fears, the Canal Zone was not subject to any direct attacks during World War 2, this did not mean that soldiers and sailors based or operating from there were immune from war risks. The small submarine force suffered losses, for example, with one boat sunk and another suffering a fire in the battery compartment that killed almost as many sailors who were lost in the sinking.[1] The loss of the submarine S-26 had happened just seven months before the fire, being the second US submarine lost in World War 2.[2]

The S-26 was also the second submarine lost by the US Navy in the Canal area since it had established a base there**.** In 1923, the 520-ton O-5 (SS-66) sank off Cristobal following a collision with a United Freight Company 5,000-ton freighter in Limón Bay around 0630. The freighter SS Abangarez, inbound from Havana, was heading for Cristobal's Dock No.6, while the O-5 was lead boat of four submarines heading for the Gatun Locks to transit the Canal. In that incident, only three men were lost and two men who were trapped were rescued when she was raised.[3] However, O-5 sank in just 36 feet of water, not the 300 feet beneath which S-26 sank.[4]

The Coco Solo Naval Reservation had been officially established by Executive Order in 1920. It was located at the Atlantic end of the Canal near Colón, and was originally established as a Naval Aviation Facility (as a Naval Air Station in 1918) for flying-boats.[5] The site would also

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[1] On 17 August 1942, the fire on USS *Bass* killed 26 crewmen trapped in the after compartments, dying from asphyxiation. Just five days, after emergency repairs, the boat returned to Coco Solo from Balboa, its dead already buried in Corozal Cemetery. Replacement crew were drafted in from the other two sister boats also based at Coco Solo.
Note: a submarine is always a "boat", and not a ship, no matter how large they have become in modern times.

[2] 52 would be lost by the end of the war.

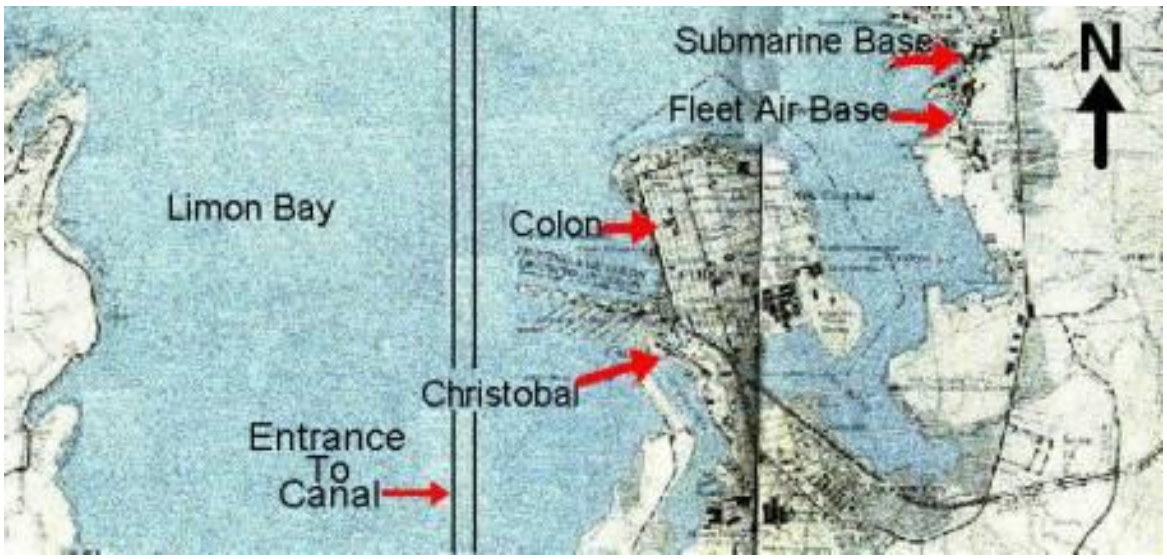
[3] By great good fortune, there were two 250-ton capacity crane barges, having the then greatest lift capacity in the world for floating equipment. They had been built in Germany especially for handling the enormous lock gates of the Canal.

[4] Recovered, the wreck was struck from the Navy List in April 1924 and sold for scrap in December. https://www.usni.org/magazines/proceedings/1972/february/o-5-down

[5] The initial improvements in 1940 included enlarging the submarine and air facilities at Coco Solo. The site is now part of 2 large container terminals.

be used for submarines, in the form of the Coco Solo submarine base,[6] which was also established in 1918, although boats were based there from 1916.[7]

The submarine base at Coco Solo occupied a 130-acre (52.6 hectare) peninsula bounded on the north by Margarita Bay and on the west and south by Manzanillo Bay, with additional facilities added under the emergency construction programme begun during Autumn 1940, with the developments being confined entirely within the limits of the existing boundaries.[8]



Coco Solo in 1941

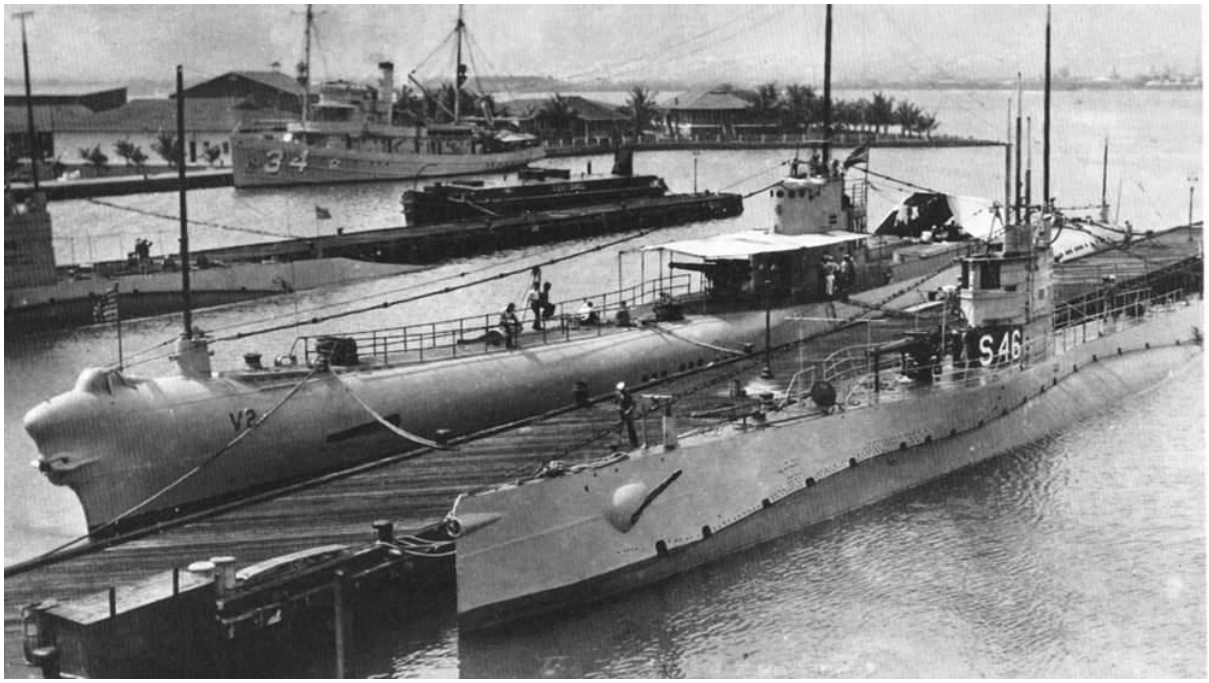
[6] Incidentally, the birthplace of Senator John McCain, who was born in 1936 at the Navy Hospital at the Coco Solo Naval Air Station.

[7] The Coco Solo Naval Base was deactivated in 1957, although where the submarine base had been handed over to Panama in 1979. The last part of the larger Coco Solo complex was turned over to the Panamanian Government in 1982.

[8] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html

Entrance to Coco Solo, c.1939[9]

Five submarines based at Coco Solo during World War 1. Its use continued during the interwar years.



The V-2 (SS-164) alongside S-46 (SS-157) at Coco Solo, c. mid-1920s

[9] http://navsource.org/archives/08/sboats/0847005.jpg

Submarine Squadron 3 was first established on 25 November 1930 at Coco Solo and its 10 boats conducted Panama Sea Frontier patrols for the Atlantic Fleet. As tensions grew through the 1930s, its mission evolved into the defence of coastal regions on both ends of the Canal. Most of the unit's submarines redeployed to the Pacific end of the Canal when war broke out.[10]

As tensions increased in the 1930s and war loomed, despite the concern about protecting the Canal, it is said that the submarines assigned to the area generally included the least efficient in the US Fleet. The poor quality of submarines at Coco Solo has been described as being indicative and symptomatic of a broader lack of preparedness of the US and its armed forces. As the war progressed the situation remained largely the same, with most of the more modern fleet boats deployed in the Pacific, leaving a motley collection of older-class boats in the Atlantic Fleet. More potent boats were seen the area, as they undertook training and transited the Canal on their way to the war.[11]

Patrols off the Canal Zone were typically of short duration and were geared more toward reconnaissance than offensive action. While there was a U-boat threat in the Caribbean, no similar threat appeared on the Pacific side. The majority of submarines based at Coco Solo were S-boats, which were of an even older lineage than the three fleet submarines that operated from Coco Solo until the end of 1941. Most of the S-boats had been commissioned in the 1920s, mothballed and then brought out of retirement as the likelihood of war increased.

The fleet submarines at Coco Solo[12] were later withdrawn for unsuccessful modification in the US as cargo vessels (though they were to end up being used in training) and, in 1942, the

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[10] https://www.globalsecurity.org/military/agency/navy/subron3.htm

[11] *United States Submarine Operations in World War II* by Theodore Roscoe, (Naval Institute Press, 1949),

[12] The boats were USS *Barracuda*, USS *Bass* and USS *Bonita.* They had been launched in 1924-25, and decommissioned in 1937, only to be recommissioned because of the threat of war in 1940 and assigned to Coco Solo. They were used to make (uneventful) war patrols but were found to have a poor operational performance. A paper in 2017 said that "*In short, the submarines were widely regarded as white elephants and had been mothballed by the Navy in 1937. Nevertheless, with the growing likelihood of hostilities they were recommissioned in 1940 and re-joined the Atlantic Fleet following the Japanese attack on Pearl Harbor*": *Coco Solo Submarines: Protecting the Panama Canal, 1941–1942* by Michael Sturma (The Journal of Military History, October 2017).

smaller S-boat submarines then based in Coco Solo were transferred to Australia and, with most of the squadron's submarines transferred to more active regions, this left only four boats in Squadron 3 by August 1943. It was finally deactivated on 1 July 1945, and reactivated in Guam on 1 October 1945.[13] The submarine base at Coco Solo would be disestablished in 1944.[14]

During the war, two submarines were lost. As detailed below, S-26 was lost in the Gulf of Panama in January 1942. The other was USS *Dorado*, lost with all hands when in transit to Panama from New London, Connecticut in October 1943.[15]

A 2017 paper[16] put forward the observation that –

> *As with most US submarine operations in the Atlantic during the Second World War, those off the Panama Canal have been ignored by historians. This is not difficult to understand given that the main battles fought by submariners in the Canal Zone were against the deficiencies of their boats rather than the enemy. Despite the undoubted importance of the Canal to the war effort, the heavy demands for US submarines elsewhere meant that those boats assigned to Coco Solo tended to be the most decrepit. While submarine patrols off the Panama Canal may have contributed to a greater sense of security, they contributed little tangible against the enemy. Nevertheless, these patrols helped to train significant numbers of men for the burgeoning submarine service and laid the groundwork for the later success of some submarine commanders. By highlighting some of the shortcomings of air patrols off the Canal, they possibly contributed to more effective air defences as well*.[17]

In the 2017 paper, the author argued that –

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[13] https://www.globalsecurity.org/military/agency/navy/subron3.htm

[14] During the war, submarine S-26 was lost in the Gulf of Panama in January 1942 (as detailed below); and USS *Dorado* was lost with all hands when in transit to Panama from New London, Connecticut in October 1943. For more, see:
https://www.public.navy.mil/subfor/underseawarfaremagazine/Issues/Archives/issue_06/silent_victory.html

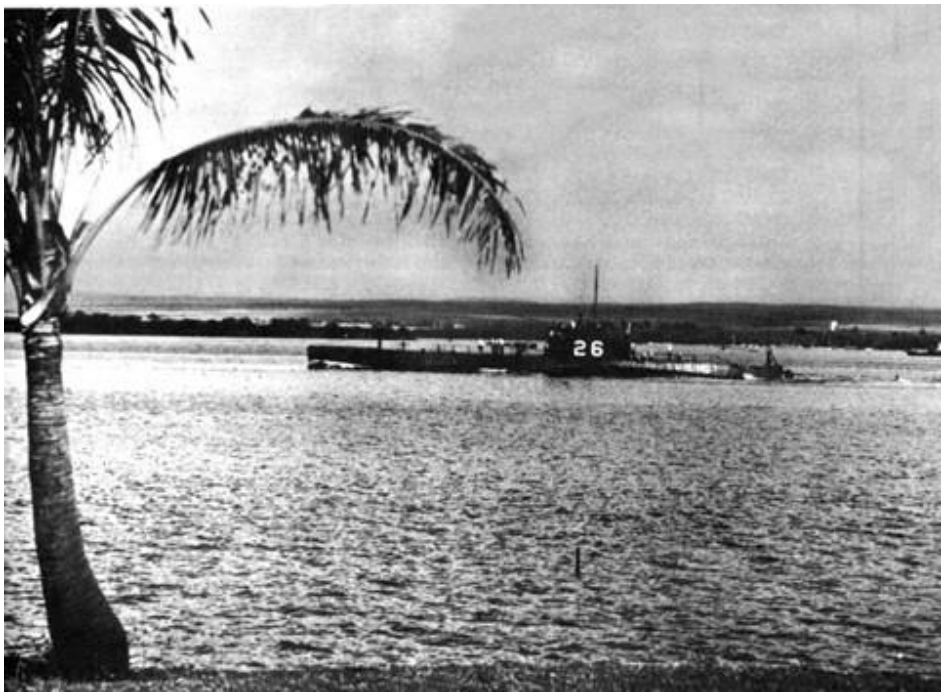
[15] https://www.public.navy.mil/subfor/underseawarfaremagazine/Issues/Archives/issue_06/silent_victory.html

[16] *Coco Solo Submarines: Protecting the Panama Canal, 1941–1942* by Michael Sturma (The Journal of Military History, October 2017)

[17] https://www.smh-hq.org/jmh/jmhvols/814.html

Despite the undoubted importance of the Canal to the war effort, the heavy demands for US submarines elsewhere meant that those boats assigned to Coco Solo tended to be the most decrepit. While submarine patrols off the Panama Canal may have contributed to a greater sense of security, they contributed little tangible against the enemy. Nevertheless, these patrols helped to train significant numbers of men for the burgeoning submarine service and laid the groundwork for the later success of some submarine commanders. By highlighting some of the shortcomings of air patrols off the Canal, they possibly contributed to more effective air defences as well.

Where the submarine base had been located was handed over to Panama in 1979, and the last part of the larger Coco Solo complex was turned over to the Panamanian Government in 1982. Coco Solo is now the site of two major container terminals – the Colón Container terminal and Manzilla International Terminal.



S-26 in the Canal Zone

THE "S" BOATS

The S Class, also known as "Sugar Boats" (after the then phonetic code for the letter S), had been the first class of submarines built in significant numbers for the US Navy and made up most of the interwar submarine fleet, being the immediate predecessors of the V-boats (of

which three were also based at Coco Solo for the first couple of years of the war).[18] The first US submarines designed for open sea operation,[19] they were designed during World War 1 to a 1916 specification, but only completed postwar, with 51 of the class commissioned during 1920-25. While not a true Fleet Submarine, as the US Navy defined that term, theywere to be longer ranged, faster, more heavily armed, and more habitable than any previous submarine class.[20]

They were built in various classes, had a length of about 225 feet (68.5 metres), beam of 20 feet (6.1 metres), and draft of 15 feet (4.5 metres). They were of single hull construction, with surface displacement of about 850 tons, and submerged displacement of 1,100 tons. They had four or five 21-inch (53 cm) torpedo tubes in the bow, and could carry 12 Mk 10 steam torpedoes. For surface action they carried a 4-inch (101 mm) deck gun. They had a maximum surface speed of about 14 knots in a flat sea, and a submerged endurance of about 36 hours at speed of about 2½ knots, or a maximum speed of 10 knots for about a ½-hour. They were designed for a test depth of 200 feet (61 metres).[21]

As an example of the class, the S-26 displaced 854 tons surfaced and 1,062 tons submerged, were 220 feet (76 metres) long and had a normal complement of 42 men. It mounted a 4-inch (102 mm) deck gun and 4 x 21-inch (533 mm) torpedo tubes.

The Electric Boat type was one of several competing designs and was selected as the basis for the majority of the class.[22] They S-Class made up the bulk of the US Navy's submarine

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[18] As mentioned above - USS *Bass, Bonita* and *Barracuda*; the USS *Bass* being the boat that was to suffer the tragic fire some seven months after the loss of the S-26.

[19] Earlier ones had been intended for harbour or coastal water defence.

[20] https://navsource.org/archives/08/pdf/0829290.pdf

[21] https://maritime.org/doc/subsinpacific.php#pg4

[22] The Electric Boat company was founded in 1899 to build submarines. During World War 1, it and subsidiaries built 85 boats; but the US Navy did not order any more from the company until 1931. However, during World War 2 it built 74 boats, and postwar became the leading submarine manufacturer in the world, continuing to this day, with the first nuclear-powered boat, USS *Nautilus*, in 1954, the first ballistic missile submarine in 1959 and numerous nuclear-powered boats since then.

force during the 1920s and 1930s, and some of the S-boats served right up to the end of World War 2.[23]

The immediate sister of the S-6, the S-5, was also lost, but during World War 1, when sunk by an accidental intake of water through its main induction valve. In that sinking all the crew were rescued, ironically, in the light of the fate of the S-6, the 38 officers and men were saved by the action of the Chief Engineer from the steamship SS *General George W Goethals*, who cut holes in the boat's hull with a hand drill – the irony being that the steamship was named for the US Army officer and engineer who had overseen construction of the Panama Canal.[24]

S-Class submarines would be the oldest and smallest submarines operationally employed by the US Navy during World War 2.[25]

One of the main limitations of the S-boats in service at Panama was the lack of air conditioning. Being submerged for many hours at a time saw the unfortunate crews affected by many cases of prickly heat and other rashes, in addition to ringworm.

In the immediate wake of the Pearl Harbor attack in December 1941, most of the submarines at Coco Solo patrolled the Pacific side, typically making the 7-to-10-hour transit of the Canal from their base to Balboa before heading for their assigned stations. Later, patrols were also undertaken on the Caribbean, sometimes as far as the Anegada Passage in the Windward Islands.

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[23] The original *S-1* built by Electric Boat served well until 1937 when she was decommissioned and laid up in Philadelphia. She was recommissioned in 1940 and eventually transferred to the Royal Navy and renamed HMS *P.552*. She served until the end of the war and was scrapped in 1945.

[24] https://theleansubmariner.com/2022/04/19/1920-the-sugar-boats-faulty-sooty-dangerous-and-repellent-engineering/

[25] https://maritime.org/doc/subsinpacific.php#pg4

S-44 in Canal Zone, 6 February 1943[26]

S-46 seen entering the Pedro Miguel Locks. The deck sonar is seen as a white dome on a tripod on the foredeck. There is another unidentifiable S-boat entering the lock in the background. The men on the bow are placing the tow line from the left side of the photo to a cleat on the deck. The opposite line is already attached from the "Mule" seen on the lock incline in the upper right side of the photo. Lines are attached from the aft deck to the Mules seen on the lock wall farther along the wall.[27]

[26] https://pigboats.com/subs/s-boats4.html

[27] Ibid

THE S-26

The S-26 (SS-131) was laid down at Bethlehem Shipping Corporation in Massachusetts on 7 November 1919, launched on 22 August 1922, and commissioned on 15 October 1923.

Her initial operations were in the Atlantic and Caribbean, moving to California in 1925, and spending several Summers in Hawaii. She served in the Panama Canal Area in March to May 1927, and again in February 1929. From December 1930 to October 1938, she operated out of Pearl Harbor, returning to the main submarine base in New London, Connecticut in March 1939.

Assigned to protection of the Canal Zone, and departing New London on 10 December 1941, she arrived at Coco Solo on 19 December to begin what turned out to be a short service from there.[28]

LOSS OF THE S-26

Weather Forecast

The Evening Star

NIGHT FINAL SPORTS

WASHINGTON, D. C., SATURDAY, FEBRUARY 7, 1942—THIRTY PAGES. THREE CENTS.

CRASH SINKS U. S. SUB, ALL BUT 3 MEN LOST

Army Air Force to Reach Million Men in 1942, Two Million Later

Flying Training Will Be Added At West Point

Expansion Expected To Bring Changes In Requirements

Japs Put Losses At 3,382 Men And 26 Ships

Two Youths Get Life Terms in Loveless Slaying

Sentence Imposed After Three-Hour Hearing at Leesburg

D. C. Divers Fly To Panama, but Aid Is Futile

Note Sent to Surface By Buoy Only Word From Trapped Crew

As explained, S-26 had been sent from the main submarine base at New London in Connecticut on 10 December 1941, arriving at Coco Solo on 19 December. She only completed one, uneventful operational patrol from New London before orders came for the redeployment to the Canal Zone.

[28] https://www.history.navy.mil/research/histories/ship-histories/danfs/s/s-26.html

On 24 January 1942, she was lost in the Gulf of Panama. She had departed Balboa, with sister submarines S-21, S-29 and S-44, on voyage to a patrol station in the Pacific, accompanied by an escort vessel, the USS *Sturdy* (PC-460).[29] The group sailed without lights, running on the surface, with the escort vessel around 1,500 yards (1,372 metres) ahead of the submarines.

At 2010, the PC-460 sent a visual message saying that it was leaving the formation.[30] However, S-26 did not receive the message and around 11 minutes later the escort mistook the submarine, about 2,000 yards (1,829 metres) behind the lead boat S-21, for a U-boat and rammed her. There was almost no time to react or take evasive action,[31] even when the darkened ship was seen. She was struck on the starboard side of the forward torpedo room (the bridge hatch was also open, of course) and sank, bow first, within seconds.

The commander of the S-26 was later reported as saying that he had been called to the bridge to view a passing merchantman when he spotted the PC-460 following a crossing course. He said he altered course, but that the escort ship was manoeuvring closer and closer. On seeing that a collision was imminent, he said he ordered engines into reverse and that collision quarters were sounded. He is quoted as saying that-

> "*The submarine remained stationary 15 or 20 seconds after the impact, then took a heavy down angle of perhaps 45 degrees — and suddenly plunged. The first thing we knew we found ourselves swimming. One seaman and I swam to the escort ship, which had halted. One of their boats picked up Lieutenant Ward. We never again saw a second seaman who was on the bridge with us*."[32]

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[29] USS PC-460 was a submarine chaser. It was a former 154-feet, 380-ton yacht, the *Elda*, dating from 1930, commissioned in October 1940 as PC-460 after being acquired by the Navy, and assigned to Balboa, operating there from November 1940. Assigned once more to the Panama Sea Frontier from February 1942 and, after repairs in Mobile, she returned to Panama and was reclassified as a coastal patrol yacht as USS *Sturdy* (PYc-50). She was disposed of in October 1944.

[30] "*This ship is 14 miles west of San Jose Light. Submarines will proceed on duty assigned. This ship will make a wide turn to the right*".

[31] The PC-460 engines also failed, when full astern was ordered.

[32] https://theleansubmariner.com/2022/02/08/all-hope-was-abandoned-the-s-26-part-2/

Three men on the bridge of the surfaced boat survived[33] (a fourth crewman died), but another 36 men were trapped inside the sunken craft.[34]

The sinking took place in the Gulf of Panama, about 14 miles west of the San Jose Light (as PC-460 had indicated in its signal), and in around 300 feet of water.

The commander of the Coco Solo submarine base[35] took charge of the salvage operation which began immediately. Shortly after the search began, a wooden message buoy was recovered which contained a brief note from a Lieutenant Thomas V Peters aboard the S-26 which indicated that the torpedo room, motor room, and engine room were flooded. Unfortunately, the note also reported that the forward and after ends of the submarine which contained the compartments fitted for rescue work with a diving bell were flooded.[36]

The Navy reported later that five expert divers were flown from Washington DC to assist those divers already in the Canal Zone.[37]

Using a technique first employed following the disappearance of the *F-4* off Hawaii in 1915, the submarine rescue ship USS *Mallard* (ASR-4) and the minesweeper USS *Woodcock* (AM-14) dragged a sweep wire between them, in an attempt to locate the S-26. However, it was days later, on 27 January, before the *S-26* was located on the seabed, but two days further before conditions became favourable for diving operations, strong currents having hindered them. When divers located the boat, they were unable to open the bridge hatch, which

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[33] Its commander (Lieutenant Commander EC Hawk), executive officer (Lieutenant EN Ward) and a lookout (Seaman First Class JB Hurst). See http://www.lost52project.org/S-26-Crew.html and https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/u/united-states-submarine-losses/s-26-ss-131.html for details of the crew.
EC Hawk would go on to serve as commander of the USS *Pompon* from March 1943, and even returned to Coco Solo in that boat in the following April, to undertake training, before continuing to service in the Pacific theatre. Hawk completed three successful war patrols on the USS *Pompon*, and would later rise to rank of Captain and survived the war.

[34] http://www.lost52project.org/S-26-Home.html

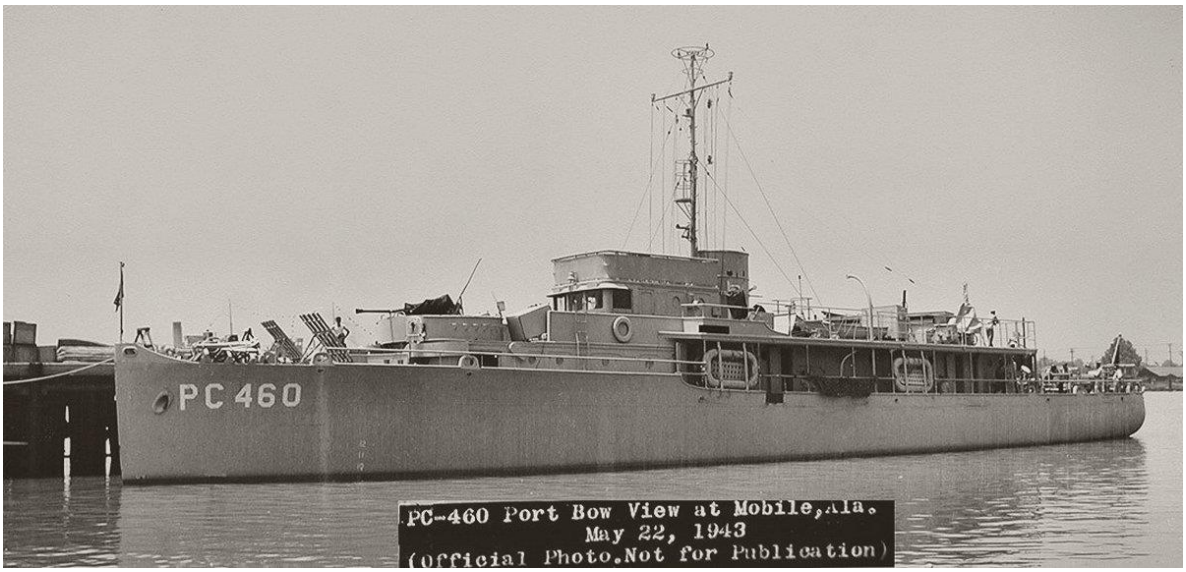
[35] Rear Admiral Frank H Sadler, Commandant of 15th Naval District.

[36] At the time the Navy explained that, owing to the design of the conning tower structure in this type of submarine, it was not possible to use a submarine rescue bell over the central compartment, even if the boat had been located in time, as the submarine bell was developed some years after this type of submarine had been built.

[37] https://theleansubmariner.com/2022/02/07/sinking-of-the-s-26-boat-january-1942/

some crewman had managed to close and, after 25 unsuccessful dives the effort was called off. The diver's report was that there could be no survivors.[38]

In 2014, an expedition discovered the wreck once more.



PC-460, seen in 1943 after her bow had been repaired from the ramming and sinking of the USS S-26[39]

[38] https://theleansubmariner.com/2022/02/08/all-hope-was-abandoned-the-s-26-part-2/ http://www.lost52project.org/S-26-Home.html https://ussnautilus.org/the-loss-of-uss-s-26-ss-131/

[39] https://pigboats.com/subs/s-boats2.html

3 survivors of the S-26, who were all on the bridge at the time
They are (left to right) Lt. Robert E. M. Ward, XO; Lt Cdr. Earle C. Hawk, Captain; and Seaman Joe B. Hurst, lookout.
Between Lt Cdr Hawk and Seaman Hurst is Captain T. J. Doyle who was in charge of the rescue operations.
The men are looking at a buoy launched by the men still trapped in the submarine.[40]

As a footnote, it is perhaps worth noting that a rescue device that might have been used by the trapped crew, the Submarine Escape Lung (also known as the "Momsen Lung", after its inventor, Lieutenant Charles Momsen), was perhaps a danger in itself.

Working independently, and on a shoestring, Momsen had developed the device and carried out a successful demonstration in 1928. It soon became standard equipment on US submarines, and all personnel had to be qualified in their use before becoming submariners.[41]

The device would contain breathable air that on the surface could also be used as a flotation device, and it was its inflatable bladder that gave rise to the nickname "Momsen Lung". The device recycled the breathing gas by using a counterlung containing sodas lime to remove the carbon dioxide. The lung was initially filled with oxygen and connected to a mouthpiece by twin hoses containing one-way valves, one for breathing in and the other for breathing out.

Used before and during the war, the only known (partially successful) emergency use of the device was during the escape from USS *Tang* on 25 October 1944, when 13 men escaped from the boat but only five survived to be picked up by the Japanese.[42] In fact, postwar

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[40] As mentioned above, Hawk went on to place the USS *Pompon* in commission in March 1943 as her Commanding Officer. Ward went on to eventually command USS *Sailfish*. It is not known where Seaman Hurst went after the sinking, but, by all accounts, he survived the war: https://pigboats.com/subs/s-boats2.html

[41] http://ghostsofthebattlefield.org

[42] During the war, 94% of US submariners whose boats were disabled died.

research demonstrated that such primitive devices probably killed more men than it saved (as is thought to have been the case with the *Tang*).[43]

Ray Todd

Panama City

Republic of Panama

25 July 2024

[43] https://www.uh.edu/engines/epi238.htm