

Preface

There is nothing more enticing, disenchanting, and enslaving than life at sea.

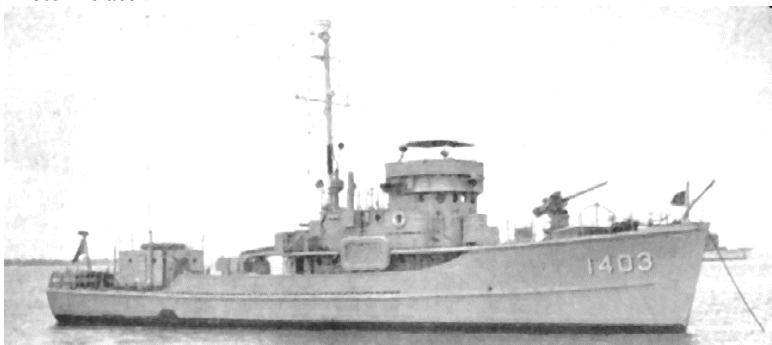
—Joseph Conrad

Photo Preface-1



Yard minesweeper USS YMS-97 in San Francisco Bay, 1945-1946. Built by Colberg Boat Works, Stockton, California; commissioned 11 April 1942. Naval History and Heritage Command #NH 81376

Photo Preface-2



Patrol craft sweeper USS PCS-1403, circa 1953. Built by Colberg Boat Works, Stockton, California; commissioned 17 February 1944. Philippine Navy photograph courtesy of NavSource

This book, titled *Kissing Cousins*, for reasons forthcoming, results from my curiosity about what exactly the U.S. Navy's little-known patrol craft sweepers (PCS) did in World War II. Research revealed that none of the 136-foot wooden vessels performed any minesweeping. Almost all of the Atlantic Fleet PCSs, and a few of those in the Pacific Fleet, were assigned training ship duties in support of the Navy's Sound (Sonar) Schools at Key West, Florida and San Diego, California. Sixteen of the Navy's PCSs earned battle stars in 1944-1945, all in the Pacific Theater—in the Mariana, Palau, and Philippine islands, and at Okinawa.

The term "kissing cousins" refers to something that is of a very similar character to another thing of the same type. Its use herein is intended to convey that the PCSs were spawn of YMSs, having been completed using hulls laid down as YMSs. Eight U.S. Navy AGSs (hydrographic survey ships) were also "cousins" of the aforementioned, having been converted from YMSs and PCSs for use in mapping waters off assault beaches, and the approaches to and waters of captured harbors. Twelve PCSs, four AGSs (converted PCSs), and Fifty-six YMSs earned battle stars at Okinawa. Sharing common dangers, they were practically indistinguishable, except for their hull numbers.¹

Before proceeding with greater details regarding the pedigree of these ships, it's appropriate to first introduce another group of "kissing cousins," whose exploits are included in the book. These were United States and Royal Australian Navy mine disposal personnel, some of whom plied their trade together, all sharing the same danger of being blown up should they make a mistake. To help prevent such tragedies, the U.S. Navy established the Mobile Explosives Investigation Unit (MEIU) No. 1 on 17 February 1943, followed by MEIU No. 4 on 12 June 1944. MEIU No. 1 was based at Brisbane, Australia, and No. 4 at Pearl Harbor. Their mission was to examine and gather information on all types of enemy ordnance found in the Pacific Area, and pass such information immediately to all interested parties.²

Of course, examination and information gathering from recovered enemy ordnance and equipment came after MEIU personnel rendering it safe. Evidence of the vital contributions of the MEIUs came in the form of two Navy Unit Commendations, awarded to them by the Secretary of the Navy for the following service:

Navy Unit Commendations		
Command	Period	Operations / Areas
MEIU No. 1	1 Mar 43-31 Dec 44	New Guinea and New Britain Campaigns and Invasions of Leyte and Mindoro Islands, Philippines.
MEIU No. 4	4 Jun 44-30 Jun 45	Pacific Area ³

U.S. Navy and Royal Australian Navy personnel first involved in rendering mines safe (Commonwealth term) were trained by Royal Navy personnel who had already gained these skills. Thus, American, Australian, and British officers and ratings, voluntarily engaged in such work, were “kissing cousins” of a sort.

Photo Preface-3



19 December 1939 – Lt. Comdr. John Ouvry at HMS *Vernon* showing King George VI the German magnetic ground mine he rendered safe on the mudflats at Shoeburyness on 23 November 1939. The projections were intended to prevent the cylindrical mine rolling across the seabed.
Courtesy of Rob Hoole

YARD MINESWEEPERS (YMS) AND PATROL CRAFT SWEEPERS (PCS)

A cursory glance at the photographs on the first page, one of a YMS (yard minesweeper) and the other of a PCS (patrol craft sweeper), will reveal that they were “kissing cousins.” Both were small, 136-foot wooden-hulled ships built in World War II, at Colberg Boat Works, Stockton, California. The contributions of the much larger numbers of YMSs to the war effort are known to some people, mainly sweep sailors, but those of the PCSs—built on the same YMS hulls—are known only to a few.

Books and other references devoted to small U.S. Navy ships often group PCSs with below-listed naval combatants; and some erroneously refer to them as sub-chasers, or patrol craft outfitted for minesweeping:

- 110-foot wooden-hulled subchasers (SCs)
- 173-foot steel-hulled sub-chasers (PCs)
- 180-foot steel-hulled patrol craft escorts (PCEs)

WWII submarine chasers were small, fast naval vessels, specifically intended for anti-submarine warfare. They had good speed and range, were fitted with sonar to find submarines, and had sufficient armament to dispatch them. PCSs—having the same type high-torque, diesel engines fitted in YMSs to enable them to pull heavy sweep gear astern—could make only 14 knots, rendering them unsuitable to stalk, chase, outmaneuver, and kill enemy submarines capable of 18 knots on the surface. Before providing more details about patrol craft sweepers, an overview of YMSs, from which they derived, is in order.

YARD MINESWEEPERS

The largest production run of any World War II warship was not, as one might imagine, a particular class of destroyer, frigate, or submarine, but instead 561 scrappy little 136-foot wooden-hulled vessels characterized by Arnold S. Lott in *Most Dangerous Sea* as belligerent-looking yachts wearing grey paint. Based on guidance provided by Capt. J. M. Irish, USN, the New York Superintendent of Shipbuilding, plans emerged from the drawing boards of Henry B. Nevins Yacht Builders of City Island, New York. The final design product was a smart, trim vessel both rugged and proportioned, possessing a high foc’s’le, and adequate freeboard. The hull had the pleasant deck sheer one might expect from a designer of yachts. Famed architect George F. Crouch (noted creator of speedboats) played a major conceptional role, in providing the

diminutive vessels with the seaworthiness, stamina, range, and habitability necessary to cross vast ocean expanses.⁴

However, not everyone was enthusiastic about the resultant vessel dubbed yard minesweeper (YMS). One critic acknowledging that the vessel was a ship of modest tonnage with good power, described it as a compromise between a trawler and a large motor launch, with a high superstructure that made it favorable for rolling. The assessment conceded that the design was acceptable on the basis of a rationalization that whereas the ship did not have extraordinary nautical qualities, these poor characteristics would not penalize it since the YMS was intended to operate close to ports and not in the open sea.⁵

Because of their small crew size, cramped quarters, and limited storage for food and fuel, the Navy concluded YMSs would only be able to operate from a naval base or yard for several days before having to return for support. Accordingly, the motor minesweepers were designated Naval District craft and known as “Yard” minesweepers. However, the necessities of war soon dictated otherwise, with the result in their operating far from home waters, plying the oceans of the world from the Aleutian Islands to Cape Horn.⁶

Although designed primarily to sweep mines, they made many and varied contributions to war efforts in every theater. Between sweeping duties, they were commonly assigned convoy escort duty; carried out anti-submarine screening assignments; used their sonar to detect submarines; and, equipped with depth charges, attacked if opportunity presented itself. In cases of enemy aircraft attack when on convoy duty, their main gun mount and AA guns supplemented the batteries of larger ships of the screen. They were also ideal, being very maneuverable with a low freeboard (distance from the main deck to the waterline), for rescuing survivors of sinking ships. YMSs also escorted tank landing ships and landing craft to advanced areas; shepherded freighters; towed disabled ships; and delivered supplies, mail, and personnel to destinations not accessible to larger vessels.⁷

The 136-foot vessels, displacing only 320 tons, could be propelled by their two 500hp propulsion diesel engines to a top speed of 14 knots. With a 24-foot 6-inch beam and 8-foot draft, they could traverse restricted waters that denied passage to larger ships. In armament, they were relatively well-equipped for their size, boasting a single barrel 3"/50-caliber gun mount on the foc's'le and two single Oerlikon 20mm anti-aircraft guns on the port and starboard side just aft of the flying bridge. To provide an anti-submarine capability, they carried depth charges, which “K guns” (projectors) located amidships, delivered off

the port or starboard side. They also had depth-charge racks on the fantail from which charges could be rolled clear of the stern.⁸

Snug but tidy accommodations berthed a complement of 30: three officers and 27 men. As crew berthing could accommodate 30 men, in a pinch there was room for a couple more. It was not so with officers, who were provided only two cramped cabins, one the preserve of the commanding officer and the other shared by the executive and another officer. If a fourth one was assigned, which became the convention as the ships increasingly remained at sea for longer periods, the most junior normally slept on a cot in the pilothouse or elsewhere until a bunk became available owing to the departure of another officer. A representative “wardroom” was comprised of the commanding officer, executive officers, engineering officer, and gunnery officer with, below in the “Chiefs’ Mess,” a boatswain mate, motor machinist mate, quartermaster, and yeoman rounding out the ship’s leadership.⁹

Duty aboard the wooden sweeps was generally not without some hardship, imposed either by operations, equipment limitations, or both. Of course, some ships fared better than others because they were outfitted with the latest equipment and other niceties as a result of their assigned tasks or areas of operation.¹⁰

Heavy weather could tax a saint’s patience. The minesweepers could roll 45 degrees when in the trough (seas directly on the beam) hour after hour as the crewmen held on, their weight first on one knee and then the other to take the strain. However, a balmy day and the smooth seas it brought resulted in noticeably higher spirits. During such times, it was a delight to ride a jaunty little sweeper with handling characteristics the envy of larger ships.¹¹

SHIP CONSTRUCTION

Five hundred sixty-one wooden YMSs (with three variants of the basic design) were hurriedly built in 35 boatyards located across the East, West, and Gulf Coasts of the United States, as well as on the Great Lakes. The construction used classic plank-on-frame methods. The initial 164 ships were comprised of YMS hulls 1 through 134 and BYMS hulls 1 through 30, the latter denoting “British” YMS-class ships which were transferred directly to the Royal Navy.¹²

The first series of ships was identifiable by two stacks and other lesser distinguishing features: a rounded bridge face and flying bridge, double-arm davit between the two funnels, sweep reel aft, rounded vent pipes (one behind the bridge and the other aft of the second stack), and separate foc’s’le and bridge decks.¹³

For the second series (YMS hulls 135-445 and 480-481 and BYMS 31-80), the ships' engine exhausts were trunked together into a single stack. Other design changes were made as well: an angled bridge-face, a double-arm davit aft of the stack, a sweep reel-well farther forward, squared vent pipes aft of the stack, and merged foc's'le and bridge decks. The latter change resulted in a broader deck from the bow aft to the chart house, which provided better fairing at the bow and additional room in the galley and crew's quarters. Importantly, because the wider bow turned away more water, the modification resulted in enhanced safety in heavy seas, as less green water was taken over the foc's'le.¹⁴

The final variants (hulls 446-479) were "sideburners" without any stacks at all. Engine exhausts were simply vented to the atmosphere through hull ports which, although their adoption decreased costs and increased stability, it did not endear the noxious stack-gas-producing sweeps to ships moored alongside.¹⁵

PATROL CRAFT SWEEPERS

Photo Preface-4



Patrol craft sweeper USS *PCS-1424* fitted with "Mousetrap" anti-submarine rocket launchers forward (each tube is the launcher of a single rocket). Probably photographed by her builder, Burger Boat Company, at Manitowoc, Wisconsin, on 24 November 1943. Naval History and Heritage Command photograph #NH 97492

In January 1942, German U-boats began a blitz on shipping along North America's Eastern Seaboard, resulting ultimately in the sinking of hundreds of ships off the East and Gulf coasts of the United States. A shortage of submarine chasers compelled top Navy leadership to undertake a number of emergency measures to overcome this serious

deficiency in anti-submarine capabilities. (The U-boats reign of terror off America's Eastern Seaboard and in South African waters, is the subject of Rob Hoole's and my recent book, *Send Some King's Ships: U.S. Navy, Royal Naval Patrol Service, and Royal Canadian Navy Ships combating German U-boats off North America's Eastern Seaboard, and RNPS and South African Naval Forces vessels in African Waters as well, 1942-1945*.) Constructing sub-chasers on the hulls of the YMS class was one such answer to the shortage. In June 1942, the hybrid program was approved, and an order for 100 ships of that ilk dubbed "PCSs" followed. (Fewer numbers of PCSs were ultimately built).¹⁶

It was envisioned that removal of a diesel-generator (presumably the minesweep generator fitted in YMSs), would enable greater storage of fuel (increasing ship's range and endurance), and increased armament. A second 3-inch gun, a "Hedgehog" projector and its anti-submarine projectiles, and increased depth-charge stowage was desired. However, calculations revealed these weight additions would significantly degrade ship stability. Accordingly, weapon enhancements were limited to the addition of a single 40mm anti-aircraft gun and smaller Mousetrap anti-submarine launchers. With these improvements over YMS armament (3-inch gun mount, two 20mm anti-aircraft guns, and depth charges), that of the patrol craft sweepers comprised:

- One 3"/50-caliber gun mount
- One 40mm Bofors anti-aircraft gun
- Two 20mm Oerlikon anti-aircraft guns
- Four K-gun depth charge throwers and two depth charge racks
- Mousetrap Mk 20 anti-submarine rocket launchers¹⁷

Photo Preface-5



Mousetrap Mk 20 rocket projector.
National Archives photograph #80-G-701380

Ultimately, fifty-nine patrol craft sweepers were built. Employing the same basic construction methods, they shared general characteristics such as hull form, superstructure, engines, shafts, rudders etc., with those of the yard minesweepers, but with some modifications. In addition to their greater armament, the PCSs had a range of 3,000 nautical miles at 12 knots, and a larger crew size than the YMS complement of 59 officers and men.¹⁸

In common with other YMS and PCS-class vessels built from the same standard plans, there were some variances between ships produced in different yards as a result of local construction techniques and availability of materials. However, as shown by the photographs of examples of each at the chapter head (from Colberg Boat Works in Stockton), YMSs and PCSs constructed in the same yards were similar. It's important to note that yards which built YMSs did not necessarily also build PCSs. For example, Stephen Brothers Boatbuilders, also located in Stockton, constructed YMSs, but not patrol craft sweepers.

“Kissing Cousins” from Stockton, California			
Ship	Shipyards	Ship	Shipyards
<i>YMS-94</i>	Stephen Brothers Boatbuilders	<i>YMS-383</i>	Colberg Boat Works
<i>YMS-95</i>	Colberg Boat Works	<i>YMS-384</i>	Colberg Boat Works
<i>YMS-96</i>	Stephen Brothers Boatbuilders	<i>YMS-385</i>	Colberg Boat Works
<i>YMS-97</i>	Colberg Boat Works	<i>YMS-386</i>	Colberg Boat Works
<i>YMS-98</i>	Stephen Brothers Boatbuilders	<i>YMS-387</i>	Colberg Boat Works
<i>YMS-99</i>	Colberg Boat Works	<i>YMS-388</i>	Colberg Boat Works
		<i>PCS-1402</i>	Colberg Boat Works
		<i>PCS-1403</i>	Colberg Boat Works
		<i>PCS-1404</i>	Colberg Boat Works

Navy leadership designated the vessels built on YMS hulls—originally intended to be sub-chasers, but which carried less armament, and were of modest speed—patrol craft sweepers. The inclusion of an “S” in “PCS” may have been to acknowledge that the vessels were offspring of YMSs or, perhaps, to leave open the possibility they might eventually be employed as minesweepers.

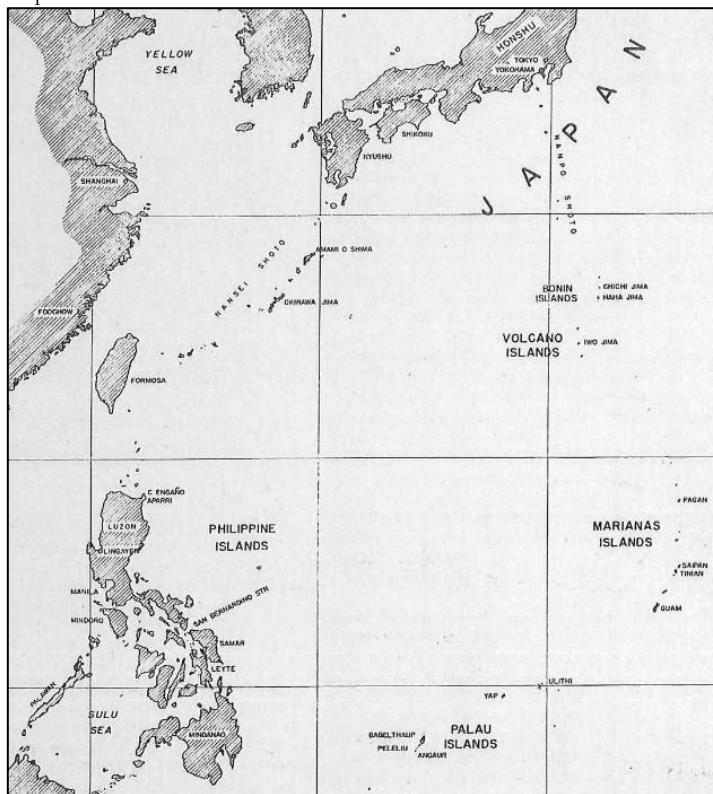
FIRST COMBAT OPERATIONS IN THE MARIANAS

On 15 December 1943, USS *PCS-1459* was commissioned, the first patrol craft sweeper completed in a West Coast yard. She and eight other newly-built West Coast PCSs following her were rushed through post-construction “shake-down” and training periods, and dispatched to the Western Pacific to join other naval forces gathering for the assault and occupation of the southern Mariana Islands (Saipan, Tinian, and Guam).

By June 1944, Gen. Douglas MacArthur's Australian and American forces had advanced northwestward up the east coast of Papua and New Guinea, and into the Admiralty Islands along his road back to the Philippines. Adm. William Halsey's forces had concurrently moved northwestward up the Solomons to Green Island and Emirau Island in the Bismarck Archipelago, and would later join MacArthur's Seventh Fleet for the invasion of the Philippines.

Meantime, Adm. Raymond Spruance's forces were driving through Micronesia in the Central Pacific—the Gilbert, Marshall, and Caroline islands—at the same time as those of MacArthur approached the Philippines. In order to gain airbases capable of supporting continued operations across the Central Pacific to the Philippines and on to Japan, the U.S. needed to take the heavily defended Mariana Islands.

Map Preface-1

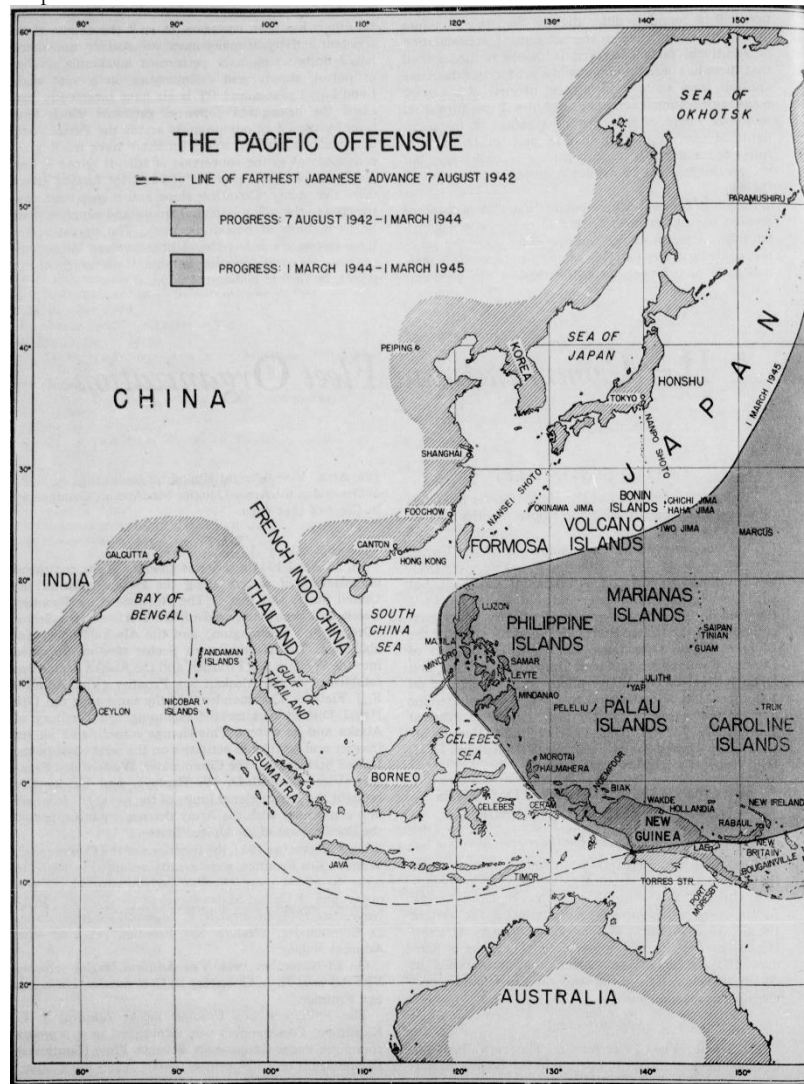


Southern Japanese islands and surrounding areas

United States Navy at War, Second Official Report to the Secretary of the Navy Covering Combat Operation March 1, 1944, to March 1, 1945 by Fleet Admiral Ernest J. King

The combat operations covered in this book all took place within the boundaries of the preceding map. The following map provides an overview of the Allies march across the Pacific, from 7 August 1942 through 1 March 1945, toward the Japanese home islands.

Map Preface-2a

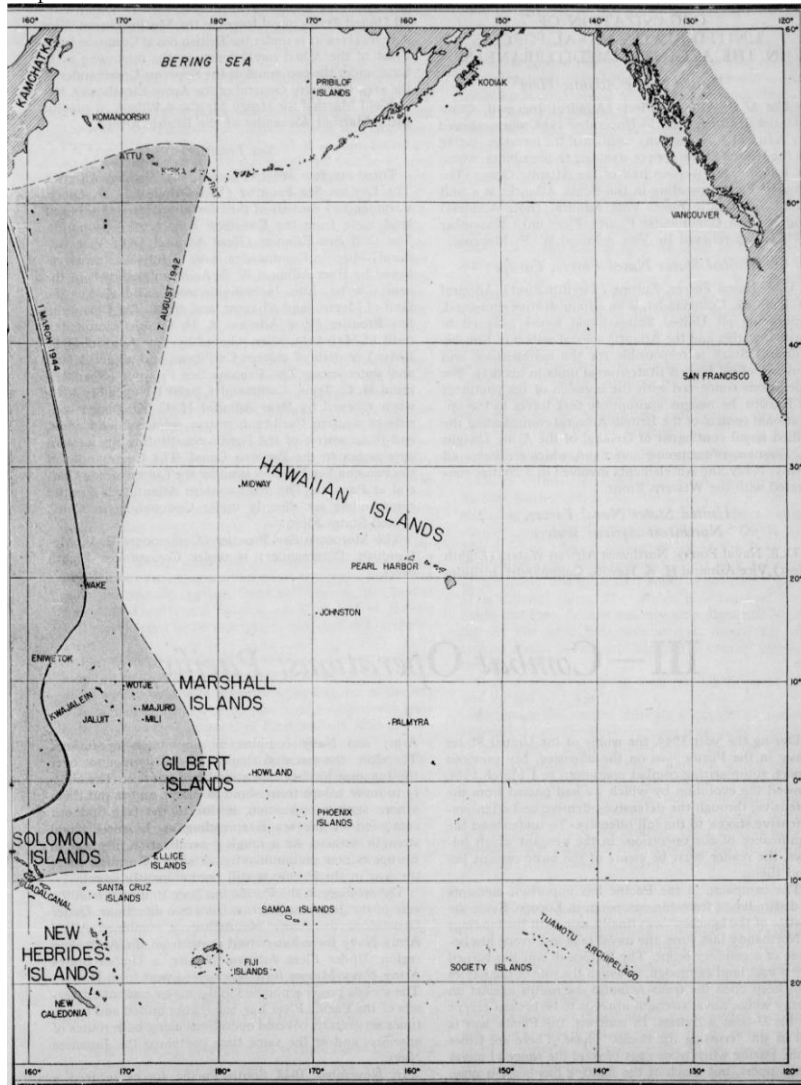


Movement of Allied Forces up through the South, South West, and Central Pacific toward the Japanese home islands (eastern portion of map is on the following page)
United States Navy at War, Second Official Report to the Secretary of the Navy, covering combat operations March 1, 1944, to March 1, 1945 by Fleet Admiral Ernest J. King

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The operations in the Pacific Theater for which patrol craft sweepers earned one or more battle stars, involved island conquests during Allied forces movement toward the Philippines, assault landings in the Philippines, and the assaults of Iwo Jima and Okinawa.

Map Preface-2b



DUTIES AND ASSIGNMENTS OF THE ATLANTIC AND PACIFIC FLEET PATROL CRAFT SWEEPERS

The following summary table lists the fifty-seven patrol craft sweepers and identifies: (1) which ships were built in U.S. East Coast/Great Lakes shipyards, or in yards on the West Coast, (2) their initial or subsequent employment, and (3) ex-PCSs named following conversion to AGSs and unconverted PCSs later designated as Reserve Training Ships.

East Coast/Great Lakes Builders (33)			West Coast Builders (26)		
Ship	Change	Named	Ship	Change	Named
PCS-1376		<i>Winder</i>	PCS-1396	AGS-8	<i>Dutton</i>
PCS-1377	ASW TS		PCS-1397		
PCS-1378	ASW TS	<i>Provincetown</i>	PCS-1399		
PCS-1379	PCS(C)		PCS-1400		<i>Coquille</i>
PCS-1380	ASW TS	<i>Rushville</i>	PCS-1401		<i>McMinnville</i>
PCS-1381	ASW TS		PCS-1402	PCS(C)	
PCS-1382	ASW TS		PCS-1403	PCS(C)	
PCS-1383	ASW TS	<i>Attica</i>	PCS-1404	AGS-9	<i>Amistead Rust</i>
PCS-1384	ASW TS	<i>Eufala</i>	PCS-1421	PCS(C)	
PCS-1385	ASW TS	<i>Hollidaysburg</i>	PCS-1422		
PCS-1386	ASW TS	<i>Hampton</i>	PCS-1441	ASW TS	
PCS-1387	ASW TS	<i>Beaufort</i>	PCS-1442	ASW TS	
PCS-1388	AGS-7	<i>Littlehales</i>	PCS-1444		<i>Conneaut</i>
PCS-1389	PCS(C)		PCS-1445	ASW TS	
PCS-1390	PCS(C)		PCS-1446	ASW TS	
PCS-1391	PCS(C)		PCS-1448		
PCS-1392	ASW TS	<i>Deming</i>	PCS-1451		
PCS-1405			PCS-1452	PCS(C)	
PCS-1413	EPCS	<i>Elsmere</i>	PCS-1455	PCS(C)	
PCS-1414			PCS-1457	AGS-10	<i>John Bliss</i>
PCS-1417	ASW TS		PCS-1458	AGS-6	<i>Derickson</i>
PCS-1418	PCS(C)		PCS-1459		
PCS-1419			PCS-1460	PCS(C)	
PCS-1420			PCS-1461	PCS(C)	
PCS-1423	ASW TS	<i>Prescott</i>	PCS-1464	AMc-203	<i>Medrick</i>
PCS-1424	ASW TS		PCS-1465	AMc-204	<i>Minah</i>
PCS-1425					
PCS-1426	ASW TS				
PCS-1429	PCS(C)				
PCS-1430					
PCS-1431	ASW TS	<i>Grafton</i>			
		EPCS			
PCS-1449	ASW TS				
PCS-1450					

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AGS: Hydrographic survey ship

AMc: Coastal minesweeper

ASW TS: Anti-submarine warfare training ship

Shading identifies ships awarded battle stars; all were for duty in the Pacific Theater

EPCS: Experimental PCS

PCS(C): Amphibious command ship

TRAINING SHIP AND OTHER SUPPORT ROLES

By the time PCSs began coming off the slipways at their builders' yards, the horrendous losses of shipping off America's East and Gulf Coasts to enemy submarines, that had spurred their creation, was greatly diminished as U-boats migrated to other areas in search of more fruitful, less dangerous hunting grounds. Large numbers of sleek, faster, new 110-foot wooden-hulled sub-chasers and larger 173-foot steel-hulled types had also joined the fleet. This resulted in the stubby, slower chasers built on minesweeper hulls being neither desired, nor required. Accordingly, the Navy found other uses for its fifty-nine patrol craft sweepers.

Seventeen of the Atlantic Fleet PSC were assigned duties as anti-submarine training ships in support of the Fleet Sonar School Squadron, at Key West, Florida. In addition to sonar and anti-submarine warfare training, these ships conducted gunnery, torpedo approach, and anti-aircraft exercises off the Florida Keys and, as required, doubled as harbor guard ships at Key West.

Four Pacific Fleet PCSs were assigned similar duties as part of the West Coast Sound Training Squadron, at San Diego. In this role, they operated in southern California waters, training new sonarmen in anti-submarine warfare techniques.

Photo Preface-6



USS *PCS-1445* under way off the U.S. West Coast, circa 1944-1945. She has been fitted with a "Hedgehog" mounting forward, in place of her 3"/50 gun, so that sound-school students could carry out dummy attacks utilizing this anti-submarine weapon. Naval History and Heritage Command photograph NH 96492

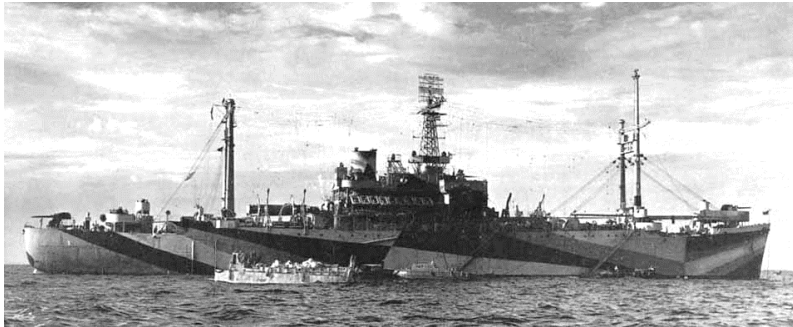
For the most part, the few remaining patrol craft sweepers, not employed as training ships or deployed to the Western Pacific for combat operations, were assigned to service squadrons. Small ships tend to function as “maids of all duties,” and these performed a variety of tasks in support of the fleet and fleet operations.

AMPHIBIOUS OPERATIONS

The shaded records in the preceding table, are intended to enable easy identification of the sixteen PCSs that earned battle stars in the Western Pacific, and their specific roles. Eleven of the ships were converted to PCS(C)s, amphibious flagships/control vessels, four to hydrographic survey ships (AGSs), and the one remaining PCS retained its designation.

In reference to amphibious command ships, most former sailors and students of naval history would picture in their minds, the much larger amphibious force command ships (AGC), which served as flagships for amphibious force commanders, not the humble PCS(C). The 459-foot *Rocky Mount*, shown below, was the flagship of Vice Adm. Richmond K. Turner, USN, while he was in command at Saipan and other amphibious landings.

Photo Preface-7



USS *Rocky Mount* (AGC-3), location and date unknown.

U.S. Navy photograph

Few people were then, or are today, aware of the existence or participation of the PCS(C) in such a role, because there were so few of them. These identified eleven 136-foot amphibious command ships served as flagships and/or control vessels for Control Groups responsible for the movement of amphibious craft to their respective assault beaches. United States Navy Landing Operations Doctrine F.T.P. 167, published in 1938, provided guidance regarding control of movement from ships to shore (an excerpt follows):

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After marking or identifying the line of departure and control points the designated vessels of the control group rendezvous with the boat groups at the designated time and place, guide them in to the line of departure, and regulate the speed of the movement so that the successive waves will cross the line at the scheduled times. This will permit orders modifying the plan to be transmitted to the boat groups through the proper control vessels. These scheduled times may be previously prescribed by the attack force commander; if not, an approach schedule computed by the commander of the transport which carried the troops to be guided should be delivered to the control vessel in the boat rendezvous area.

Diagram Preface-3

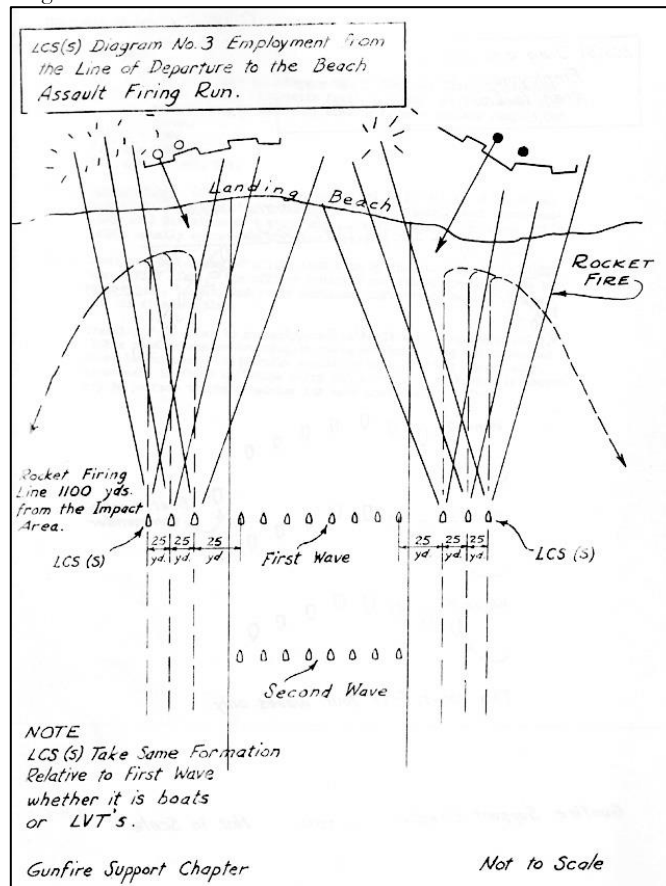


Diagram of assault firing runs show position of LCS(S) amphibious craft at the Line of Departure (LOD) from which waves of assault craft proceed shoreward
Transport Doctrine, Amphibious Forces U.S. Pacific Fleet, September 1944

Photo Preface-8



USS *PCS-1391* at anchor, circa 1945-1946. Serving as a PCS(C), she earned battle stars for landings in the Philippines at Leyte and Lingayen Gulf, and at Okinawa. Naval History and Heritage Command photograph #NH 85160

Prior to arrival in assault areas, PCS(C)s served as screening ships for the amphibious forces they were accompanying in transit, providing security from enemy forces via use of their sonar, radar, and guns if necessary. When not at the line of departure, controlling movements of assault craft, PCS(C)s screened large ships in transport areas, waiting to offload combat materiel, or farther offshore accompanying them during night retirement to safer areas out to sea. As necessary, the small wooden ships also carried out patrols off beaches of Japanese-held areas to prevent exfiltration (escape of enemy forces by sea) or infiltration (resupply of the enemy troops ashore) from the sea.

HYDROGRAPHIC SURVEY SHIPS

The inadequacy of the A.A. protection provided this ship after conversion from a PCS to a hydro[graphic] ship had been the subject of great concern to the commanding officer. When operating in isolated duty the only protection is [two] 2-20mm guns, one of which can be brought to bear on a target at one time. The 3"-50 gun is not suitable for suicide planes. Separate correspondence will be initiated to proper authority on this subject and a request made to add .50 caliber guns to our allowance.

—Lt. Frederick E. Sturmer, USNR, commanding officer,
USS *Dutton* (AGS-8), in Action Report of Attack
by Enemy Suicide Plane, 28 May 1945.

It is urgently recommended that consideration be given to improving AA defenses on the eight additional hydrographic vessels of this type now under conversion.

—Commodore Leon S. Fiske, USN, commander, Service Squadron Twelve, endorsement on USS *Dutton* Action Report of Attack by Enemy Suicide Plane, 8 June 1945.

Thus far in this overview, the reference to the book title “Kissing Cousins” has been mainly to the huge family of YMSs, and the lesser one of PCSs. However, there was an even smaller family related to the 136-foot wooden ships, a handful of PCSs and YMSs converted to hydrographic survey ships (AGSs), identified in the following table.

Patrol Craft Sweepers Converted to Hydrographic Survey Ships

Date Commissioned	Date Reclassified as Survey Ships	Date Named
USS PCS-1458, 17 May 44	AGS-6, 27 May 44	USC&GS <i>Derickson</i> , 17 May 44 (on loan)
USS PCS-1388, 11 Dec 43	AGS-7, 28 Feb 45	USS <i>Littlebales</i> , 24 Mar 45
USS PCS-1396, 29 Mar 44	AGS-8, 20 Mar 45	USS <i>Dutton</i> , 24 Mar 45
USS PCS-1404, 30 Mar 44	AGS-9, 20 Mar 45	USS <i>Armistead Rust</i> , 20 Mar 45
USS PCS-1457, 26 Feb 44	AGS-10, 20 Mar 45	USS <i>John Blish</i> , 24 Mar 45 ¹⁹

Yard Minesweepers Converted to Survey Ships (AGS)

Date Commissioned	Date Reclassified as Survey Ships	Date Named
USS YMS-195, 23 Mar 43	AGS-11, 20 Mar 45	USS <i>Chauvenet</i> , 20 Mar 45
USS YMS-242, 27 Mar 43	AGS-12, 20 Mar 45	USS <i>Harkness</i> , 24 Mar 45
USS YMS-262, 15 Sep 43	AGS-13, 23 Mar 45	USS <i>James M. Gilliss</i> , 23 Mar 45
USS YMS-263, 11 Aug 43	AGS-14, 20 Mar 45	USS <i>Simon Newcomb</i> , 20 Mar 45 ²⁰

Before delving into the duties of the hydrographic survey ships (AGSs), it is illustrative to identify the numbers of YMSs, PCSs, and AGSs that took part in major combat operations in which they all participated. The following table lists the operations for which PCSs and AGSs earned battle stars in World War II. Hundreds of yard minesweepers plied their dangerous trade in many theaters distant from one another, and earned battle stars for a multitude of operations. Those identified below are ones in which PCSs and AGSs earned battle

stars. Not surprisingly, for all but one, members of their YMS cousin family were also present.

YMS, PCS, AND AGS CREWS IN IT TOGETHER

Operation in Which Ships Earned Battle Stars	Number of Ships Participating		
	YMS	PCS	AGS
Marianas Operation: Capture and Occupation of Saipan	9	9	
Marianas Operation: Capture and Occupation of Tinian	0	5	
Marianas Operation: Capture and Occupation of Guam	23	2	
Capture and Occupation of South Palau Islands	17	2	
Leyte Operation: Leyte Landings	20	3	
Luzon Operation: Lingayen Gulf Landing	50	3	
Assault and Occupation of Iwo Jima	15	10	
Assault and Occupation of Okinawa	57	16	4
Total YMSs, PCSs, and AGSs taking part in operations	191	50	4

YMS AND AGS SHIPS DAMAGED AT OKINAWA

Photo Preface-9



Japanese suicide plane crashing and exploding in the water off Okinawa Shima.
CTF 51 report on Okinawa Gunto operations from 17 February-17 May 1945

DEADLY AND DIVERSE THREATS ABOUND

Enemy forces encountered were limited to shore batteries, submarines, planes, baka bombs, mines and suicide boats, rafts and swimmers. Other than the above, the minesweepers had few worries, except for reefs, shortage of fresh water and a deplorable and serious shortfall of diesels spares, which was more often than not a lack rather than a shortage.

—Rear Admiral Alexander Sharp Jr., USN, commander Minecraft, U.S. Pacific Fleet, and commander Mine Flotilla at Okinawa.²¹

At Okinawa, of the fifty-six YMSs, twelve PCSs, and four AGSs that earned battle stars, four YMSs and the survey ship *Dutton* (ex-*PCS-1396*) were damaged by enemy action with crewmen killed in action (KIA), wounded in action (WIA), or missing in action (MIA). The AGSs at Okinawa were so recently converted from PCSs, they were identified in some reports as, for example, *PCS(H)-1396*; the letter “H” having been added to identify them as hydrographic survey ships.

YMS and AGS-class Ships Damaged by Enemy Action at Okinawa			
Date	Ship	Cause	Damage
6 Apr 45	<i>YMS-311</i>	suicide plane	minor; 1 KIA, 2 WIA
7 Apr 45	<i>YMS-427</i>	coastal gun	minor; 3 KIA, 1 WIA
8 Apr 45	<i>YMS-103</i>	mines	major; 5 KIA, 7 WIA
8 Apr 45	<i>YMS-92</i>	mine	major; 2 WIA
28 May 45	<i>Dutton</i> (AGS-8)	suicide plane	major, 1 MIA ²²

The Mine Flotilla at Okinawa was quite large, comprised of: steel-hulled DMS (destroyer minesweepers), DM (light minelayers), and AM (minesweepers); wooden-hulled YMS (yard minesweepers); and a handful of PC (patrol craft), PGM (gunboats), and LCPR (landing craft). Damage to, or losses of flotilla ships and associated personnel casualties were quite high, as a result of Japanese mines, suicide planes (Kamikaze), and other type enemy attacks.²³

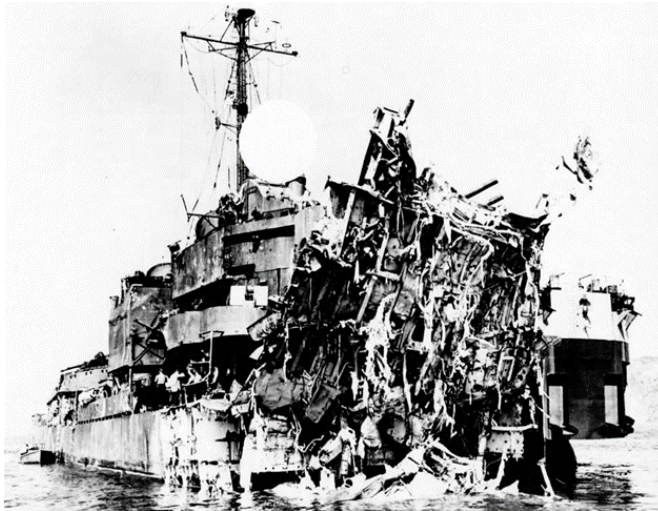
Admiral Sharp highlighted in his report on the capture of Okinawa Gunto (based on preliminary reports), personnel casualties for the Mine Flotilla shown in the following table. These figures in comparison with Navy casualties reported as of 20 June 1945, reveal that minecraft suffered 15.45 percent of the total casualties:

Comparison of Mine Force and Total Navy Casualties at Okinawa

Component	KIA	WIA	MIA	Total
Mine Force Casualties	213	583	177	973
Total Navy Casualties ²⁴	1,105	3,637	1,553	6,295

Among the Mine Flotilla ships, steel-hulled minesweepers and minelayers suffered the greatest damage and associated deaths. These types of ships being much larger than YMSs, were considered by Japanese pilots to be more valuable targets. In addition, some of the steel ships were used in roles that made them particularly vulnerable. The severely damaged light minesweeper, pictured below, had been assigned to one of the radar-picket stations ringing Okinawa to detect, and shoot down, Kamikaze aircraft arriving from Japanese airfields to attack fleet units.

Photo Preface-10



Bow of a light minelayer, likely the USS *Aaron Ward* (DM-34), which was crashed by several Kamikaze on 3 May 1945, while on duty on a radar picket station off Okinawa. CTF 51 report on Okinawa Gunto operations from 17 February-17 May 1945

SUICIDE KAMIKAZE AND “BAKA” BOMB ATTACKS

A greater number of wooden-hulled YMSs, PCSs, AGSs came under enemy attack than suggested by the preceding table, because only ships that suffered damage are listed. Japanese attacks against a YMS and an AGS—one by suicide aircraft (Kamikaze), and the other by suicide pilot-controlled-bomb (Baka)—illustrate two of the many dangers

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posed by enemy forces at Okinawa. Greater details about these events are provided in the text of the book.

Photo Preface-11



Japanese standby bomber crews relax on an airfield in Japan, 1945. The “Betty” bomber shown is carrying an “Ohka” (Baka) piloted-bomb beneath its fuselage. Naval History and Heritage Command photograph #NH 73100

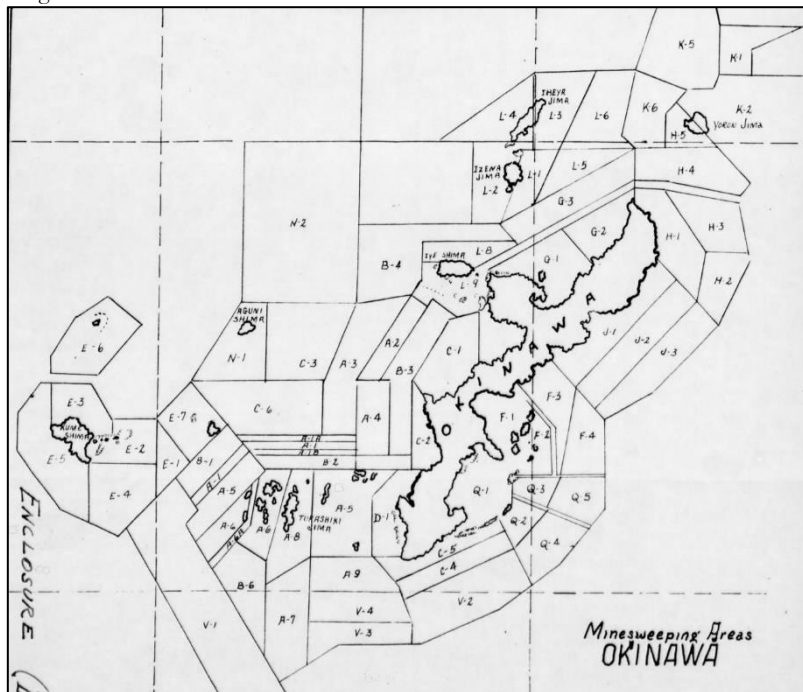
Photo Preface-12



Japanese Baka bomb suicide attack weapon guarded by an MP at Yonatan Airfield, Okinawa, circa April-May 1945. NARA photograph #80-G-K-4930

On the morning of 4 May, USS *YMS-331* was en route with other minesweepers to area E-6, located north of Kerama Retto, for sweep operations. At 0845, her crew was summoned to General Quarters in response to a warning of inbound aircraft. Five minutes later, two Vals (Aichi D3A Navy Type 99 carrier bombers) were sighted. Separating, one dove at the 314-foot destroyer minesweeper USS *Hopkins* (DMS-13), the other at the 184-foot minesweeper USS *Gaity* (AM-239). Both were shot down by gun crews aboard the “steel-hulls.” The suicide planes only narrowly missed their targets, one impacted the water sufficiently close to *Hopkins* that she suffered minor damage, with one crewman killed and four wounded. *Gaity* escaped harm in this attack.²⁵

Diagram Preface-4



Minesweeping areas off Okinawa

Commander Task Group 32.2 (52.2), Report of Capture of Okinawa Gunto – Phases One and Two, 23 July 1945.

A short time later at 0945, a “Betty” (Mitsubishi G4M Navy Type 1 land-based attack aircraft) was observed at an altitude of about 12,000 feet, circling out of range of naval gunfire. The bomber then launched a Baka human-piloted suicide bomb, which went into a steep dive with a streak of black smoke observed. At an altitude of approximately 500

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feet, the bomb pulled out of the dive, and headed straight for the minesweepers. Fighter planes shot down the Betty, but the Baka continued on its run, closing *YMS-331*. Gunfire from her caused the Baka to alter course slightly and attempt to crash dive *Gaity*.²⁶

As the Baka passed *YMS-331*, her starboard 20mm gun shot off the tail of the pilot-steered bomb, and it splashed into the sea, nearly missing *Gaity*. Fragments from the bomb damaged one of *Gaity*'s 40mm guns, caused another gun minor damage, and wounded three crewmen.²⁷

Three weeks later, on the morning of 27 May, the hydrographic survey ship USS *Dutton* (AGS-8) had just left Nakagusuku Wan, bound for Kinmu Wan farther up the east coast of Okinawa, when she received a local "Flash Red" warning of enemy aircraft. It was raining slightly and visibility was poor. At 0740, the survey ship's lookout reported three planes dead ahead, just visible in the clouds at an elevation angle of 40 degrees, on a course away from her. The aircraft, identified as "Vals," then reversed course. Within a minute, they were over *Dutton*, and two broke formation and started attack runs.²⁸

Photo Preface-13



Hydrographic survey ship USS *Dutton* (AGS-8), location and date unknown.
Naval History and Heritage Command photograph #NH 84644

One of the attackers was driven off by *Dutton*'s 20mm fire; the other crash-dived her, carrying away part of the bridge, and creating a 4-foot by 3-foot gaping hole in the starboard side of the forecastle structure. It was believed that ship's gunfire killed the pilot, because the plane, headed for the midship section, had swerved off enough to overshoot its apparent intended mark. The aircraft wreckage carried over the side of the survey ship, and an explosion ensued. Owing to a resultant

deluge—which covered the entire ship with a heavy wash of water, oil, gasoline, and plane parts—it appeared that the bomb carried by the plane had detonated a considerable depth beneath the surface.²⁹

Providence smiled upon the 136-foot ship and her crew that day. *Dutton* tragically suffered the loss of a crewmember, who was blown or washed overboard by the force of the crash or explosion, and unlocated, was considered missing in action. Casualties could have been much worse, and despite considerable damage topside, the survey ship was seaworthy, and able to return to anchorage at Nakagusuku Wan. *Dutton* later underwent shipyard repairs and was returned to duty.³⁰

MINE DESTRUCTION AND INVESTIGATION UNIT

The operation of a Mobile Mine Investigation and Disposal Unit is practical and most useful for an operation similar to the one at present being undertaken. Two of such units could have been used here. One to care for KERAMA RETTO and the other to care for the OKINAWA coastline. The distances involved would have made it most difficult for this unit to operate effectively from KERAMA RETTO and accomplish mine disposal work at OKINAWA. About 15 miles is a good operating radius from base for one unit.

The most effective ships to operate from were YMS or PGM [gunboat]. These types can manuever readily close to the beach and mine disposal teams can operate effectively from them using 600 pound rubber boats if the surf is not too high.

—Comdr. Donald N. Clay, USN, commander Mine Division Two and commander Task Unit 52. 6.5 (Mine Destruction Unit), during the invasion and occupation of Okinawa.³¹

Rear Admiral Sharp's Mine Flotilla at Okinawa consisted of over one hundred mine warfare ships; as well as a handful of patrol craft, gunboats, and landing craft; approximately one dozen net tenders and net cargo ships; and a Mine Investigation and Disposal Unit under Comdr. Donald Noble Clay, USN. Clay would be particularly familiar to students and practitioners of Mine Warfare for his successful intelligence mission ashore at Chinnampo during the Korean War. Sent to find locals, who may have been coerced into laying lines of enemy mines between Chinnampo and the open sea, he successfully accomplished his mission, and the vital information obtained facilitated rapid, and safe mine clearance operations that was necessary to open the port. Clay was later awarded a Gold Star in lieu of the Third Bronze Star Medal for meritorious achievement in Korea.³²

Before Commander Clay was assigned duties as commander of the Mine Destruction Unit at Okinawa (in addition to his existing one as commander Mine Division Two), he had earned his first Bronze Star Medal for heroic actions during the assault and occupation of Iwo Jima.



For meritorious service as Commanding Officer of the USS *Gamble* and as Commander Mine Division Two in action against enemy Japanese forces during the assault of Iwo Jima in February of 1945. When his vessel sustained two bomb hits in the fireroom which resulted in the explosion of the boilers, Commander Clay directed excellent damage control measures to maintain the vessel afloat until it could be towed to a rear area, thereby contributing materially to saving the ship..." (Combat "V" authorized.)³³

The Mine Disposal and Investigation Unit was formed with Clay in command specifically for the Okinawa operation. Upon the unit's arrival at Kerama Retto and continuing five days before the assault landings, its duties involved daily sweeps of the two channels to Kerama Retto, maintaining navigational buoys off the entrances, and supplying mine disposal units for all jobs requiring the rendering safe of mines or for diving operations. Details of these employments are taken up later in this book.³⁴

It's important to note that Clay's Unit comprised only a small subset of the huge mine and other ordnance disposal efforts in progress, including those by MEIU No.1 which had been sent forward from Brisbane to the Philippines, to dispose of large quantities of munitions found there by Allied land and sea forces.

MOBILE EXPLOSIVES INVESTIGATION UNIT NO. 1

MEIU No. 1 was located at a base in Brisbane, Australia (identified in correspondence as Navy 134), until orders were received in February 1945, transferring the command to the forward area. Officers assigned to the unit in March are identified in the table.

MEIU No. 1 Officer Personnel in March 1943

Name	Position/Duties
Lt. Comdr. DVG O. R. Cross Jr.	Commanding Officer
Lt. DVG W. F. Neale	unknown
Lt.(jg) EVG J. E. Richardson	Executive Officer
Lt.(jg) OVS W. Kenda	Research Officer
Lt.(jg) DVG H. P. Brown III	BDO, Milne Bay, New Guinea

Lt.(jg) DVG O. W. Watson	TD, assistance research officer
Lt.(jg) D. E. Bushnell	Procurement Officer
Lt.(jg) DVG W. K. Cook	TD, DO, Milne Bay, New Guinea
Lt.(jg) DVG J. C. Armstrong	TD, BDO, Port Moresby, Papua
Lt.(jg) DVG W. J. Kramer	TD, BD Research Officer
Ens. R. W. Eigell	Gunnery Officer ³⁵
BD: Bomb Disposal	EVG: Engineer Officer
BDO: Bomb Disposal Officer	OVS: Ordnance Officer
DO: Diving Officer	TD: Temporary Duty
DVG: Diving Officer (General)	

In March, three officers and fifteen enlisted men of MEIU No. 1 proceeded north to Manus Island, New Guinea, while 65-tons of cargo, comprising their entire equipment of the unit was shipped there. At that time, six officers and two enlisted men remained at Brisbane. Of these, one officer was awaiting transportation to the United States, four officers were awaiting transportation to Manus, and one officer had been detached for duty at commander, Service Force, Seventh Fleet Subordinate Command, Australia. The two enlisted men also awaited transportation to Manus.³⁶

On 21 April, the personnel of MEIU No. 1, having completed their staging at Manus, left there with most of their equipment, bound for the Philippines. They were embarked aboard the attack transport USS *Lavaca* (APA-180) at Nabu Dock, Seeadler Harbor, and landed four days later at Guinan Harbor, Samar, Philippine Islands.³⁷

AUSTRALIAN RENDER MINES SAFE OFFICERS

Working with MEIU No. 1 U.S. Navy personnel in the Philippines were some Royal Australian Navy counterparts, among them Lt. Leon V. Goldsworthy, a Render Mines Safe officer, who would become the most highly decorated Australian Naval officer in the war.

Photo Preface-14



Lt. Comdr. Leon Verdi Goldsworthy,
GC, DSC, GM, MID, RANVR.
Australia War Memorial photograph 081383

Photo Preface-15



Lt. Leonard (Leon) Verdi Goldsworthy, RANVR (second from left) assists unidentified officers and ratings of the Enemy Mines Section of HMS *Vernon* retrieve an unexploded German type C magnetic mine from the Thames River. Australian War Memorial photograph P03434.016

Photo Preface-16



Leigh Park House at Havant near Portsmouth where sections of HMS *VERNON*'s Mining Department (which also dealt with mine countermeasures) were evacuated to escape the Blitz (German bombing campaign) during the Second World War. Other sections were accommodated at West Leigh House and West Leigh Cottage on the same Leigh Park Estate. The ornamental lakes at the foot of the hill were used to trial underwater explosive devices. Rob Hoole collection

Goldsworthy (Goldy) was trained at HMS *Vernon* and spent most of the war in Europe. He and Geoffrey John “Jack” Cliff, also RANVR, were both promoted acting lieutenant commanders in September 1944, and sent in October to the Pacific as British Naval Liaison and Intelligence officers. Attached to the U.S. Navy’s Mobile Explosive Investigation Unit No. 1, their task was to learn about U.S. search, recovery and disposal techniques, and then to forward samples of Japanese ordnance, particularly torpedoes and mines, to the UK.³⁸

Goldsworthy and Cliff reported for duty on 4 February 1945 to MEIU No. 1, located in Australia on the southern side of the Brisbane River. Soon after, the Render Mines Safe officers became engaged in intelligence gathering, and “hands-on” work defusing Japanese mines and booby-traps in the Philippines and New Guinea area. On 9 May in connection with landings in the Borneo area, Goldsworthy boarded USS *YP-421* at the small Philippine island of Nalunga, across the Sulu Sea from Borneo. The former Massachusetts beam trawler commanded by Walter E. Baker, USN, was assigned to support MEIU No. 1.³⁹

Photo Preface-17



Leading Seaman R. F. Peel, a member of a RAN Render Mines Safe Unit, examines a booster charge at Alexishafen No. 1 Airstrip, New Guinea, 1944. The charge had begun ticking, and was prevented from exploding by disconnecting a battery powering the firing mechanism. The sign above the mine had been erected by the Japanese to warn their own forces of the danger.

Australian War Memorial photograph 073155

As a matter of background for RAN, it is important to acknowledge that independent of some work with their American counterparts in 1944-1945, Australian Render Mines Safe personnel were occupied throughout the war ridding Australian beaches of Japanese mines washed ashore, disposing of sundry live ordnance in Europe, and doing the same in many Pacific Theater areas.

STONE FRIGATES

Readers will find many references to HMS *Vernon* in this book and, because “Vernon” is italicized, may believe that these references are to a ship, such as, for example, USS *Constitution*. However, unlike the U.S. Navy, Commonwealth navies commonly italicize the names of shore establishments, which are termed “stone frigates.” Until the late 19th century, the Royal Navy housed training and other support facilities in hulks—old wooden ships of the line—moored in ports as receiving ships, depot ships, or floating barracks. When these facilities became too large to continue afloat and were moved to shore establishments, they kept their names. Thus, HMS *Vernon* was a RN shore command.

STAND OUT TO SEA

With this overview of wooden minesweepers (YMSs), working with even more obscure, and fewer amphibious control ships (PCSs) and survey ships (AGSs) completed, it is time to (vicariously) leave harbor, and head fair in Western Pacific waters. There, readers will meet courageous ships’ crews cutting sea mines free of their moors while under shore battery or aircraft attack, and bomb and mine disposal personnel dealing with mines washed ashore, and a variety of other ordnance—some delivered by suicide planes. Meanwhile, PCSs on the line of departure during assaults of enemy-held islands, direct waves of troop-laden craft to landing beaches, and AGSs ply their trade off hostile approaches and in bays and harbors.