PANAMA IN WORLD WAR 2 – THE ROLE OF THE NAVY

It probably appeared somewhat odd to many people (it certainly was to me) that, despite the primary function of the Panama Canal being to facilitate movement of the US fleet, and it being an obvious maritime or naval asset, the defence of the Canal and Canal Zone was laid to the US Army, even its seaward defence – at least to the limit of the range of the Canal's protecting guns and that of the US Army Air Corp (USAAC) bomber force.[1]

Even its intelligence operations in the region were largely secondary to that of the Army[2], and while it had a limited number of functions in respect of protection of the harbours and the Canal, even its air patrol operations had to be supplemented by Army aircraft for a sizeable part of World War 2.

Nonetheless, there was an obvious role for the US Navy, and there was a Navy presence – warships, PT boats, submarines, blimps and aircraft would be based there, and the Navy would own or use essential facilities provided in the Canal Zone.

As one might expect, the organisation of the Panama Canal included several naval officers, who were under the direction of the Governor, including the Superintendent of the Mechanical Division. The Navy contributed to the civil administration of the Zone and its defence.[3] The Commandant of the 15th Naval District, the US Navy command based in the Zone, was a rear admiral.

The terminal ports, Balboa on the Pacific and Cristobal on the Caribbean, were administered by the Marine Superintendent, a US Navy officer. He is also chairman of the Board of

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[1] This was, of course, in line with US defence policy, and the same situation applied in the Continental US and other overseas bases.

[2] A Presidential directive in June 1939 had laid down the areas of responsibility for domestic counterintelligence, but had not clearly defined them where overseas operations were involved. By June 1940, the need to define the latter had become more pressing, and as a result, the US Navy Office of Naval Intelligence was given responsibility for intelligence coverage in the Pacific, and the US Army responsibility in Europe, Africa and the Canal Zone. Elsewhere in the Western Hemisphere, except Panama, responsibility lay with the FBI. Despite the apparent interest in, and importance of, the Canal to the US Navy, it was the Army that took the counterintelligence lead in the Canal Zone.

[3] http://bdigital.binal.ac.pa/rdd/historicoview.php?ID=178321

Measurement and was also in charge of a subdivision responsible for the efficient functioning of all aids to navigation.

Under the Marine Superintendent were the Port Captains for each port, who were also US Navy officers. They had under their jurisdiction all the pilots, tugboat crews, a harbour master, and other personnel; and were responsible for the enforcement of regulations relating to navigation of the Canal, the ports and adjacent waters, as well as harbour regulations on berthing, mooring, inspection and measurement of vessels. The Port Captains also supervised the entrance and clearance of all vessels at the ports, and were members of the local board of inspectors, and as such, would report their findings to the Governor.

The first naval installation autonomous from the Panama Canal Company, and for the exclusive use of the US Navy, had been the Balboa Naval Radio Station[4], established in 1914 on land separated from Fort Amador for use by the US Navy at the Pacific end of the Canal. However, Navy expansion in the Canal Zone would lag behind that of the Army and, prior to 1939, Navy buildings on the Atlantic side were limited to a naval air station and submarine base at Coco Solo, a radio station and a smaller base at Cristobal. On the Pacific side, there was the 15th Naval District headquarters was established at Balboa, an ammunition depot on the west bank of the Canal and a radio station at Summit (about one-third along the Canal). A half dozen fuel tanks at either end of the Canal, and a few other, minor installations had been built.

Fuelling, repair and maintenance of vessels largely depended on the facilities provided by the Canal authorities.[5] The facilities centred around a battleship graving dock at Balboa and a small dock at Cristobal on the Atlantic end of the Canal.[6]

[4] The Radio Station became US Navy Communications Station (NAVCOMMSTA) by World War 2: http://navy-radio.com/commsta/balboa.htm

[5] *Historic Resources Assessments: Department of Defense Activities 1993* (Panama Canal Treaty Implementation Plan Agency, Washington DC, 1995)

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

On the major functions of the US Navy in Panama pre-war were the operation of high-power radio stations, these being at Balboa, Summit, France Field, Toro Point and Gatun, as well as at Cape Mala and David in the Republic.[7]

In 1937, an important addition to Navy facilities was the establishment of a large ammunition depot on the west bank of the Canal at the Pacific entrance, the naval Ammunition Depot being commissioned on 8 September 1937.

As well as the big guns of the coastal artillery, the Army was also responsible for some of the other defences of the Zone's harbours[8], including the minefields of its Harbor Defense Commands, one based on Cristobal and the other on Balboa.[9] Additional defences were designed to cope with the threat of attack by small, torpedo-armed boats – with guns and searchlights.

It should be remembered that the Army also had a substantial number of vessels of various sizes in use in and around the Canal Zone. These would range from the mine planter ships used to lay and service minefields, to vessels used for supply, especially to bases best or only accessible by water, and rescue boats for downed aircrew. By 1 June 1942, the Panama Canal Department (the name for the Army command) was said to have had 197 harbour boats in operation.

PRE-WAR EXPANSION OF THE NAVY

During the period between the World Wars, the Navy did somewhat better than the Army in terms of budget allocations, if only because (as with Britain) the Navy was seen as a means to keep a would-be enemy at arm's length. Despite this, Congress was not overly generous in funding.

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[7] *The Panama Canal: Twenty-fifth Anniversary* (Panama Canal Press, Mount Hope, Canal Zone, 1939): https://dloc.com/UF00083288/00001/images/0

[8] The Navy retained responsibility for certain aspects (including taking over responsibility for the Transit Guard from February 1942). These included underwater installations, but not the inshore controlled minefield.

[9] Termed the Harbor Defenses of Cristobal and Harbor Defenses of Balboa. Following the war, all such minefields, as well as the remaining coastal artillery were disarmed and disestablished in 1950: https://en.wikipedia.org/wiki/Harbor_Defense_Command

Following World War 1, President Coolidge, who was no enthusiast for the Navy, sponsored legislation to bring the Navy to parity with the Royal Navy. However, Congress gave way to pacifist and isolationist protests and sharply cut the programme. Then, under the following Hoover Administration, no warships were laid down. It was only under President Roosevelt in the 1930s that an expansion of the Navy took place.

The plans after World War 1 to boost the naval defences of the Canal Zone were not helped by the 1922 Washington Naval Treaty, which pledged the five signatories — the US, Britain, Italy, France, and Japan — to impose limits on their respective fleets, to scrap several new battleships and battle cruisers then being built as well as older ships that were no longer first-line units. One consequence of the agreement was that the US could not maintain two effective ocean-going fleets, with the smaller but more modern force that remained after implementing the treaty concentrated on the west coast. This meant that the Panama Canal was vital to US naval policy. It allowed the Navy to shift the bulk of its forces from the Pacific to the Atlantic and *vice versa* - but the reduction in military spending that followed the ratification of the Treaty prevented the Navy from turning the facilities at Balboa into a major naval base.[10]

The pre-war US planning for all harbour defences were intended to have three purposes –

- To protect the defended area against invasion and capture;
- To protect the area from naval bombardment, and shipping from submarine or surface torpedo attack; and
- To cover the seaward approaches sufficiently far out to enable the Navy to emerge and meet an attack.

It was the insistence of the Navy for adequate protection of bases and its ships in port that was the principal reason for the retention and improvement of harbour defences. In the case of the Canal, of course, the vital role in allowing the free movement of the fleet was an added factor.

[10] https://www.usni.org/magazines/naval-history-magazine/2013/july/fleets-visit-panama

During Roosevelt's first term, he sought to aid the depressed shipbuilding and steel industries and thus strengthen the Navy. In 1933, he allocated $238 million for 32 vessels to be laid down over a three-year period. In 1934, the Vinson-Trammel Act provided a replacement programme for 102 ships, aimed at building up the Navy to the limits allowed by the Washington and London Naval Treaties over an eight-year period[11]. From then until 1940, naval appropriations grew and approached $1 billion annually. The Second Vinson Act of 1938 authorised a 20% increase in ship tonnage above the treaty limits. Older vessels were modernised, more fleet aircraft carriers laid down and naval aviation programmes developed, with naval bases and air stations built.

In June 1940, Roosevelt authorised an 11% increase in the strength of the fleet and three days later, Admiral Stark, Chief of Naval Operations from 1939, requested $4 billion for the building of a two-ocean navy. This was the largest procurement in US naval history, more than doubling the existing warship fleet and providing for 15,000 naval aircraft.[12]

110 NAVAL VESSELS THROUGH THE CANAL IN 48 HOURS

In 1934, the US Fleet Commander, Admiral David Foot Sellers, decided to try to surpass the estimated maximum for passing naval vessels through the Canal – said to have been 48 ships during a 24-hour period. Canal Operations managed to pass 110 ships through in 48 hours, moving them from the Pacific to the Atlantic. At the same time, as a fuller test of the capabilities of the Canal, an emergency was declared. All military personnel in the Canal Zone were mobilised and wartime regulations were put into effect, with no civilians allowed near the Locks – and with all Canal facilities readied for the unprecedented mass movement.[13]

[11] The Washington Treaty of 1922 obviated the need to build either large battleships (and later aircraft carriers) or a two-ocean fleet - at least until the Treaty expired in 1936 (when Japan announced its withdrawal): *What Roosevelt Took: The Economic Impact of the Panama Canal, 1903-37* by Noel Maurer & Carlos Yu: https://www.hbs.edu/ris/Publication%20Files/06-041.pdf

[12] https://www.usni.org/magazines/naval-history-magazine/2019/february/fdr-his-mighty-navy

[13] http://www.panamahistorybits.com/article.asp?id=2011-07-15

THE VINSON BILL AND THE HEPBURN AND GREENSLADE BOARD REPORTS

In 1934, the aforementioned Vinson-Trammell Act, providing for an expansion of the fleet, also led to a Board being established which set out the general priorities to govern future development of naval installations. As a result, the US West Coast, the Canal Zone, Hawaiian Islands, the Philippine Islands and Guam were given the highest "A" classification.

A board set up by the US Navy, which became known as the Hepburn Board, made an exhaustive survey of the strategic needs in connection with the naval defence of the US and of the existing facilities for meeting those needs. Its report was submitted to Congress on 27 December 1938, and recommended the establishment of new air bases and the expansion of existing bases to provide three major air bases on each coast of the Continental US, plus one in the Canal Zone, and another in Hawaii; with outlying operating bases in the West Indies, Alaska, and Pacific islands possessions.

There was also a list of projects, considered to be of immediate strategic importance, and which should be undertaken at the earliest practicable date – none of which impacted the Canal Zone. However, the report did recommend development of a submarine base at Balboa.[14]

During World War 2, another board was set up, the Greenslade Board, which requested plans from the various bureaux and offices of the Navy Department and considered this material from the standpoint of the naval requirements upon the completion of the 81% increase in the Navy planned by 1946, following passage of the Two Oceans Act of 1940, and the envisaged huge expansion of the Navy. This Board was given the specific task of recommending sites and facilities for the bases that had been acquired in British possessions under a September 1940 agreement.

[14] *Building the Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946 (Volume I)* (Department of the Navy, Bureau of Yards and Docks, 1947): https://www.ibiblio.org/hyperwar/USN/Building_Bases/index.html#contents1

The report was submitted on 15 November 1940 and proposed facilities that would cost a total of $315 million. However, the Canal Zone was to have the role only of a "subsidiary operating base".

Notwithstanding its description in the Greenslade Board report as a "subsidiary operating base", the Canal Zone – due to its importance in US national security considerations - had been one area already highlighted for authorised expansion and improvements of naval facilities during the 1930s, in the recommendations following the Vinson-Trammell Act of 1934 and in the Hepburn Board report.[15]

THE NEUTRALITY PATROL

In the 1930s, the US enacted a series of laws designed to prevent it from being embroiled in a foreign war by clearly stating the terms of US neutrality.

Panama also remained neutral until the Pearl Harbor attack, and its neutrality proved useful to the US Government in the months before its entry into the war, as US-owned ships under the Panama flag could be used to supply Britain without involving US-flag merchant ships[16].[17]

During the period of US and Panamanian neutrality, Esso and Texaco continued to ship oil not only to the Allies using Panamanian-registered tankers, but also, it appeared, to the Axis, although the oil was officially consigned to Spain. As late as 1942, Esso was supplying the Canary Islands, ostensibly selling to the Spanish state monopoly, but the consignments called for what appeared to be a high proportion of naval-grade fuel, and British and US intelligence suspected that such deliveries found their way to Germany.[18]

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[15] www.ibiblio.org/hyperwar/USN/Building_Bases/bases-1.html

[16] *The Outlaw Sea – a World of Freedom, Chaos, and Crime* by William Langewiesche (North Point Press, New York, 2004). *From Flags of Convenience to Captive Ship Registries* by Le T Thuong (Penn State university Press: *Transportation Journal*, Vol. 27, No. 2. 1987).

[17] At the meeting of American republics in 1939 that resulted in the Declaration of Panama, a resolution was approved permitting ships to change their registry, which allowed US ships to deliver supplies to Allied nations under the flag of Panama, thereby avoiding violation of the US Neutrality Acts.

[18] *Rough Waters: Sovereignty and the American Merchant Flag* by Rodney Carlisle (Naval Institute Press, 2017).

The day war began in Europe in September 1939, the CNO informed US naval forces that German U-boats were ready to begin operations in Atlantic shipping lanes, and that reports indicated that a dozen German merchant ships were being armed as raiders. The CNO ordered the commander of the Atlantic Squadron to establish as soon as possible a combined air and sea outer patrol for observing and reporting on movements of warships of the belligerent nations.

The US then established Neutrality Zones that included the whole Gulf of Mexico, the entire Caribbean Sea, and extended 200 to 300 miles (322 to 483 km) into the Atlantic from North American and South American shores. Concurrently with operations in the Atlantic, much-lesser-known neutrality patrols were also carried out in the Pacific by naval air patrol assets mainly based at Cavite, Philippines, home port of the US Asiatic Fleet.[19]

The original mission of the Neutrality Patrol was purely that of observation and reporting, and ships were instructed to avoid any action that might be interpreted as being of hostile intent.[20] By 16 October 1939, the orders had changed, calling for "suspicious" vessels and warships to be followed. These basic rules did not change until just before the US entry into the war in December 1941. Nonetheless, the operations of the Patrol expanded in 1940 with old destroyers being recommissioned and new patrol aircraft squadrons added.

On 18 October 1939, President Roosevelt issued a Proclamation which banned all submarines of the belligerent countries from the ports and territorial waters of the US, and the Canal Zone, unless forced to do so by *force majeure* (in which case they had to remain on the surface and displaying their national flag).[21]

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[19] https://www.history.navy.mil/browse-by-topic/wars-conflicts-and-operations/world-war-ii/1941/prelude.html

[20] *The Navy Air War*, edited by Lt AR Buchanan USNR (US Navy), 1946: https://penelope.uchicago.edu/Thayer/E/Gazetteer/Places/America/United_States/_Topics/history/_Texts/AHUNAW/4*.html

[21] https://www.presidency.ucsb.edu/documents/proclamation-2371-restricting-the-use-territorial-waters-the-united-states-foreign

On 26 September 1939, the foreign ministers of the Latin American republics met for a special conference in Panama and the US successfully lobbied for a multilateral declaration that would keep the European war away from the Americas, and the Declaration of Panama was signed on 2 October. This included backing and enforcement of a neutrality zone.

The Declaration had established a neutral zone constituting an area from 60W longitude to 23N latitude, thence to a point 600 miles (654 km) south of the Cape Verde Islands, and finally south-west and parallel to the South American coast (and known as the Pan American Security Zone). All belligerent warships were to be prohibited from warlike operations in this area,[22] and submarines were barred from using ports of the American republics. In short, it brought most of the Latin-American republics in line with US foreign policy on hemispheric neutrality.[23]

The US also declared its intention to patrol well beyond the boundaries of western Neutrality Zones in order to properly monitor the approach of any belligerent shipping. on 15 March 1941.[24] The revised plan also involved keeping two patrol aircraft squadrons, a division of old destroyers, and a few submarines in the Canal Zone. The rest of the ships assigned to the Neutrality Patrol were ordered to what were designated "mob*ilization ports*".[25]

[22] The Royal Navy came within a whisker of violating the terms of the Declaration, following the Battle of the Rover Platte on 13 December 1939. If the "pocket battleship" *Graf Spee* had opted to fight its way out from Montevideo, instead of being scuttled, the waiting British warships were ready to attack, which could have involved "warlike operations" within the neutrality zone, if not in waters claimed by Uruguay (of course, the initial battle probably violated the terms of the Declaration).

[23] It also included a demand for an end to any subversive activity in their countries: https://apps.dtic.mil/dtic/tr/fulltext/u2/a245396.pdf

[24] https://apps.dtic.mil/dtic/tr/fulltext/u2/a245396.pdf

[25] https://apps.dtic.mil/dtic/tr/fulltext/u2/a245396.pdf

THE TWO-OCEAN ACT AND THE THIRD LOCKS PROJECT

As mentioned, the Two-Ocean Navy Act of 1940[26] (aka the Seventy-Percent Act, the Vinson-Walsh Act or the Second Naval Expansion Act[27]) was a huge procurement Bill. It increased by 70% the Navy's combat tonnage at a cost of $4 billion. It also set into motion a strategy that is still relevant today – basing US fleets in both the Pacific and Atlantic Oceans.

The plans included a requirement for five *Montana* Class battleships. These ships (and other such large warships that might follow) would be too large to pass through the existing locks system of the Canal.

Since the 1930s all of the Canal's widening studies had agreed that the most effective and efficient alternative to enhance Canal capacity was the construction of a third set of locks of larger dimensions than those of the locks built in 1914.

In 1936, the Governor of the Panama Canal was authorised by the US Congress and directed to investigate the means of increasing the capacity of the Canal for the future needs of interoceanic shipping. A Special Engineering Section was created by the Governor in 1937 to make the necessary investigations. It made a careful study of topography, hydrography, and other matters[28], and submitted a report on 24 February 1939, saying that construction should start within 10-12 years and that, for defence security considerations, the new locks

[26] In fact, a landslide which had blocked the Canal in 1916 had prompted Congress to decide to build a two-ocean navy, but then failed to follow through on the decision.

[27] The first had been the Vinson-Trammell Act of 1934 (aka the Naval Expansion Act), which provided the first major expansion since World War 1. This had added 65 destroyers, 30 submarines, one aircraft carrier and 1,184 naval aircraft. There had also been the National Industrial Recovery Act (NIRA) of the mid-1930s, which saw $237 million set aside to construct warships to help improve the economy with increased employment. The Navy responded by contracting to build 20 destroyers, four submarines, four light cruisers and two aircraft carriers. The Naval Expansion Act 1938 added to the inventory with $1 billion for a dirigible, two light cruisers, one aircraft carrier, one large and two smaller seaplane tenders, minelayers, minesweepers, two oil tankers, two fleet tugs, and an indefinite number of speedy, experimental torpedo boats (which became the wartime PT boats). The Naval Expansion Act of June 1940, aka the Eleven Percent Act increased the Navy's warship fleet by 11%, concentrating mostly on aircraft carriers, submarines and cruisers: https://usnhistory.navylive.dodlive.mil/2014/07/19/as-war-in-europe-escalated-1940-naval-expansion-act-came-when-platformsmatter-ed-most/

[28] http://bdigital.binal.ac.pa/rdd/historicoview.php?ID=178321

should be placed some distance from existing ones. The cost was estimated at $277 million.[29]

Having been endorsed by the Governor of the Panama Canal, by the Secretary of War, and by the President, on 11 August 1939, the US Congress authorised the "Third Locks Project", also known as the "bypass project",[30] to provide new, larger locks near existing ones at Gatun, Pedro Miguel and Miraflores in order to increase the Canal's capacity. Congress allocated $15 million the following Spring to begin work and authorised the signing of contracts before July 1940 year for $99 million. This was despite those in the House of Representatives who believed that the $277,000,000 which the project would cost could be spent to better advantage for munitions and materiel.[31]

Excavation began near Miraflores on 1 July 1940, the new locks to be 200 feet (61 metres) longer and 30 feet (9.1 metres) wider than the originals; and this feature soon began to override the security consideration as the principal reason for the project.[32]

However, the entry of the US into the war brought into question the future of the project; although the Navy's interest in it gave it high priority. On 23 December 1941, the Governor reported by letter to the Secretary of War that the schedule, which called for completing the project by 30 June 1946, could be met only by assigning high priority to, and by "*vigorously prosecuting*" the construction. With the first of the new super-battleships scheduled to be completed late in 1945, it would appear essential that the locks program be completed as soon as possible.

Changed priorities on the part of the US Navy saw it postponing indefinitely the construction of the larger battleships for which the new locks would have been necessary, and this effectively ended the Third Locks Project in May 1942.[33]

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[29] https://ufdc.ufl.edu/AA00019286/00001/pdf
[30] http://bdigital.binal.ac.pa/rdd/historicoview.php?ID=178321
[31] https://www.globalsecurity.org/military/facility/panama-canal-third-locks.htm
[32] Ibid.
[33] https://apps.dtic.mil/dtic/tr/fulltext/u2/a388262.pdf

THE CENTRAL AMERICAN BANANA FLEET (THE US NAVY SPECIAL SERVICE SQUADRON AND THE CARIBBEAN REGION 1920-1940)[34]

During 1920, a plan evolved for the use of patrol squadron for services in Latin American waters, with itineraries to include frequent calls at ports, with the hope that an occasional visit by a US warship would raise "*the ghost of intervention or gringo absorption*".

The squadron was official created on 25 September 1920 as the Special Service Squadron (although it would be dubbed the "*Central American Banana Fleet*"). Its primary mission was to be "*to promote friendly relations and to contribute to the growth of a better understanding between the United States and the other republics of the Western Hemisphere*". Underlying this was, of course, seen as protection for US citizens and US interests in the region.

On 51 occasions during 1920-34, the State Department requested responses to political unrest and revolutionary violence in the Caribbean, forming what has been described as a pattern of coercive naval diplomacy. In some cases, "neutral zones" were established by landed forces in ports to protect US and foreign lives and interests.[35] There were also more prolonged intervention operations – in Nicaragua in 1926-33 and in Cuba 1933-34.[36]

During the 1930s, disagreements with the State Department had resulted in the Squadron being reduced to being "on call" in the Canal Zone, only to be revived and given a new lease of life by the Cuba crisis. With the end of that crisis, in February 1935, the Squadron relocated from its temporary base at St Petersburg, Florida and return to the Canal Zone, and recommenced the goodwill cruises of the Caribbean. In 1935-39, goodwill missions became the Squadron's primary concern, and two new gunboats joined the Squadron in 1938 to assist in carrying out such missions. However, the practice of sending newly-

[34] *The Special Service Squadron and the Caribbean Region, 1920-1940: A Case Study in Naval Diplomacy* by Donald A Yerxa (Naval War College Review, Autumn 1986): https://www.jstor.org/stable/pdf/44637727.pdf

[35] For example, Honduras in April 1925 and Nicaragua in May to August 1926.

[36] The Cuban crisis saw the rise to power of Fulgencio Batista, the dictator who would eventually be ousted by Fidel Castro.

commissioned warships on shakedown cruises of Latin American ports tended to make the Squadron's goodwill visits somewhat superfluous.

The outbreak of war in September 1939 and the creation of the Neutrality Patrol radically altered the operations of the Squadron. Its commander was given the task of protecting the Canal Zone and policing the Caribbean and, on 5 September 1939, began patrolling to augment the activities of the 15th Naval District in the Canal Zone. Two additional destroyers were attached to the Squadron, so that it could patrol both the approaches to the Canal and carry out some limited neutrality patrol work in the Caribbean.

The Navy Department formally abolished the Squadron on 17 September 1940, reassigning most of its vessels to the 15th Naval District.

WARTIME NAVY EXPANSION IN THE CANAL ZONE

The period 1940-44 was to see considerable expansion of Navy facilities. At Coco Solo, 30 acres (12 hectares) of beach was reclaimed and a sea wall built at the air station, and a low-lying 20-acre (8.1 hectare) area fronting Margarita Bay was enclosed and brought up to a suitable elevation. At nearby Coco Solito, there was a "low-cost housing" development of 824 units on 33 acres (13.3 hectares), a mile south of the air station. A 200-bed naval hospital was built on 41 acres (16.6 hectares) on the north side of the Trans-Isthmian Highway, about four miles from Coco Solito. The 700-acre (283 hectare) naval magazine at Coco Solo was expanded to 1,300 acres (526 hectares), of which 140 acres (56.6 hectares) were for the Coco Solo Tank Farm. The 300-acre (120 hectares) Gatun tank Farm was also built.

On the Pacific side there were also developments. The headquarters was increased from 40 to 65 acres (16.2 to 26.3 hectares). Farfan Radio Station was constructed in 1941-42 on a 820-acre (331.8 hectare) reservation south of Rodman Naval Station. A hospital, later converted to a housing facility called Rousseau, was built on 50 acres (20.2 hectares) adjoining the naval station. Arraijan Tank Farm was built on a 807-acre (326.5 hectare) site

adjoining the Thatcher Highway, and connected to the Gatun Tank Farm by 32-mile (51.4 km) pipelines, completed in 1943.[37]

In 1940, there were just two fuel storage tank farms available for use by the Navy, at Balboa and at Mount Hope, and both were vulnerable to air attack. Construction began in 1942 on the Arraijan and Gatun tank farms, to provide underground, bombproof fuel supplies, distanced from the harbours. The fuel storage situation in the Canal Zone was seen as presenting a serious hazard. To exacerbate matters, the Balboa tank farm was on high ground adjoining the harbour entrance channel, and its tanks presented an excellent target for air attack. Had these tank farms been destroyed it would have been impossible to refuel shipping in the Canal Zone.

It became increasingly apparent that in event of war additional fuel-handling facilities would be required. In 1940, all Navy vessels were fuelled at the Panama Canal docks at Balboa and Cristobal, with the exception of diesel-powered craft based at Coco Solo. In 1941, there was a conference of all interested parties, including the Commanding General, the Governor of the Canal Zone and the Commandant of the 15th Naval District.[38]

In June 1941, the Navy Fuel Storage Board submitted its report on the quantity, type, and location of liquid fuel storage to be provided in the 15th Naval District. It made recommendations for the storage and suggested distribution on the Pacific and Atlantic sides. It was further recommended that an additional reserve be stored on the Atlantic side near Coco Solo, in order to be readily available to the naval air station, and that on the Pacific side, a reserve gasoline storage be combined into a single project under the cognizance of the Army. All storage was to be underground.[39]

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[37] *Historic Resources Assessments: Department of Defense Activities 1993* (Panama Canal Treaty Implementation Plan Agency, Washington DC, 1995).

[38] *Building the Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946* (Department of the navy, Bureau of Yards and Docks, 1947): https://www.ibiblio.org/hyperwar/USN/Building_Bases/index.html#vol2

[39] in January 1941, the Secretary of the Navy recommended that all liquid fuel be in underground storage as soon as practicable. Plans were also considered for a pipeline connecting both coasts in order to replace tanker shipment through the Canal, but the difficulties and cost of construction caused those plans to be dropped until 1942, when the course of the war made it a project of vital urgency.

There was also greatly increased housing[40], and associated facilities, which included two new hospitals, one at either end of the Canal and for Navy personnel.[41] It also included, as one might expect, increased ammunition storage, including a doubling of size of the naval magazine at Coco Solo (which had only been completed in 1937).[42]

Summer 1941 saw the start of work on the development of a new naval operating base on the west bank at Balboa which, with further expansion impossible along the congested eastern waterfront, became the centre of major war construction effort in the Canal Zone.[43]

Some of the work was undertaken by Navy Seabees and, due to the difficulty of finding civilian labour for work in outlying areas, the units were also used at the bases outside the Canal Zone. However, some were stationed within the Zone, to operate power houses and perform specialised maintenance work.[44]

Within days of the attack on Pearl Harbor, the US Navy began to remove families, and military authorities planned to evacuate all women, children and men deemed non-essential to Canal operations. The Commanding General offered to evacuate civilian families, if they wanted to go.

1942 saw work started on a second and a third graving dock at Balboa, a bombproof command centre, additional housing in the District headquarters area, additional frame warehouses at the supply depot, two new marine railways, adjacent to the existing drydock at Cristobal, enlarged ammunition depots at Coco Solo and Balboa, as well as enlarging the facilities at the Coco Solo submarine base, including dredging the basin, and air station and the Balboa operating base.[45]

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[40] For example, under a contract awarded in December 1940. 1,400 units, were built to provide for the families of married enlisted personnel and civilian employees of the 15th Naval District 1,104 being on the Atlantic and 296 on the Pacific end of the Canal.

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

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

[43] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
The peak of construction activity was reached in Summer 1943, and three of the four major contracts were terminated during the Autumn, followed in April 1944 by several smaller lump-sum contracts were awarded for minor additions and improvements and to cater for ongoing needs.

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

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

In 1943, multiple pipelines linked the new oil storage sites at either end of the Canal (thus preventing the need for tankers to transit).

THE 15th NAVAL DISTRICT

The US Navy presence in the Canal Zone, the 15th Naval District, was established on 28 November 1917 by Executive Order and encompassed "*the waters adjacent to the Canal Zone exclusive of the area between the inner limits of the defensive sea areas established at the Atlantic Entrance and the Pacific Entrance of the Panama Canal*". The shore-based command and administrative centre was headed by a Commandant.[46] In 1941, it moved to its wartime headquarters at the newly-constructed Bryan Hall at Fort Amador, at the Pacific end of the Canal.[47]

Wartime commanders were –

1937-39	Rear Admiral Walter N Vernou	4 Sept 1937
1939-42	Rear Admiral Frank H Sadler	10 Aug 1939
1942-43	Rear Admiral Clifford E Van Hook	15 April 1942
1943-44	Rear Admiral Harold C Train	14 Oct 1943
1944	Captain Ellis S Stone	10 June 1944
1944-45	Rear Admiral Howard F Kingman	3 Nov 1944
1945	Captain Schuyler Mills	9 July 1945
1945-46	Rear Admiral John R Beardall	23 August 1945

In July 1941, the Commandant of the District was designated Commander, Panama Naval Coastal Frontier, responsible for the Panama Sea Frontier, the defence of the approaches to the Canal and for naval shore facilities in the Central American region.[48] In 1942, his responsibilities were expanded when, in April, the Southeast Panama Pacific Force was

[46] The system of Naval Districts was ended in 1999, by which time the US Navy had vacated the Canal Zone.
[47] The Navy sector of Fort Amador served as a US Navy headquarters 1918-93, with the 15th Naval District Headquarters (which was disestablished 1976).
[48] https://www.history.navy.mil/content/history/nhhc/research/library/research-guides/guide-us-naval-administrative-histories-wwii.html#122

established. At its peak, the District had a complement of 779 officers and 7,725 enlisted personnel.

The Panama Sea Frontier patrol and threat area covered both Pacific and Caribbean regions. It stretched from the Mexico/Guatemala border out to the Galapagos Islands and down to a point at 5° of latitude on the coast of South America. On the other side, it stretched from the Mexico/British Honduras border to Punta de Gallinas in Colombia on the north coast of South America, and around 90 miles west of Aruba. It encompassed the coastlines of British Honduras, Guatemala, Honduras, Nicaragua, Costa Rica, Panama and Colombia.

The Caribbean Defense Command was officially activated as the overall forces command structure in the Canal Zone in February 1942. However, there were ongoing problems in coordinating operations between the Panama Canal Department (an Army entity) and the Navy (in the form of the 15th Naval District) – with coordination expected by means of "mutual cooperation".[49]

In, in 1947 the Panama Canal Department was deactivated and replaced by the new US Army Caribbean (USARCARIB), which retained its headquarters in the Canal Zone. The Army, Navy and USAF components in Panama were reorganised under the overall, forces-wide Caribbean Command.[50] [51].

10TH NAVAL DISTRICT (THE CARIBBEAN NAVAL COASTAL FRONTIER)

Naval units in the Caribbean region at the beginning of 1941 were under the command of what was designated the 10th Naval District, with its headquarters in Puerto Rico, and which encompassed most of the Caribbean including the northern coast of South America (and latterly bases in the British possessions of Jamaica, Trinidad, Bahamas, Antigua, St. Lucia, and British Guiana). Activated in 1940, shortly before US entry into the war it was changed

[49] As explained, unity of command continued to be a major problem as naval anti-submarine units within the Caribbean Sea Frontier were under command of Commander Caribbean Naval Sea Frontier, not under the direct command of the Caribbean Defense Command.
[50] Which was to become US Southern Command in 1963.
[51] https://apps.dtic.mil/dtic/tr/fulltext/u2/a388262.pdf

to become the Caribbean Naval Coastal Frontier and separated into three sectors: centred on Guantanamo Bay, Puerto Rico, and Trinidad.[52]

TABOGA

A home base for PT-boat squadrons operating under the Panama Sea Frontier was set up as a war emergency project on Taboga Island, which overlooks the Pacific entrance of the Panama Canal, 10 miles (16 km) from the Balboa piers. The island was officially part of Fort Grant on the mainland.

Its purpose was to act as a main maintenance, overhaul, and operating base for flotillas of PT-boats, and as an operational training centre for PT squadrons *en route* to combat zones. Construction began 6 July 1942. Initially it had a timber pier, two small marine railways, overhaul shops, power plant, light and power systems, refrigeration building, water storage and supply, and a radio building. Later construction included a storehouse, mess hall, barracks, quarters, and 12 storage tanks for fuel oil and gasoline. A torpedo workshop, munitions storage, and numerous other facilities, services, and developments were subsequently added. Seabees later assembled two pontoon drydocks and erected magazines, warehouses, and other buildings with the help of local labour.

Work on the new base was half done by the end of August, when the base was commissioned, and 90% complete by the end of the year – with final work undertaken by Seabees. At its peak the base on Taboga Island operated with 47 PT boats and 1,200 men.

A recreation camp was established on neighbouring Morro Island, accessible by a sand bar at low tide, and an Army telephone cable furnished direct communication with the mainland.

[52] *A History of the United States Caribbean Defense Command (1941-1947)* by Cesar A. Vasquez (Florida International University, FIU Electronic Theses and Dissertations No. 2458, 2016): https://digitalcommons.fiu.edu/etd/2458

Naval Supply Depot, Balboa, acted as the assembly point for PT-boat squadrons, furnished material to complete their allowance lists, and rigged the boats and their equipment for secure stowage aboard ship. They were loaded by two 250-ton floating cranes, made available by the Panama Canal authorities.

There was also a degausing range, the degaussing and deperming installation on the island, this being authorised in March 1942.[53]

The Taboga station was decommissioned in March 1946, and all fixed improvements were turned over to Panama.

DEGAUSSING AND DEPERMING

A steel-hulled ship is like a huge floating magnet with a large magnetic field surrounding it and, as the ship moves through the water, this field also moves and adds to or subtracts from the Earth's magnetic field. Because of its distortion effects on the Earth's magnetic field, the ship can act as a trigger device for magnetic sensitive ordnance[54] or devices which are designed to detect these distortions.[55]

Degaussing is a process of changing the magnetism effect. Coils were placed around a ship and the magnetism altered by means of varying degrees of electric current. The function of a degaussing range was to ascertain initially what coil settings (or degrees of current) were necessary to bring about the altered magnetism.[56] The electrical cables run bow to stern and back, with a current then being passed through the cables to cancel out the magnetic field.

[53] https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/b/building-the-navys-bases/building-the-navys-bases-vol-2.html

[54] Such as the magnetic mines used by the Germans during the war: https://www.chem.ucl.ac.uk/resources/history/people/goodeve_cf/magmine.html

[55] The same basic principle allows magnetic anomaly detectors on aircraft detect submarines.

[56] https://navyhistory.au/home-home-on-the-range-degaussing/2/

When a ship is incapable to neutralise its permanent magnetism during normal degaussing process, then the ship requires the deperming method. Deperming is removal of permanent magnetic signature of the material whereas degaussing is removal of induced magnetic signature.

THE NAVY'S ROLE IN DEFENCE OF THE CANAL

A joint Army/Navy plan drawn up in 1935 had assigned defensive roles between Army, Navy, and the Panama Canal administration as follows –

- Army – to defend the Canal from sabotage and hostile attacks;
- Navy – to patrol the coastal zone and control and protect shipping therein; and
- Panama Canal Administration – to protect, operate and maintain the canal, its adjuncts and appurtenances to ensure continuous service at the required levels.[57]

In the late 1930s, naval defence of the Panama Canal, as the focal point of US traffic between the Atlantic and Pacific and South America, was, on the Atlantic side, seen as being primarily a matter of controlling the approaches to the Gulf of Mexico through the Florida Straits and the approaches to the Caribbean through channels and passages, with a screen of islands and potential coastal bases.[58] Providing for the adequate defence of the Canal over the Pacific approaches presented a far more difficult problem, with there being no potential sites for air bases outside of Panama which could be secured by lease or treaty, with only Costa Rica's Cocos Island and the Galapagos Islands presenting possibilities.[59]

In 1922, the bulk of the Navy's Atlantic Fleet had been transferred to the Pacific, and what remained in the Atlantic Fleet became redesignated as the Scouting Fleet (1922–1937) and then the Fleet Training Detachment in 1937.[60] Therefore, it was vital that elements should be able to quickly redeploy to the Atlantic in any emergency.

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[57] https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=3672&context=etd
[58] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[59] Ibid.
[60] *US Global Defense Posture, 1783–2011* by Stacie L Pettyjohn (RAND Corporation, 2012): https://www.jstor.org/stable/10.7249/j.ctt24hrv8.15

In September 1939, the War Department had reminded the Panama Canal Department that the Navy was (in theory) responsible for the location and attacking any forces found in its coastal zone[61], and the role of the Army was to assist.

In a plan approved on 14 August 1940, the Caribbean was earmarked as a "*theater of probable initial operations*". Early assessments suggested that, though a direct invasion of Panama by Axis forces was unlikely, the use of submarine warfare to disrupt shipping and possibly threaten the Canal itself was a real threat if control over the Atlantic was not definitely settled.[62] In 1942, this prediction was to come to pass.

At the time of the attack on Pearl Harbor in December 1941, Navy resources in the Canal area consisted of only two old destroyers and a gunboat, plus six submarines, three yachts converted as patrol vessels, five subchasers[63], a minesweeper, and 12 patrol flying boats with their tender vessel.

While, as we have seen, close-in defence of the Canal, locks and harbours was generally the responsibility of the Army, the Navy retained responsibility for certain aspects (including taking over responsibility for the Transit Guard aboard ships passing through the Canal from February 1942). These included underwater installations, including the anti-torpedo and anti-submarine defences and, from 1942, the indicator loop underwater submarine detection system (see below).

In 1939, funds had been authorised for improvement of the Canal Zone's defences included for underwater protection against submarines and torpedo (including those air-launched). By July 1941, anti-submarine nets had been installed to protect the outer reaches at the entrance to the Colón breakwater and in the area of La Boca at the other end of the Canal. However, it was felt that traffic in the main channel, and in Gatún and Miraflores Lakes were

[61] The Joint Defence Plan, Panama Canal, 1938.

[62] *A History of the United States Caribbean Defense Command (1941-1947)* by Cesar A. Vasquez (Florida International University, FIU Electronic Theses and Dissertations No. 2458, 2016): https://digitalcommons.fiu.edu/etd/2458

[63] A subchaser was a small (less than 100 tons), quite slow patrol and escort vessel designed, as the name suggests, for the anti-submarine role. Huge numbers were built for the US Navy in both wars, over 400 in World War 2: https://www.splinterfleet.org/

vulnerable to torpedo attack. In March 1942, a technical report said that the Japanese had developed a new type of torpedo which rendered current defences obsolete. This resulted in proposals to upgrade and strengthen the nets protecting the Miraflores and Pedro Miguel Locks.

A Joint Operations Center was established on 17 December 1941, with an Air Task Force added on 22 December, under the Commanding General of the Sixth Bomber Command. The Air Task Force was to include all USAAC bombers in the Panama sector, plus all US Navy patrol bombers in the Panama Naval Frontier, for the purpose of aerial patrol and reconnaissance and to attack any force detected in either the Atlantic or Pacific approaches. This initially left the Caribbean areas largely to naval sea forces, as both USAAC and Navy aviation operations were concentrated on the Pacific approaches, which were thought more potentially vulnerable. Indeed, the Army was convinced that the greater danger came from the Pacific and thus there was a need to concentrate forces on that side. However, the Navy considered the submarine threat on the Atlantic approaches and Caribbean sea routes to be greater.[64]

In May 1942, the Navy Department informed the 15th Naval District that it would allocate no less than 180 aircraft to the Panama area. However, the Battle of Midway in June 1942 removed much of the fear that an attack of the type seen at Pearl Harbor could be duplicated in the Continental US or Panama.[65]

The Navy also contributed, for a time, to barrage balloon defences in the form of the US Marines Corp's 1st Barrage Balloon Squadron (designated ZMQ-l by the US Navy).[66] This unit arrived in Panama on 30 December 1941, and was assigned to the Army's Panama Artillery Command.[67] In late April 1942, the Navy Department requested that the Army relieve the

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[64] *Security and Defense of the Panama Canal 1903-2000* by Charles Morris, Panama Canal Commission: https://original-ufdc.uflib.ufl.edu/AA00047733/00001/6j

[65] https://media.defense.gov/2010/Nov/05/2001329891/-1/-1/0/AFD-101105-019.pdf

[66] The US Navy was required to reimburse the USAAF for the balloon equipment supplied to the Marines: http://www.ibiblio.org/hyperwar/AAF/AAFHS/AAFHS-3.pdf

[67] *The US Army Barrage Balloon Program* by James R Shock (Merriam Press, 2006).
A decision of the Joint Army-Navy Board on 12 December 1940 was that while the Army was responsible for balloons at permanent naval bases, the Navy was responsible for defences on shipboard and "such advanced

unit as soon as possible, but in the event it was not until September 1942 that the Squadron was finally able to return to the US.[68]

One element of the defence of the Canal provided by the Navy were the PT Boats, the small, fast motor torpedo boats (see below), with Panama also serving as a training and preparation base for units destined for service in the Pacific war.

The Navy had responsibility for censorship of telecommunications in both Panama and the Canal Zone during the war, employing some 50 Panamanians in an examination station located next to the All-American Cable Office in Balboa. There was also supervision of telecommunications by forces' personnel at cable offices in Panama City – Panama was the only country in the region that permitted such an arrangement. The Navy also had its own Fleet Post Office (FPO).

Following the Pearl Harbor attack, and several false alarms, on 14 December 1941, the War Department was told that the Navy had sent two submarine divisions, comprising eight to 12 boats[69], and a patrol squadron of 12 aircraft to Panama with orders to establish advanced bases in the Galapagos Islands and the Gulf of Fonseca (a sheltered inlet to the north, bordered by Nicaragua, El Salvador and Honduras).[70]

The primary US Navy naval strategy in the Atlantic areas from 1942 was the destruction of U-Boats operating (including in the so-called Wolf Packs) in the Gulf of Mexico, Caribbean and the Atlantic. This was to include the use of surface craft, aircraft and submarines operating from Panama. 1942 was to be the peak year for U-boat activity in the Caribbean (neither they nor Japanese submarines were to be a problem on the Pacific approaches).[71]

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bases as are not defended by the Army". A Marine squadron had 10 officers and 200 men (later increased to 12 officers and 216 men).

[68] https://www.marines.mil/Portals/1/Publications/Special%20Marine%20Corps%20Units%20of%20World%20War%20II%20%20PCN%2019000413200.pdf

[69] See below for a comment on the relatively little use made of submarines based in Panama during the war.

[70] https://history.army.mil/books/wwii/Guard-US/ch16.htm
Despite this, the Army still bore the greater responsibility for air patrols.

[71] See https://wordpress.com/post/raytodd.blog/41823

ANTI-SUBMARINE INDICATOR LOOPS

It has been reported that a US Navy Loop Stations was apparently operated along the Panama coast, but there appears to be little detail.[72] It has been claimed that there is about 850 nautical miles (1,574 km) of 8-inch (20.3 cm) cable running down the full length of both coasts of Panama, and that the main cable has several 2-inch (5.08 cm) feeder cables running back to the mainland.

Indicator loops were long lengths of cable laid on the seafloor of harbours to detect enemy submarines. It relied on magnetic properties of submarines (see the note on degaussing abobe). Loops of cable are laid on the ocean floor in shipping channels and when a submarine passes overhead an induced current is produced and this is detected on the galvanometers at the nearby shore station. Even if wiped or degaussed, submarines still have sufficient magnetism to produce a small current in a loop.[73]

In the Canal Zone, control stations were at Cristobal on the Atlantic side at Fort Sherman; and at Balboa on the Pacific side at Fort Amador.[74]

BASES OUTSIDE THE CANAL ZONE

In the same way that the Army felt that it was essential to have bases outside the Canal Zone for better defence of the Canal, so the Navy required additional sites. Also like the Army, some of these bases were for aircraft to patrol the approaches to the Canal.

By the time of the Pearl Harbor attack on 7 December 1941, basic plans for the defence of the Caribbean and the Panama Canal were rapidly taking shape. It was further expanded during 1942, with the development of bases at Salinas, Ecuador; Barranquilla, Colombia; Curacao, in the Netherlands West Indies; Puerto Castilla, Honduras; on the Gulf of Fonseca and at Corinto, Nicaragua; on Taboga Island, and at Almirante, Chorrera, and Mandiga in

[72] http://indicatorloops.com/panama.htm
[73] http://indicatorloops.com/usnlrs.htm
[74] Ibid.

Panama and outside the Canal Zone. Most of these were relatively small installations, chiefly to support seaplanes, lighter-than-air craft (blimps), and small surface craft.

During the two years that followed, the tempo of construction activity increased steadily, reaching its peak in the early months of 1943. By that time, the major features at each base had been completed and were being fully used by the occupying forces. Ongoing station maintenance, as well as minor items of new construction necessary for more efficient operations, was henceforth accomplished by Seabees or by local labour.[75]

The bases included Barranquilla, capital of the Atlántico Department of Colombia on the Caribbean coast, which was used for air patrols, including by blimps. Soleded Airport was shared with the services of Pan American Airways. In May 1944, the base was designated a naval auxiliary air facility and enlarged to cater for patrol bombers and a blimp.[76] Expansion of the base was completed in October 1944. However, the following month, patrol operations in the Atlantic were curtailed, and both landplane and blimp detachments were withdrawn. The base then continued on a maintenance-only status until its disestablishment in March 1945.

Another base was for flying-boats at the Gulf of Fonseca, at Money Penny Anchorage on the Pacific coast of Nicaragua (despite lacking any formal agreements having been signed prior to construction). However, this moved to the more sheltered Corinto in 1943. Used by flying-boats and PT boats, it closed in 1946.

Guayaquil was a coastal base in Ecuador, near to the second-largest city in the country. In 1940, intelligence direction-finding trucks had been deployed there by the Navy in what turned out to be a disappointing and short-lived operation to track down German radio transmissions. During the war it was used for patrol flying-boats.

[75] https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/b/building-the-navys-bases/building-the-navys-bases-vol-2.html

[76] Equipment being transferred in August 1943 from the blimp base at Mandinga in Panama.

Salinas was also on the coast of Ecuador, and was used by both the Navy and USAAF (as the USAAC had become in 1941). It operated as a base for Navy flying-boats, at the southern terminus of the Pacific patrol arc, and was established in 1942, with final construction undertaken by Seabees. Initially intended as a naval base, it became a refuelling base for flying-boats and developed into a naval auxiliary air facility, servicing and housing a complete patrol squadron. Aircraft operations ended in May 1944, leaving just an emergency refuelling unit and a crash boat rescue service.[77] It was redesignated Naval Air Detachment, Army Air Base on 24 July 1944. On 1 February 1946, the US vacated the base, surrendering all permanent installations to Ecuador.

US Navy patrol flights went from Salinas out to the Galapagos Islands and from the Galapagos to Corinto in Nicaragua. The aircrew would stay overnight at the Galapagos and at Corinto. The distance out to the Galapagos was about 600 miles (965 km), and the distance from Galapagos to Corinto was about 800 miles (1,287 km).[78] When based in the Galapagos Islands there would be support from a seaplane tender.

In December 1941, five days after the attack on Pearl Harbor, the Navy rushed a token force of 36 men aboard a British tramp steamer, to the Galapagos Islands to establish a refuelling depot for patrol aircraft and, a few days later, seaplanes were being refuelled by hand pumps from a motor launch[79].

In the Summer of 1943, a small refuelling base was established at Almirante, on the Caribbean coast of Panama, as a refuelling base for PT boats.[80]

A base for use by Navy blimps an Mandinga, on the Caribbean coast of Panama, was transferred from the Army in February 1944, for use in aerial patrols of the eastern approaches to the Canal. Much of the work in building the site had been carried out by

[77] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[78] https://boeingtestpilot.com/chapter-3-patrol-flying/
[79] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[80] *Building the Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946* (Department of the navy, Bureau of Yards and Docks, 1947): https://www.ibiblio.org/hyperwar/USN/Building_Bases/index.html#vol2

Seabees. However, in September 1944, the blimp and its equipment was transferred to Barranquilla on the coast of Colombia, and the Navy vacated the site, which was returned to the Army.[81]

R+R

Panama was a popular place for "rest and recreation" for sailors. Panama City and Colón both offered entertainment and other diversions for sailors. Indeed, during the war, Panama became famous for "marinades", a term describing when hundreds of US servicemen landed in Panama City and/or Colón, looking for alcohol, sex etc after weeks or months at sea.[82]

Catering for the US servicemen is said to have represented "commercial activity" for the year 1945 that was worth more than $6 million "in prostitution and vice", this being $4 million more than the foreign aid provided by the US Government in Panama that same year.

THE VIEW OF THE NAVY COMMANDER OF THE DEFENCES IN 1941

In letter from the Commandant of the 15th Naval District to the Chief of Naval Operations in Washington on 10 July 1941, in response to one dated 3 July which had asked if the measures taken by the Army and Navy were adequate to prevent sabotage, the Commandant said he did not think the measures were adequate and he –

- Complained about discipline on Army ships (as opposed to Navy ones);
- Said that protection from the water left much to be desired, with a need for a harbour police force, which was not employed due to lack of men and boats (and even if it existed, he said it would not be a sure cure);

[81] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[82] http://www.panamayestadosunidos.com/prueba_la-segunda-guerra-mundial.html

- Maintained that the transit guards on the ships passing through the Canal were "*wholly ineffective and futile*" (despite the Army employing 20-30 officers and 500 men "*working hard but to no effect*"); and
- Argued that the Canal was wide open to an air attack launched from the sea, and that this position would remain until Caribbean and Pacific bases were completed, manned and operating.

On 25 July, a response from the War Department cast doubt on the Admiral's conclusion that the Canal was open to attack "*from three dimensions*", but agreed to deficiencies in protection from air attack, and saying that 55 pursuit (fighter) aircraft had been despatched. The War Department also said that parachute and airborne units should be able to prevent hostile occupation of landing fields, once equipped with the necessary transport aircraft.[83]

PT BOATS

A role for the PT boats, in defending forward bases, such as the Canal Zone or Hawaii, was seen as freeing up larger surface forces for offensive operations.[84]

As mentioned above, US Naval Station Taboga overhauled PT Boats and provided operational training for crews. The training base opened on 1 August 1942, with 11 boats of MTB Squadron 2. At its peak, the base on Taboga Island operated with 47 PT boats and 1,200 men.[85]

Early in the use of the PT Boats base at Taboga, the squadron of boats then based there was divided into three sections –

[83] https://ncisahistory.org/wp-content/uploads/2019/12/Canal-Zone-Response-to-CNO-on-Preparations-to-Prevent-Sabotage-Jul-10-1941.pdf
[84] https://www.lutonmodelboat.co.uk/history_ptboats.html, https://scholarworks.uno.edu/cgi/viewcontent.cgi?article=2612&context=td, and https://warfarehistorynetwork.com/2019/12/03/weapons-wwii-pt-boats/
[85] https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/b/building-the-navys-bases/building-the-navys-bases-vol-2.html

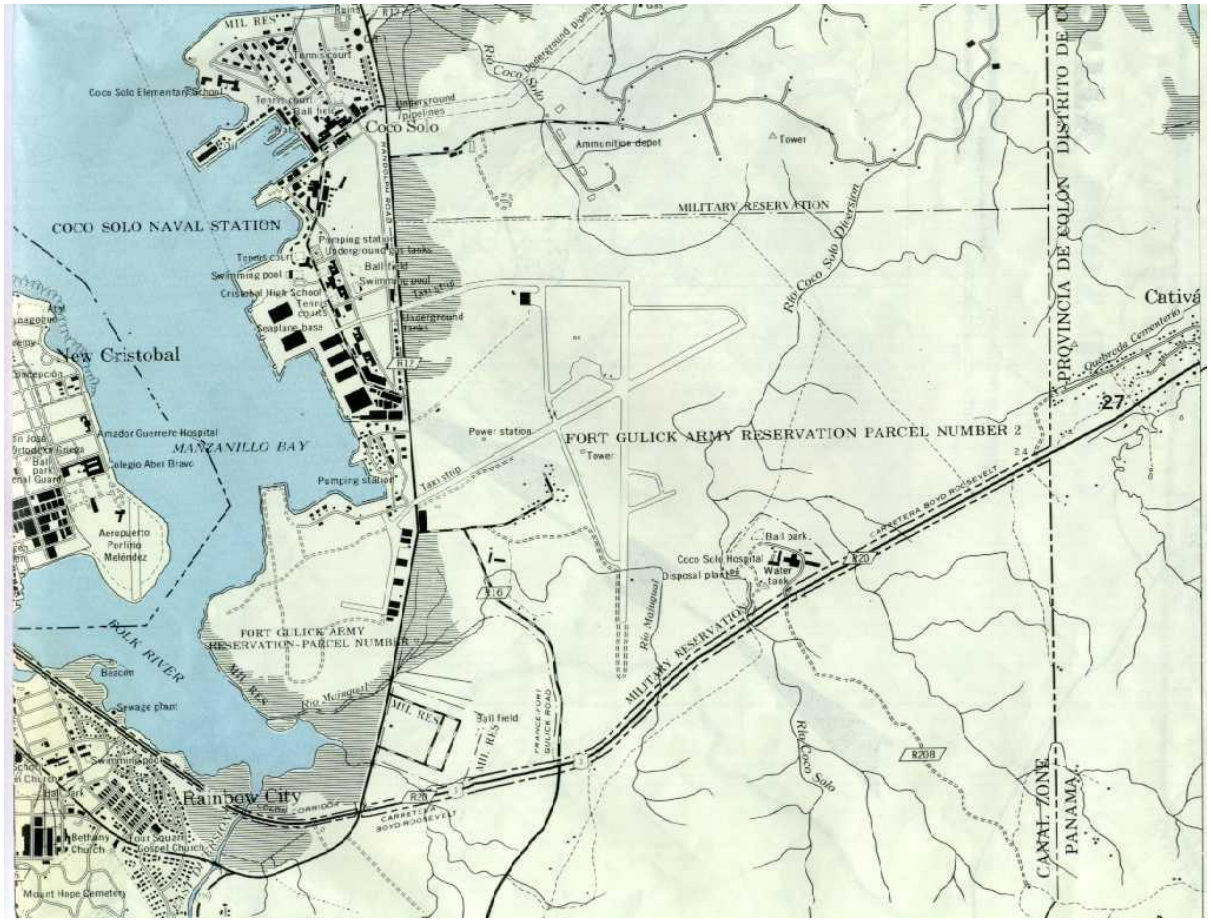
- One would head to the Pearl Islands (a group of islands about 30 miles, 48 km, off the Pacific coast) for anti-submarine/security/training patrols;
- The second would be stationed at Balboa for patrol at entrance to the Canal;
- The third would be kept around Taboga.[86]

Proceedings, the journal of the US Naval Institute, said in September 1940 that –

> "*A force of motor torpedo boats, each carrying two torpedoes, two depth charges, one 50-caliber machine gun, and one 1.1-inch anti-aircraft weapon would be an ideal defense for any important naval base, anchorage, or outlying territory, such as Hawaii, the Panama Canal, our various islands in the West Indies, Alaska, and the Philippine Islands*".[87]

In Summer 1943, a small refuelling base was also established at Almirante on the Caribbean coast to refuel PT boats

[86] http://www.ptboatforum.com/cgi-bin/MB2/netboardr.cgi?fid=102&cid=101&tid=2132&pg=1&sc=20&x=0
[87] https://www.usni.org/magazines/proceedings/1940/september/motor-torpedo-boats



COCO SOLO NAVAL AIR STATION[88]

Located at the Atlantic end of the Canal, this site had been originally established as a Naval Air Station, for flying-boats, in 1918.[89] Having been placed in reserve in 1922, and its radio station (NAVRADSTA) (R) disestablished and closed in 1923, Coco Solo was reactivated as a Fleet Air Base on 1 July 1931. A naval magazine was added in 1937. It became NAS Coco Solo on 30 September 1939. Postwar, operations ceased on 15 February 1950 and it was disestablished on 1 July 1950.[90]

[88] Aka Upham Naval Air Station, as the translation of "one coconut" was seen as unflattering

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

[90] https://members.tripod.com/william_h_ormsbee/cocosolo_naval_base_hist_p01.htm

A review by the Hepburn Board[91] (see above) had recommended an increase in the air facilities in the canal Zone sufficient to accommodate no less than seven squadrons of patrol aircraft, with a supporting industrial establishment capable of complete engine overhaul, and a further naval station at Balboa, on the Pacific end of the Canal, to support submarines, destroyers, and smaller craft. Development of the bases recommended by the Hepburn Board under early contracts awarded in June and July 1940.[92]

The greatest single deficiency of the station had been the lack of sheltered water for a full-load take-off immediately adjacent to the base. There was a wide gap of open water between the eastern breakwater and Margarita Point, through which heavy ocean swells entered Manzanillo Bay, which could make seaplane operations hazardous – and this was tackled by closing the 3,800-feet (1,158 metres) gap in the Margarita breakwater, using coral and rock, armoured with pre-cast concrete blocks. The dredging involved also produced coral fill for the construction of new runways at the Army's nearby France Field.[93]

Construction work from 1940 saw three large steel hangars, four seaplane ramps, 700,000 square feet (65,032 square metres) of concrete parking area, engine test stands, and a large aircraft assembly and repair shop added to the operating area fronting on Manzanillo Bay.

To make expansion possible, 30 acres (12.1 hectares) of beach was reclaimed, with a steel sheet-pile sea wall, 2,100-feet (640 metres) long, to enclose two edges of this reclaimed area.[94] Other work included new barracks, a bombproof command centre, an operations building, and a large administration building to house the administrative offices of both the air station and the adjoining submarine base. Also added were several large warehouses.[95]

[91] The "Hepburn Board Report" of December 1938 was the basis for the massive Shore Establishment expansion that took place prior to World War 2.
[92] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[93] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[94] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html
[95] https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html

A larger Coco Solo Hospital was constructed in the Summer of 1941,[96] on an areataining transferred from the civil part of the Canal Zone following President Roosevelt's Executive Order 8981 of 17 December 1941.[97]

During World War 2, Coco Solo would also host, late in the war, a squadron of USAAF P-38 Lightning fighters, and a one-mile taxiway connected the facility to France Field.[98]

COCO SOLO SUBMARINE BASE

Alongside the air station, this base had been established in 1918.[99] It occupied a 130-acre (52.6 hectare) peninsula bounded on the north by Margarita Bay and on the west and south by Manzanillo Bay, and additional facilities were accomplished under the wartime construction programme begun during Autumn 1940 with the developments being confined entirely within the limits of the existing boundaries.[100] A wide mole pier enclosed with steel sheet-piling was built as an extension to the original north quay wall, to provide additional berthing space and increase the basin area, and the south quay of the base was likewise extended.

There was an industrial area, where extensions were made to the torpedo shop, ship fitters' shop, and battery shops. A large storehouse and a three-story structure to house the machine and optical shops were erected. A low-lying, 20-acre (8 hectare) area fronting on Margarita Bay enclosed with a steel sheet-pile seawall, with coral fill dredged from the bay, was later developed as the main housing area for the station, with a chapel and library, theatre, tennis courts, and a recreation building for enlisted men and officers.

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[96] In 1954 it was transferred to the Canal Zone authorities: https://www.govinfo.gov/content/pkg/GOVPUB-W79-6974c7887ccf00b36992981b3cfc87de/pdf/GOVPUB-W79-6974c7887ccf00b36992981b3cfc87de.pdf

[97] https://navy.togetherweserved.com/usn/servlet/tws.webapp.WebApp?cmd=PublicUnitProfile&type=Unit&ID=8240 https://www.presidency.ucsb.edu/documents/executive-order-8981-navy-hospital-area-coco-solo-canal-zone

[98] *VPNavy! USN, USMC, USCG and NATS Patrol Aircraft Lost or Damaged During World War II* by Douglas E. Campbell (Syneca Research Group Inc, 2018).

[99] The Coco Solo Naval Base was deactivated in 1957, and 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.

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

It had seen five submarines based there during World War 1 and, at the time of the Pearl Harbor attack, it was home to three "V" Boats stationed.[101] [102] It would also be the base for several of the smaller "S-type" boats (aka the "Sugar boats"), as well as the submarine tender USS *Mallard*[103] –

> "*The Mallard operated with the submarines, sometimes acting as a target ship and also retrieving practice torpedoes that the submarines fired at her but never forgetting the primary purpose of a submarine rescue and salvage ship was just that. Our biggest gang aboard was the divers… Sometimes we would go outside of the breakwater into the Atlantic/Caribbean and it was all ways rough out there but we could go out in the morning and come back in the afternoon, just for one days' operation. We preferred it when we would transit the Canal and operate in the Pacific near the Perlas Islands where it was usually calm*".[104]

The V boats based at Coco Solo were large, long-range fleet submarines, but had been found to have a poor operational performance, with a maximum surface speed less than designed (18.7 knots, not the intended 21 knots), and a speed submerged that was also less than planned. It has been said that these submarines were widely regarded as white elephants and had been mothballed by the Navy in 1937. Nevertheless, with the growing likelihood of hostilities, they had been recommissioned in September 1940 and re-joined the Atlantic Fleet following the Japanese attack on Pearl Harbor.[105]

Renamed as the USS *Barracuda*, USS *Bass* and USS *Bonita* in 1931, they had arrived at Coco Solo just before the Pearl Harbor attack, but would leave for other duties (not combat) in

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[101] They were used to make (uneventful) war patrols from there.

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

[103] A former *Lapwing* Class minesweeper, launched in 1918, she had been converted into a submarine rescue vessel at Boston Navy Yard in 1928, redesignated ASR-4 in September 1929, and arrived at Coco Solo in 1930. She remained there during World War 2, its roles including target towing and diver training services for ships of the fleet. In May 1946, she was decommissioned in New York and, in May 1947, she was sunk as a target ship by the submarine USS *Piper*.

[104] George O Jones, USN (Retired): http://www.geocities.ws/goliverjones/page10.htm

[105] John D. Alden, *The Fleet Submarine in the U.S. Navy: A Design and Construction History* (London: Arms and Armour Press, 1979)

1942, after making a number of patrols notable only for mechanical failures and a serious fire that killed a number of crewmen on the USS *Bass*.[106]

Of the S boats, the S-11 arrived at Coco Solo on 5 October 1941, remaining in the area until June 1943. The S-13, S-15, and S-17 began operations in December 1941, with the *S-17* making a patrol from Coco Solo only three days after the attack on Pearl Harbor. The S-30, originally commissioned in October 1920, was the oldest S boat in service. It arrived at Coco Solo on 16 February 1942 and operated in the Canal Zone with Submarine Division 52, which also included S-31, S-32 and S-33. At the time of the attack on Pearl Harbor, the S-45 was at Bermuda and, rather than returning to New London as had been planned, the submarine sailed to Coco Solo for a quick overhaul and then transited the Canal to the Pacific to take up a patrol area about 100 miles (160.9 km) off the coast. As the likelihood of a Japanese attack reduced, S-45 returned to Coco Solo to join a new group, Submarine Division 53, which, in March 1942, departed for Brisbane, Australia.

All the S boats transferred out in 1942, being redeployed to Australia, and four to the cold seas off Alaska.[107]

The S Class submarines were the oldest and smallest submarines operationally employed by the US Navy during World War 2, dating from the end of, and just after, World War 1. 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. By 1944, most of these old boats

[106] USS *Barracuda* and USS *Bonita* were scrapped after the war, and USS *Bass* was scuttled to become a sonar target.

[107] S-26 was lost in the Gulf of Panama in January 1942: https://www.public.navy.mil/subfor/underseawarfaremagazine/Issues/Archives/issue_06/silent_victory.html

would be withdrawn from active combat service, and used instead for various training roles.[108]

Despite the apparent concern about protecting the Panama Canal, it being seen as vital for the war effort and the security of the US, it has been said that the submarines assigned to the area generally included the least efficient in the US Fleet, and that the poor quality of submarines at Coco Solo was in part symptomatic of a broader lack of US preparedness.[109] The more modern submarines were needed for making the long-distance patrols required in the Pacific, whereas patrols off the Canal Zone were typically of short duration and geared more toward reconnaissance than offensive action – and thus could be undertaken by the older and smaller designs.

In 2017, an article in The Journal of Military History summarised the performance of the Coco Solo submarines during the war - [110]

> *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.*[111]

[108] https://maritime.org/doc/subsinpacific.php#pg4
[109] *Coco Solo Submarines: Protecting the Panama Canal, 1941–1942* by Michael Sturma (*The Journal of Military History* 81 (October 2017).
[110] Ibid.
[111] https://www.smh-hq.org/jmh/jmhvols/814.html

On 24 January 1942, one of the "S" boats, S-26, was lost following a collision with a surface escort, USS *Sturdy*, after having departed Balboa in company with three other boats for patrol in the Pacific.[112] Just three crew who had been on the sail of the surfaced boat at the time of the collision survived.[113] [114]

Further fatalities occurred on 17 August 1942, with a fire aboard USS *Bass* that killed 26 crewmen. They were buried at Corozal Cemetery. This underlined the mechanical and other problems encountered with the V boats (and USS *Barracuda* had also suffered a fire a little earlier, on 15 June).

Another risk for the submarines was attack by friendly aircraft, and the S-17 was attacked in February and August 1942 while on patrol.

While the submarines based at Coco Solo engaged in no combat (and only once claimed to have sighted a U-boat), it seems that the main benefit of the patrols was in terms of training for officers and enlisted men. In order to meet the demands of the ramped-up new submarine construction programme the turnover in crew was very high. In these circumstances, although submarine patrols off the Panama Canal made a modest contribution to defence, they were invaluable in affording experience at sea. The base contributed to the training of not only those crews assigned there, but of submariners passing through on their way to the Pacific war, who underwent a brief but rigorous period of exercises at the Canal Zone. [115]

The submarine base was disestablished in 1944. While the submarine base had been was handed over to Panama in 1979, 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.

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[112] For more detail, see https://wordpress.com/post/raytodd.blog/40369
[113] http://www.lost52project.org/S-26-Home.html
[114] https://ussnautilus.org/the-loss-of-uss-s-26-ss-131/
[115] *Coco Solo Submarines: Protecting the Panama Canal, 1941–1942* by Michael Sturma (*The Journal of Military History* 81 (October 2017).

THE U-BOAT WAR

Of the roughly 90 U-boats that entered the Caribbean, US Navy patrol craft destroyed 30, USAAF bombers four, and the RAF three.[12] Elsewhere, Allied anti-submarine forces combined in July 1942 to decimate Donitz's milk-cow fleet (U-487, U-459, U-461, U-462, and U-489) off the Azores and Spain, leaving just two resupply boats to service the U-boats making the long journey to the Caribbean.[13]

Between February and August 1942, no fewer than 330 vessels were sunk by U-boats and Italian submarines in the Caribbean, its approaches and the Gulf of Mexico. On the hand, despite the considerable threat from U-Boats in the Caribbean, and the significant effort put into patrol activities in what was termed the Panama Sea Frontier[116] to detect and deter them, the direct impact on the Canal and its operations from U-Boats was relatively minimal[117].

This is not to say that there was no impact –

> *Decreased shipping meant a reduction of exports of sugar, coffee, and fruits as well as a severe limitation of vital imports of oil and resultant reductions of electric power. Even more devastating were the widespread food shortages that affected Puerto Rico, the Dominican Republic, Cuba, Haiti, and the British and French West Indies, along with other areas of the circum-Caribbean such as Guatemala, Honduras, Nicaragua, Costa Rica, and Panama. Ironically, even as daily nutritional intakes declined, many people in the area were left in the dark about the cause, thanks to a US military blackout of news regarding the deadly submarine war.*[118]

[116] Based at Balboa and responsible for the defence of the Pacific and Atlantic approaches to the Canal and for naval shore facilities in the Central America region during the war.
[117] For information on shipping and U-boat losses in the Caribbean 1941-45: https://uboat.net/maps/caribbean.htm
[118] *The Caribbean Front in World War II: The Untold Story of U-Boats, Spies, and Economic Warfare* by José L Bolívar Fresneda **(**Princeton NJ: Markus Wiener Publishers, 2021): https://brill.com/downloadpdf/journals/nwig/96/1-2/article-p169_24.xml

The first U-Boat began operating in the Caribbean in February 1942 but, until June 1942, U-Boats had only entered the outer reaches of the Panama Sea Frontier. Then ships began to be sunk, with one in June only some 85 miles (137 km) from Colón. At the time of the June 1942 attacks, a gunboat[119] was the only active escort vessel available in the Panama Sea Frontier area. There were four destroyers engaged in offshore patrol but they lacked radar and did not detect any U-Boats. The US port of Cristobal was closed to outbound traffic and the Navy organised a "hunter-killer" group consisting of two destroyers, three MTB[120] and PBY Catalina patrol flying-boats, but found nothing.

As we have seen, the Panama Air Task Force for anti-submarine patrol work had been created in December 1941 under the supervision of the Caribbean Defense Command. However, shortages in the number of available (and effective) aircraft (long-range B-24 Liberators had been requested) made it clear that the well-designed plans that had been created for the defence of the command before the war did not stand a reasonable likelihood of being implemented.[121]

The main concentration was not on Canal traffic, but rather on oil traffic from Venezuela and Aruba, and South American trade (including all the US supplies of bauxite) which had to pass by Trinidad. At one time, 10% of shallow draft tankers operating out of Maracaibo, Venezuela to Aruba had been sunk.[122]

The brief outbreak of near-direct attacks affecting the Canal in June 1942, although involving no more than five U-Boats but seeing on average a ship a day sunk over a two-week period, resulted in further, additional defences being implemented on the Caribbean coast. These included anti-submarine nets at Port Limon in Costa Rica (where a U-boat had entered and sank a ship), increased air patrols (including now with radar-equipped PBY), and convoys being organised for shipping between the Canal and Guantanamo Bay, Cuba.

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[119] USS *Erie*.
[120] Motor torpedo boats (or "PT Boats" in US Navy parlance).
[121] As mentioned elsewhere in respect of the submarine operations from Coco Solo, the principal use of those craft was to underline how inadequate air patrols in the region were.
[122] https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=3672&context=etd

The increased defences saw the first U-boat lost in the Panama Sea Frontier, with the U-153 sunk by a destroyer, USS *Lansdowne*. On 22 August 1942, another U-boat, the U-654, was sunk by a B-18 bomber about 150 miles (241 km) off Colón.

Intensive U-boat operations in the Gulf of Mexico in September 1942 were to cause the cancellation of numerous sailings from New Orleans to the Canal Zone, and a congestion of cargo developed at that port.

However, in October 1942, for the first time in six months, there were no losses to U-Boats in the Gulf of Mexico and Panama Sea Frontier areas.[123] In fact, after January 1943, U-Boats were never again to be a major threat in the Caribbean.

Nevertheless, the Germans tried once more and, in October 1943, a minelaying U-Boat laid mines within four miles of the Colon breakwater. These caused no damage, and most were swept within a month.[124]

Then, in November 1942, a U-boat sank several vessels in the Canal approaches, resulting in all unescorted shipping being stopped, together with some convoys.

In total, in 1942 U-Boats in the Caribbean sank 336 ships of over 1 million tons. In 1943, losses fell to only 35 ships and 178,000 tons, and in 1944, only three ships of 15,000 tons were lost to U-Boats.

THE USAAF-USN FIGHT OVER ANTI-SUBMARINE MISSIONS

Before World War 2, the US Congress had mandated that the US Navy was not permitted to operate land-based combat aircraft. This followed the inclusion of torpedo planes in the US Navy's plans for Panama and Hawaii in the 1920s, which violated an Army-Navy agreement limiting the Navy to scouting and patrol planes.

[123] However, in November, losses to U-Boats rose in the Trinidad area
[124] The U-Boat involved went on to laid off the Gulf of Paria, Venezuela, again with little or no effect.

In the 1930s, the Army and Navy reached an understanding, with then Chief of Staff, General MacArthur, noting that –

> "*The naval air forces will be based on the fleet and move with it as an important element in performing the essential missions of the forces afloat. The Army air forces will be land based and employed as an element of the Army in carrying out its mission of defending the coasts, both in the homeland and in overseas possessions*".[125]

During the war, however, these rules forbidding the Navy landbased combat aircraft were gradually modified, as the Navy sought greater control over all aspects of naval warfare, and the Army needed all its units for combat operations in Europe and the Pacific.[126]

The two bodies may never have reached agreement if it were not for a new factory being built for Boeing in Renton, Washington in 1942. Boeing built it to make the Navy's new Sea Ranger patrol flying-boat. USAAF commander, General Arnold, thought it would be better served manufacturing B-29 Superfortress bombers for the USAAF, and in exchange for the Renton facility he offered the Navy a percentage of future B-24 Liberator deliveries. This deal meant the Navy would finally obtain a land-based patrol aircraft while the Army got its Superfortress plant.

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[125] https://media.defense.gov/2016/Mar/17/2001481634/-1/-1/0/PAGES%20FROM%20AVIATION%20IN%20THE%20US%20ARMY%201919-1939.PDF

[126] The success of the German U-boat offensive in the Western Atlantic after the US entry into World War 2, which led the War Department leadership to believe that the US Navy was not employing adequate anti-submarine tactics. In the application of airpower to combat the submarine threat, the War Department and Army leadership believed that aggressive "hunter-killer" tactics would prove more effective than the Navy's defensive tactic of providing aerial patrols in the vicinity of convoys. Navy leaders, meanwhile, contended that its defensive tactics were the best method of protecting shipping.
The Army-Navy Contest for Control of Land-Based Antisubmarine Aviation and the Military Unification Debate, 1942–1948 by George H Monahan (OUP, October 2019):
https://doi.org/10.5810/kentucky/9781949668049.003.0011
To meet the USAAF's objections and achieve better control and coordination between the services, the Army Chief of Staff, General Marshall, proposed in April 1943 a centralised anti-submarine organisation under the Joint Chiefs of Staff. Admiral King rejected this proposal but on 20 May 1943, established the 10th Fleet, a command with jurisdiction over all anti-submarine activities. On 9 July 1943, after several meetings, the Army and Navy agreed that the USAAF would withdraw from anti-submarine operations. In accordance with this agreement, the USAAF by 6 October turned over 77 B-24 configured with anti-submarine equipment to the Navy in return for an equal number of unmodified B-24 from the Navy allocation. From 31 August, the USAAF re designated anti-submarine squadrons as heavy bombardment squadrons:
https://uboat.net/allies/documents/usaaf_asw3.htm

The Navy took another step toward taking over full control of the anti-submarine effort when, on 10 May 1943, the 10th Fleet was established. This was a "paper" fleet, without ships or aircraft, but with as its mission the directing and coordinating all Navy anti-submarine activities worldwide. One aspect that the establishment of the new fleet resolved, was that unity of command continued to be a major problem as naval anti-submarine units within the Caribbean Sea Frontier were under command of Commander Caribbean Naval Sea Frontier, and not under the direct command of the Commander of the Caribbean Defense Command. The Navy's resistance to having a flag officer (general officer) assigned to the Command had delayed their full integration into the structure until 1942.

It was not until November 1945 that the War Department made crystal clear that the Panama Canal Department Commanding General had control of the 15th Naval District, but it also emphasised that unity of command existed by virtue of his being Panama Canal Department Commander, and not by virtue of being commander of the Caribbean Defense Command. It was said that this arrangement had not caused major conflicts only because military planners had made sure to make the head of the Command and the Commanding General the same person.

In June, at a conference held between Arnold and senior naval officials, an arrangement was made in which the USAAF would turn over its anti-submarine B-24 Liberator bombers in exchange for an equal number of unmodified Liberators originally allocated to the Navy. The head of the Navy, Admiral King notified Army Chief of Staff, General George Marshall, on 14 June that "*The Navy will be prepared to take over all anti-submarine air operations by 1 September 1943*."[127]

[127] https://warfarehistorynetwork.com/article/sub-hunters-over-the-bay-of-biscay/

US NAVY BLIMPS[128]

During the war, Panama saw deployment of detachments from US Navy blimp squadrons ZP-15, ZP-21 and ZP-22.[129] In the escort and patrol roles, the K-ships blimps employed possessed the advantages of long endurance,[130] combined with the ability to hover and make slow-speed searches at altitudes of 100 feet (30.4 metres) or less for extended periods of time. They also had a use in locating and assisting in the rescue of many vessels, aircraft and persons in distress. The ability to operate successfully in conditions of reduced visibility made it possible for such airships to perform their anti-submarine missions when low ceilings and poor visibility grounded other types of aircraft.

They could be equipped with an ASV-type radar unit capable of detecting objects at 90 miles (144.8 km). Underwater search equipment included sonobuoys and MAD gear[131]. The armament for the K-ship normally included four torpex-filled Mk 47 (350 lb or 159 kg)) depth bombs, two on external bomb racks and two in the bomb-bay, plus machine guns.

In August 1943, the US Navy blimp (or LTA – Lighter Than Air) programme found itself in the middle of a bitter turf war between the USAAF and Navy for control of land-based air anti-submarine warfare (see above). This was just as the blimp was getting effective sensors and proving its worth – but cutbacks affected development, with the killer blow for the programme being the high casualty rate from basic aviation accidents, and the failure to score a single clear-cut U-boat kill.[132]

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[128] See https://wordpress.com/post/raytodd.blog/40561

[129] https://www.history.navy.mil/content/dam/nhhc/research/histories/naval-aviation/dictionary-of-american-naval-aviation-squadrons-volume-1/pdfs/Dict-of-Amer-Avia-Sq-v1.pdf

[130] The K-ship's normal endurance was over 26 hours at cruising speed.

[131] The Magnetic Anomaly Detector gear depended on the submarine's hull causing disturbance in the plant's magnetic field. It was developed in the US under Project *Sail* under the auspicious of the Naval Ordnance Laboratory and the National Defense Research Committee. Tests using a B-18 bomber on 10 June 1942 were successful and resulted in orders for 200 sets: *The Airship in World War II: Assessing a Unique Element in Naval Air Power* by Martin L Levitt (Air Power History, Vol 39 No 3 Fall 1992, Air Force Historical Foundation).

[132] *Forgotten Weapon: US Navy Airships and the U-boat War* by William T Althoff (Annapolis: Naval Institute Press, 2009)

THE NAVY TAKES OVER THE TRANSIT GUARD ROLE

From 20 February 1942, the Navy finally took over from the Army the Transit Guard functions for ships passing through the Canal, using Marines from Rodman or Coco Solo. The Navy employed five or six officers and around 350 marines, with 25 to 30 sailors attached.

The Navy adopted a system with five types of guard –

- Ship's guard or full guard (the standard Transit Guard arrangement);
- Hazardous cargo guard – for ships carrying hazardous cargo and temporarily located at the piers, docks, anhorages or moorings;
- Emergency guard – a reserve force available to the Port Captain in the event of riot, mutiny, fire, attempted sabotage etc;
- Naval boarding party guard – for placing on ships in Canal waters, to protect it and assit in clearance of the vessel; and
- Courtesy guards – for use on vessels of other than the US Navy in transit.

Precautions taken aboard a transiting ship included ensuring that any guns were unloaded and then guarded[133].

THE LATTER PART OF THE WAR

The War Department reduced the Caribbean Defense Command to the status of Category "B" in April 1943 (meaning that it was considered a coastal frontier that "may be subject to minor attacks"), and the blackout in Panama was also partially lifted that month.

From April 1943, Navy patrol aircraft began to gradually replace USAAF bombers on the Pacific patrols, with squadrons stationed at Salinas in Ecuador and Corinto in Nicaragua. In October 1943, with additional squadrons becoming available, the Navy finally took on the

[133] *Security and Defense of the Panama Canal 1903-2000* by Charles Morris, Panama Canal Commission: https://original-ufdc.uflib.ufl.edu/AA00047733/00001/6j

entire Pacific security patrol role. As we have seen, in mid-1943, the Army had agreed to turn over all of its anti-submarine operations to the Navy, and in August 1943 the relevant agreement came into force. However, during the period of renewed U-boat threat from 23 November 1943 to 8 April 1944, the USAAF took on more of the anti-submarine work in the Caribbean, carrying out anti-submarine sweeps on behalf of the Navy.

In early 1943, the new 10th Fleet had been established for overall command of all anti-submarine operations in that part of the Atlantic under US strategic control – this meaning that a commander of forces in the Panama Sea Frontier was serving three superiors (the Caribbean Defense Command, the local 15th Naval District and the theatre-wide 10th Fleet).[134]

The peak of construction activity on behalf of the Navy had been reached in Summer 1943, after which three of the four major contracts were terminated. After this, in April 1944, the Navy awarded only several smaller lump-sum contracts were awarded for minor additions and improvements and to cater for ongoing needs.[135]

The submarine base at Coco Solo was disestablished in 1944. Then, in June 1944 the 10th Fleet itself was dissolved, and the Chief of Naval Operations directed that all Lend-Lease bases in the region, except Trinidad, be put on caretaker status.

THE WIND-DOWN AND END OF THE WAR

As early as 1944, preparations were underway to begin downgrading or eliminating defences in many of the areas where they had been emplaced.

[134] *Security and Defense of the Panama Canal 1903-2000* by Charles Morris, Panama Canal Commission: https://original-ufdc.uflib.ufl.edu/AA00047733/00001/6j

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

On 22 April, the Secretary of the Navy ordered that routine inshore and offshore patrol, mine sweeping and patrol craft escort of shipping in inactive threat areas be discontinued except in the case of "*important harbors*".[136]

On 29 May, the entire region was re-defined as being a "non-combat area", and two days after the D-Day landings, Defense Category "A" was lifted altogether, and June also saw the 10th Fleet dissolved and all Lend-Lease bases except Trinidad be put on caretaker status. Overall, the lifting of wartime footing continued throughout the entire area of responsibility for the Caribbean Defense Command for the latter half of 1944.

One type of defence that was thought to have had less effect than expected were the minefields and, considered of dubious usefulness, all were removed by October 1945.

In November 1947, the Caribbean Defense Command was formally renamed the US Caribbean Command, and was reorganised with new goals and responsibilities.

AIRCRAFT

Aside from its blimps, the most obvious US Navy aircraft seen in Panama before and during the war would have been its patrol flying-boats.

There were other types, such as the OS2N-1 Kingfisher, built under licence by the Naval Aircraft Factory, of which at least four were lost in Panama. A two-seater, it could use either a fixed tail undercarriage or operate as a seaplane on floats. The type had been ordered as the OS2U in 1937, primarily for use as a scouting aircraft based on large warships, as a seaplane launched by catapult. Armed with a fixed forward and a dorsal machine gun, it could also carry two small bombs. It was also used for air-sea rescue and in the anti-submarine role by the Navy.

[136] San Juan, Guantanamo, Trinidad, and Aruba-Curacao.

Probably the most famous flying-boat of the US Navy, and possibly of all time, was the twin-engine Consolidated PBY Catalina. This had first flown in 1935, initially as a pure flying-boat[137] (later there would be amphibian versions too – and was used as such by the USAAF as its OA-10). It saw extensive use throughout the war. Coco Solo was an early base for the PBY, with the initial PBY-1 model being used by patrol squadron VP-3 there in the mid- to late 1930s. Various models (PBY-3 and PBY-5) would be used from the base, and as early as 1941-42, there were 28 examples present.

Another type used in Panama was the Consolidated PB2Y Coronado. This was a larger, four-engine flying-boat that had seen the first prototype ordered in 1936. Due to the delivery of large numbers of PBY, the first production orders were only placed in 1939. Delivered from 1940, each example cost as much as three PBY. In Panama, the type was used by US Navy patrol squadrons from Coco Solo, replacing PBY on Pacific patrols. It would also see deployment to the Galapagos Islands and, with the reduced U-boat threat, latter use as a long-range transport. In the patrol role, the PB2Y was equipped with radar, and local modifications to the aircraft while at Coco Solo included removal of all interior heating units, de-icing equipment, armour-plating and engine superchargers.

The gull-wing Martin PBM Mariner flying-boat first flew in 1939 and, although overshadowed by the PBY, remained an important type during the war, operational from 1941, and seeing continued postwar use, with production only ending in 1949. Faster than a PBY (for which it was the intended successor), it could also carry a heavier warload further. The type's first assignment was with US Navy patrol squadron VP-32 stationed at the NAS Coco Solo. It would feature a distinctive radar radome above the cockpit.

PBM-3S was a specialised, lightened anti-submarine version of the Mariner, with extra fuel and two 325 lb (147 kg) depth charges, being built from 1944. It served exclusively or nearly so in the Atlantic, particularly in defence of the Panama Canal. Postwar, the type saw continued use from Coco Solo well into the 1950s.

[137] A flying-boat can only land on water (and needs a beaching gear trolley if it comes ashore), whereas an amphibian also has a wheeled undercarriage and can land and take-off from either land or water.

Following the 1943 agreement with the USAAF on the use by the Navy of land-based patrol bombers, one of the types adopted for the role and used from Panama was the Lockheed-Vega PV-1 Ventura.[138] Six of this twin-engine design were deployed to Coco Solo from Puerto Rico in March 1944. However, they were to leave again in July, travelling to NAS Beaufort in South Carolina.

Latterly, with the reduction in the U-boat threat late in the war, the flying-boats saw increasing use in the transport role.

(NON-EXHAUSTIVE) US NAVY AIRCRAFT LOSSES[139]

VP-1	PB2Y-3 Coronado	Lost in the ferry flight from San Diego
	18 October 1943	
	While moored at Puerto Castilla, Honduras and attempting a take-off in high winds. After taxing all night, another take-off was attempted but the aircraft was damaged and one engine provided no power. In rough seas, the flying-boat eventually sank and just two crew survived, being washed up ashore nine days later.	
VP-24	PBY-5 Catalina	Lost at Coco Solo
	19 August 1942	
	On take-off at night, crashed into the Panama Canal tug *Alhajucia* when about 15 feet (4.5 metres) off the water. The PBY was lost, the tug damaged and set of fire by fuel from the aircraft. Eight of the aircrew were lost (just one surviving), together with six of the tug's crew, with five more injured.	
	PBY-5 Catalina	Lost at Coco Solo
	12 January 1943	
	Hit a submerged object on take-off and managed to reach the seaplane ramp at the base before the aircraft sank. Crew and passengers were unhurt.	

[138] The B-24 Liberator, famous for its use in the role on the North Atlantic, was not used by the Navy in Panama, although adopted as the PB4Y. The Liberators used in anti-submarine patrols from Panama had all been from USAAF units.

[139] *VPNavy! USN, USMC, USCG and NATS Patrol Aircraft Lost or Damaged During World War II* By Douglas E. Campbell (Syneca Research Group Inc, 2018).

VP-206 PBY-5 Catalina Lost from Galapagos Islands

14 October 1943

The PBY was forced to land on open sea while on patrol, and ruptured fuel tank had flooded the aircraft with fuel. No word of the aircraft's trouble reached the base and Navy aircraft began a search, with USAAF aircraft taking up the search the following day (with a Liberator lost when it crashed into a small mountain on the Cocos Islands). Five USN PBM Mariners also began a search, and one spotted the disabled PBY, with a destroyer despatched to rescue the crew. However, an Esso tanker nearby picked up the seven aircrew – but damaged the PBY in the process and it began to sink, being finally sunk by naval gunfire.

VP-209 PBM-3S Mariner Lost at Salinas, Ecuador

14 March 1944

The PBM crashed on take-off and was so badly damaged that it had to be written off.

PBM-3S Mariner Damaged at Coco Solo

9 September 1944

Taxing before take-off on night patrol, the PBM struck the seaplane ramp and seawall resulting in major damaged. It was repaired and was flying again by 17 September (see below).

PBM-3S Mariner Damaged at San Blas Bay

17 September 1944

The PBM damaged on 9 September (see above) was on a training flight from San Blas Bay. On take-off an engine cowling came away and was lost. The PBM landed safely with minor damage.

PBM-3C Mariner Damaged at San Blas Island

17 September 1944

Ran aground on a coral reef on take-off, following a forced landing. Extensive damage caused to the aircraft, and the Naval Air Station's Assembly and Repair Shop recommended that it be written off.

VPB-1 PB2Y-3 Coronado Damaged at Lake Managua, Nicaragua

24 November 1944

Operating from Corinto in Nicaragua, the PB2Y took off with a liberty party bound for Managua. It landed in adverse weather and gusty wind and was damaged, and sank during an attempt to beach, having also been damaged by offshore underwater obstructions. It took a 10-wheel truck, a caterpillar tractor and two of the aircraft's own engines in reverse pitch to pull the PB2Y off the rocks.

PB2Y-3 Coronado Damaged at Corpus Christi, Texas

21 February 1945

The squadron had returned to Coco Solo on 19 February, being there relieved by VPB-209. While on a ferry flight to San Diego, it landed at Corpus Christi and moored on the water (there was another aircraft there but only one set of beaching gear). Strong winds during the night produced rough seas and, while taxing to reach the lee of a breakwater, the aircraft was abandoned when it appeared it would sink. It was then washed up on the beach, but the damage was so great that the aircraft was written off.

Ray Todd

Panama City

Republic of Panama

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