

MARTIN'S PBM MARINER

1937–1956

by Bob Smith, VPB-216, VPB-21 (prepared in 1984)

The Martin PBM *Mariner* seaplane was deployed from 1940 to 1956 for a period of sixteen years. It was in production for twelve years. Few planes of that era had that length of production and fleet service. Glenn Martin had built his first plane at Santa Ana, California in 1909. Like the Wrights, he left bicycle and auto interests for the flying machine. He was in and out of a partnership with the Wright brothers. By 1917, he had an aircraft plant in Cleveland, Ohio. Martin was always innovative and fast from design to production. He built aircraft for the army and the navy and later added some commercial airline business. This diversity continued as long as his company produced aircraft, well into the fifties.

In the early thirties his B-10 gave the USAAC their first long range enclosed cockpit bomber. In the middle thirties he answered Pan American's challenge for an aircraft that had the range to fly the vast Pacific. His answer for them was the *ChinaClipper* seaplane. Three of these were built; the *China*, *Philippine* and *Hawaiian Clippers*. They were outfitted for up to fifty-two passengers in luxury accommodations and had a range of 3,200 miles. Their four engines gave them a cruising speed of 150 m.p.h.

Fresh from success with earlier twin-engine flying boats for the navy and the larger *Clippers*, the Martin team proposed their gull-winged model 162 (PBM) flying boat to the navy and included, for the first time, a three-eighths scale man-carrying airplane to prove its air and water worthiness. The navy placed an order on June 30, 1937 for one prototype XPBM-1. This prototype was flown for the first time on February 18, 1939. By December an order was given for twenty production PBM-1's. These had retracting stabilizing wing floats. The



Martin XPBM-1 prototype note the horizontal tail with no dihedral. This was the only Mariner with this feature. (Photo USN/Martin via Bruce Barth)

prototype XPBM-1 was originally fitted with a straight horizontal tail that caused some problems but was modified to include dihedral for the horizontal stabilizer. All subsequent PBM's had dihedral in their stabilizers. A further fix, installed on PBM-3's and all other PBM's was a small vortex, inboard of each rudder, that gave the *Mariner* improved "tail" control.¹

The Navy Operation Archives at the Washington Navy Yard have proven to be the most valuable source for PBM reference. I have their microfilm tape of the "*Operational History of the Flying Boats - Selected Campaigns in World War II and Operational History of the Atlantic Campaign*." This report was done by Michael G. Kammen for the Bureau of Aeronautics. There are over 250 pages to his paper prepared for the Office of the Scientific Historian, Lee M. Pearson. It selected Saipan, Iwo Jima and Okinawa in the Pacific Theatre because in each of these campaigns harbor and beach facilities were not initially available. I will refer to this Kammen report prepared in 1959 by using the symbol 1. Reference to the Fleet Air Wing One-Eighteen summaries' symbol will be 2. Other references will be detailed.

The first two PBM squadrons were VP-55 and VP-56. They accepted their first PBM-1's in the summer of 1940. LCDR A. B. Vosseller was the CO of VP-55.

Kammen's report had lots of detail on the early pre-war North Atlantic bases and considerable detail on these two squadrons.

VP-55 and VP-56 had a few months of intensive training with to their new bird in early 1941. In June of 1941 a general reorganization of patrol planes created Patrol Wing Seven. The line of command was quite short, with Admiral King in command working directly with Rear Admiral Bristol. King wanted seadromes in Newfoundland and Iceland. The *USS Albermarle* (AV-4) established a seadrome at NAS Argentia,



Martin Model 162A three-eighths scale flying model (N19168) "Tadpole Clipper" now in NASM Silver Hill facility. (Photo USN/Martin via Bruce Barth)



Martin PBM-1 production line at the Glenn L. Martin plant near Baltimore, Maryland in 1940. Deliveries of the first 21 production PBM-1s started in September, 1940. (Martin photo 20481 from the R.D. Neal)

Newfoundland on May 15, 1941. Three PBY squadrons (VP-51, VP-52 and VP-53) and VP-55 PBM's were assigned there. While there, their numbers were changed to VP-71, VP-72 and VP-73 for PBY's; VP-74 and a Transitional Training Unit at Norfolk for the PBM's.

VP-74 moved on to Reykjavik, Iceland on August 6, 1941. Summers are short in Iceland and the fall months bring terrible flying weather with intense fog. VP-74's first casualties occurred on November 2, 1941 when Crew Eight crashed into the Mountain as they tried to land. Vosseller had recommended that seaplane operations be flown there only from April to October. All flying boats were removed later and VP-74 went to the Caribbean. In waters off Bermuda, the rugged PBM-1's began to demonstrate their "capability" and "dependability" for open sea rescues. Open sea rescues were made by PBM's in 1942 on February 11, April 18, 22, 23 and June 27. On October 25 they performed a risky rescue in fifteen foot swells. It was apparent that the PBM crews were putting themselves into a lot of jeopardy. Orders soon came down for PPC's to obtain permission before attempting an open sea rescue. The squadron moved on to Natal, Brazil in November and by spring of 1943 had switched to PBM-3C's.

SUBMARINE KILLS

A VP-74 PBM piloted by Lt. Richard E. Schreder sank the first submarine to be sunk by U.S. seaplanes in World War II. This sinking was off Bermuda on June 30, 1942, only the third by U.S. navy aircraft and the fifth by U.S. forces. Nine other subs were sunk by PBM's, all by PBM-3's, in the Atlantic in 1943. These incidents were: 17 May 1943; U-128 was sunk off Brazil by two PBM-3C's piloted by Lts. Howland Davis and H.C. Carey of VP-74, with the assistance of two destroyers, (Carey was flying a PBM called "Nickle Boat"); 15 July 1943; U-159 was sunk in the Caribbean south of Haiti by a PBM-3C piloted by Lt. R.C. Mayo of VP-32; 19 July 1943 U-513 was sunk off Florianopolis, Brazil by a PBM-3C piloted by Lt. Jg R.S. Whitcomb of VP-74, (this was the "Nickle Boat's" second kill). German U-Boat Captain Guggenberger was captured as a result of this action; 26 July 1943 U-759 was sunk in the Caribbean east of Jamaica by a PBM-3C piloted by Lt. R.W. Rawson of VP-32; 28 July 1943 U-359 was sunk south of

Puerto Rico by a PBM-3S of VP-32; 31 July 1943 U-199 was sunk off Rio de Janeiro by a PBM-3C piloted by Lt. Jg William F. Smith of VP-74 with the assistance of Brazilian aircraft; 3 August 1943 U-572 was sunk by a PBM-3S piloted by Lt. Jg Clifford C. Cox of VP-205. This was night action and the plane was not heard from after the attack; 6 August 1943 U-615 was sunk north of Aruba by PBM's of VP-204 and VP-205 assisted by other aircrafts from VP-130. Seven PBM's were involved. The pilots mentioned were Lt. Jg J.N. Erskine, Lt. A.R. Matuski (shot down), Lt. L.D. Crockett, Lt. Jg J.W. Dresback (killed) and LCDR R.S. Null.

Morrison Vol. X, pp 195-197 reports the August 6 attack and describes it as "perhaps the best example in the entire war of a fiercely aggressive, fearfully costly, but finally successful air-submarine action."

Other PBM squadrons that operated in the Atlantic, Caribbean, Canal Zone and South Atlantic during World War II included VP-201 through VP-215. Several later moved to the Pacific starting with VP-202, followed by VP-205, VP-208 and VP-215.

VP-214 squadron's history as recorded in the Navy's Archives is illustrative. It reads in part: "Commissioned October 18, 1943 at NAAS Harvey Point, North Carolina, LCDR Malcolm C. McGrath, USN C8, with twelve PBM-3Ss, 56 officers and 178 enlisted men. The squadron's main purpose was to combat submarines. They deployed to Key West on January 8, 1944 for specialized anti-submarine warfare and began their fleet operations from Breezy Point NAS, Norfolk, Virginia.

They moved to Guantanamo Bay, Cuba in September 1944 and on to Goco Solo, Canal Zone in January 1945. This included a week's training with the *Tender Albermarle* at Almirante Bay, Panama. On March 24, 1945 one of their planes with PPC (Patrol Plane Commander) Robert Kientz made an open sea landing to pick up two carrier pilots. The squadron was decommissioned at Norfolk on May 31, 1945. Recently a VP-214 reunion was held in Norfolk to celebrate their 40th anniversary. Kientz and his wife were among the 41 present.

There was an urgent need early in World War II for aerial transport of men and equipment to the naval bases in both the Atlantic and Pacific. The load carrying capability, range and water basing of the new PBM's gave them a high priority of



Martin XPBM-2 (Bu.No. 1247) Shown at the factory April 15, 1941. Note dihedral of the horizontal stabilizer with verticals normal to the horizontal stabilizer. This was taken from the PBM-1 and converted to a Navy strategic bomber with increased bombloads and fuel. It was also designed to be catapulted from barge. (Photo USN/Martin via Bruce Barth)



This Martin PBM-3S incorporated British anti-submarine color scheme, white with gull gray top surfaces. The -3S omitted armor and power turrets for longer combat range. (Peter M. Bowers collection via A. Hansen)

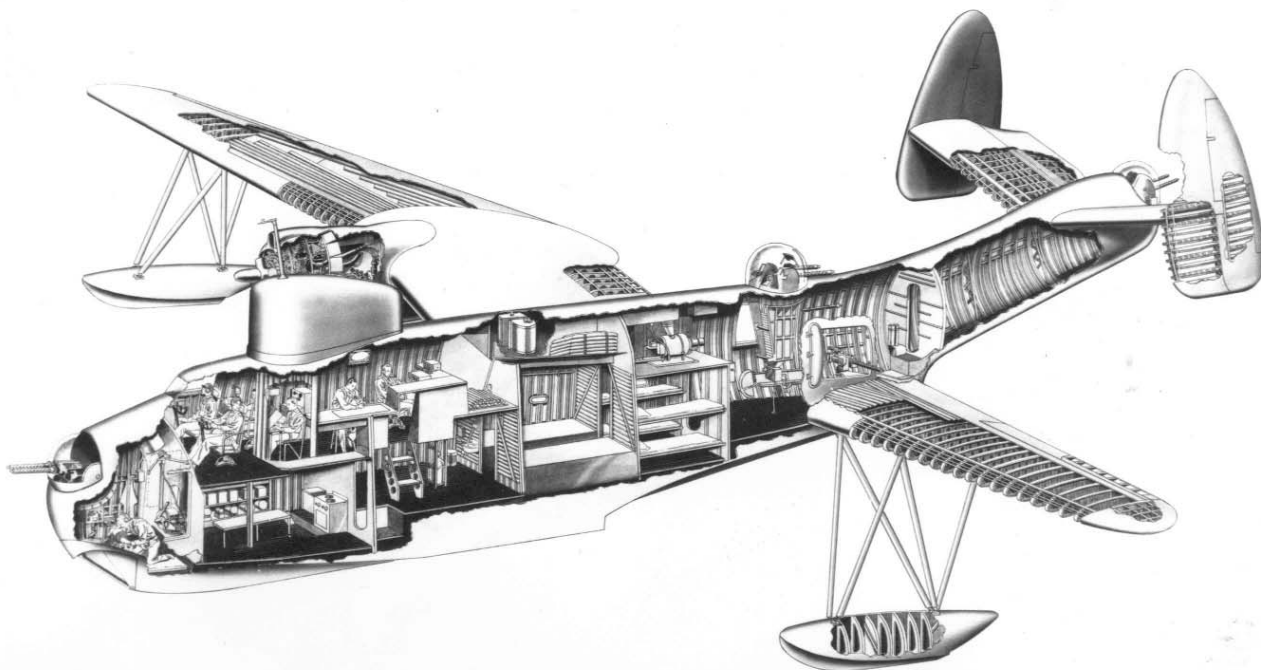
selection for "VR" (naval air transport) duty. The twenty-seven PBM-3 *Mariners* purchased by and delivered to the United Kingdom were returned to the United States. Some were pressed into VR service at Miami's Dinner Key Pan American base and flown on the Caribbean Central and South American routes. They were outfitted for a mix of passengers and cargo to maximum loading. Others were used by naval air transport in the Southwest Pacific Theatre. Identification was a problem in the trigger-happy Pacific where our forces were being

aggressively attacked by Japanese seaplanes. This early use of PBM's for transport use in both theaters gave them a reputation as "VR"-type planes. This identification stuck with them for the life of the aircraft. Many VR pilots have flown *Mariners*. Most *Mars* pilots flew *Mariners* as trainers. Some of the 36 amphibian PBM-5A's built after WW II were used by VR-21 to administer the newly formed Mariana's Trust Territory in the Central Pacific.

Most PBM pilots and aircrewmembers through 1944 took transitional PBM training at Banana River Naval Air Station, which was commissioned near Cocoa, Florida, in 1940. The first successful flight crew simulator, developed by Bell Laboratories, was "cut" into service there in December 1943. By March 1944 it was accepted by the navy.

The cost per hour of this simulator was \$17.31 vs \$140.70 for "live" PBM's. As an early "user", I can testify to its effectiveness. By the way, each simulator cost \$150,000 vs an average PBM at \$414,000. Another PBM unit was established at Corpus Christi, Texas.

A well publicized incident occurred during the summer of 1944 when Scott Fitzgerald, flying a PBM-3 enroute from Eagle Mountain Lake near Fort Worth, Texas to San Diego, Arizona. Scott, who now lives in Moultrie, Georgia, recalls: "If there ever was a plane I was sentimental about, it was the PBM. Every pilot that ever flew the PBM I consider a blood brother." Scott was on a VR-8 ferry flight at 10,000 feet in a mountainous area with 6,000 ft. peaks when an oil line broke requiring an engine shutdown and an emergency procedure. Available items were thrown over the side and the navigator-pilot Ensign Gerald McCormick located a dry lake bed



Cutaway of Marten PBM-3C Mariner (Photo USN/Martin via Bruce Barth)



Martin PBM-3 at the Martin plant in early WWII. The big flying boat was powered by Wright R-2600- 12, 14 cylinder engines of 1700 hp. (Martin photo from the A. Hansen collection)

(Wilcox Dry Lake) about sixty miles east of Tucson that appeared to be a good risk. The crew elected to stay aboard rather than use their parachutes. Scott executed a near perfect landing, losing one float. There was no other damage. Navy and Martin Co. men fitted modified beaching gear for a "land" take-off which was dropped when airborne with Lt. Flynn at the controls. This permitted a routine flight to San Diego.

This plane was named "The Miracle of Wilcox Dry Lake".

The landing and take-off photos were widely publicized. When the takeoff photo appeared in the July 1944 Naval Aviation News, a navy fighter pilot wrote in to "doubt the take-off and dropped gear." An editorial answer, with photo of the dropped gear, appeared in the November 1944 Naval Aviation News*.

*Naval Aviation News, Nov. 1944, pp 14-17. (Details furnished by Capt. Richard Knott, USN, Head, Aviation Periodicals and History).

Until late 1943 every PBM squadron had been deployed in the Atlantic but the role for the PBM *Mariner* was about to change significantly. VP-202, commanded by CMDR Leeman, USN, was the first squadron to be equipped with the PBM-3D at NAAS Harvey Point, North Carolina where conditions were very primitive. The PBM-3D had an uprated R2600-22 engine with twin .50 caliber's in nose, deck and tail power turrets. Another .50 caliber was mounted in each waist hatch. The log book of VPB-202's Ensign W.L. (Bill) Webb of Bethesda, Maryland, shows the following dates which are typical for this squadron: Harvey Point to Eagle Mountain Lake near Fort Worth, Texas during the New Year, to San Diego on January 3, 1944, to Johnston Island January 16, 1944 his crew flew patrols, from Majuro, Kwajalein and Eniwetok. VPB-202 had been the first and only PBM squadron for this first step to Tokyo in the Central Pacific that included the early occupation of the Gilbert and Majuro atolls and the successful invasion of the Marshall Islands. This gave us our first Japanese-built sea-landing ramps in this area.

VP-16 and VP-216 were the second and third PBM squadrons to be equipped with PBM-3D's. VPB-216's trans-pacific flight from Alameda proved to be uneventful, with all fifteen planes arriving at the seadrome off Saipan, ready to fly patrols. While at Kaneohe, they had made a "fix" on the R2600-22 Wright engine faulty exhaust valves. There were some "close calls" on the Alameda-Kaneohe run as, at this time, the squadrons were transporting all of their personal gear and extra passengers which added considerable weight to the



Martin PBM-5, Bu59295 was equipped with the Pratt and Whitney R-2800-22 18 cylinder engines of 2100 hp. The PBM-5s superior speed, range and payload made them a more effective patrol aircraft especially in the Pacific War. (Peter M. Bowers collection from A. Hansen)

already over-burdened aircraft. My log book for April 10, 1944 flight with Lt. R.B. Stephens, PPC shows 18.5 hours.

Our flight was lengthened by an hour because of a navigational error, made by me, at the start of the flight, but discovered in time by the PPC. I had added my deviation in backwards, a mistake that I never repeated!

VP-16 had several trans-pac incidents. The first happened on the same April 10 evening when their Crew 2, with Lt. W.R. Briggs in command, and Crew 3 with Lt. jg. F.B. Wardlow in command departed Alameda for Kaneohe in a three-plane section that included our VP-216 Stephens flight. The flight experienced unpredicted bad weather including a total overcast soon after departure.

Just one hour before reaching the "estimated turning point". Briggs' plane developed a bad oil leak. Briggs immediately reversed his course for Alameda and used the engine down to 12 gallons of oil, hoping to restart it briefly, if needed. They jettisoned all removable gear, including bomb-bay tanks, before the *Mariner* could maintain level flight with a power setting of 2400 RPM with 35 inches of manifold pressure. An hour later they hit severe turbulence which forced him to descend to eighteen hundred feet. He had been able to maintain perfect radio contact with Alameda and had dropped parachute flares every thirty minutes to stay informed of the sea condition.

After two hours the flight engineer reported, "The port engine is on fire!" The engine had to be cut, which extinguished the fire, and the LUX extinguisher was released to protect the plane's hull tanks on the crash landing. Briggs was faced with as tough an assignment as any pilot who ever lived to describe it. It was dark, with about 25 knots wind, huge swells and a rain squall. Briggs was able to get into the wind and, somehow, made a successful dead stick landing in the heavy swells. Only one float was knocked off so the plane remained afloat for an hour and a half. A radio message was acknowledged that Alameda knew they were down safely.

A PBY spotted their three rafts the next day and blinked that a destroyer would reach them. The ship failed to locate them. It was near dusk of their second day when other PBY's directed a destroyer, the *U.S.S. Aulick*, to eventually rescue them.

The rescue made West Coast headlines and the whole incident earned high respect for Briggs, his crew, and the tough *Mariner*. As VP-16 moved from Kaneohe to Eniwetok, two more less serious incidents were encountered. At newly won Majuro's seadrome, Briggs had the gas tanks filled with water!

Crew Four, with PPC Lt. J. Kennedy experienced an oil leak enroute from Canton Island to Majuro near the turning point for this leg. On single engine, again with everything jettisoned, he could not maintain altitude and elected to land at the tiny island of Howland, as yet in Japanese control, made famous by Amelia Earhart. This landing was picture-perfect and some of the crew members used rubber life rafts to reach the atoll. They fortunately found it to be unoccupied. Undoubtedly, this was the first island ever to be "taken" by a PBM crew!

These two squadrons and a detachment from VH-1 operated from tenders in unprotected water during the Saipan Island assault. They flew patrol and reconnaissance to look for any enemy force that could attack our ground forces. The amphibious assault had begun on the heavily defended island on June 15, 1944. The first six of VP-16's planes commanded by Wm. J. Scarpino of Seattle, Washington arrived on June 17; VH-1 on January 20 and VP-216, commanded by Harry Cook of Hot Springs, Arkansas, arrived on June 23. The first tender was the *USS Ballard*, which laid buoys five miles off shore to escape shore battery fire. Sea conditions were too severe for the planes and tender maintenance so the buoys had to be moved to about three miles off shore. Other tenders for the assault were the *Pocomoke*, *Mackniac*, *Onslow* and the *Chandeleur*.

VP-16 flew night patrols and VP-216 flew day missions. A patrol flight (Ref.: 3), which is mentioned in most Navy WW II histories, was a night patrol on June 18 flown by VP-16's Lt. Arle to locate the Japanese carriers for Vice Admiral Spruance. The *Mariner* located the Japanese ships by radar at 0115 on June 19. They sent a message out which, for an unexplained reason, was not relayed from the Saipan based tender to Admiral Spruance. Actually, Spruance did not receive the sighting report until Arle's PBM had landed back at Saipan. The message was received by CINCPAC in at Pearl Harbor.

The seadrome and weather conditions for the first five weeks at Saipan were terrible but the patrols went out regardless. The Kammen report states that only the *Mariner* could have flown sector patrols with fleet overloads under these conditions. There were a few PBY-5A's and a few *Coronados* at Saipan but they were not used for patrols. We moved into the excellent Japanese-built Tanapag Harbor seaplane base as early as July 10 before the island was secured. The first PBM to be beached was one from VP-216 flown by Lt. "Red" Stephens. Within a few days beer parties were permitted at the Pokomoke Club.



Martin PBM-5 Mariner taking off from smooth water. The large Structure just aft of the cockpit is the surface search radar. (Photo USN/Martin via Bruce Barth)

Ref. 3: From "Nimitz and His Admirals, How They Won the Pacific War", (Hoyt)

VP-202 moved to Saipan on July 17 and the *Yakutat* joined the tenders. The following summary is taken from the Kammen report: Action Report VPB-216 Serial 004. 21 July, 1944 covers search patrols out of Saipan.(1) This action report is a splendid resume of Marianas operations in all phases of flying boat activities, rich in discussion of problems encountered. The report read, in part: "At first, practically without exception, the pilots had a tendency to hold the nose too high on take-off. This is a natural tendency, it being more comfortable to stall the plane into the air. However, with the heavy loads and the comparatively low power available, the airplane just would not build up enough speed. If it bounced off and the pilot tried to hold it he would only stall back on to the water. It was found necessary to hold the nose slightly down and ride the contour of the swells rather than jump from swell to swell. Here again, it was vital that the pilot be positive that his loading was correct because, invariably, the plane would hit a swell and start to porpoise just as it was getting on the step. With correct loading the porpoise can be dampened, but with incorrect loading it can very easily get beyond control before it can be stopped. In conclusion, it is felt that the PBM lends itself readily to advanced operations of this kind, because of its sturdy construction. Pilots with considerable experience in other type patrol aircraft have expressed an almost unanimous opinion that neither the PBY or the PB2Y could have operated successfully at the outset. The *Mariner*, however, is decidedly under-powered. The high power settings which are necessary to maintain relatively slow speeds preclude any possibility of excellent engine performance, it might be observed, in this connection, that the experience of this squadron indicates that even the R-2800 engines, with which the PBM-5's are to be equipped, will not give the desired satisfaction. Here again, relatively high power for relatively slow speed will evoke unforeseen bugs. It is the opinion of this squadron that real efficiency of operation with the PBM will not be achieved, until engines with a rated horsepower of at least two thousand are supplied."

*These two paragraphs were from VPB-216 war history written by their CO. CMDR H.E. Cook, Jr.

(Note: See OPERATIONAL STATISTICS COVERING



JATO helped to get this Martin PBM-5 off the water quickly. (Photo USN/Martin via Bruce Barth)



Above: Martin PBM-5 "Nightmare." (Photo USN/Martin via Bruce Barth)

SAIPAN OCCUPATION TABLE II at the end of the text-Editor)

During the period under consideration the following losses have been sustained by the seaplane squadrons under this command. The cause of the losses as noted is the unofficial assessment by this command from all known facts.

(Note: See PLANE LOSSES, TABLE III at the end of the text-Editor)

*DBLR - Damaged beyond local repair; to be returned to Oahu via surface or flown back after temporary repair.

Early in September as the Marianas were becoming somewhat "secure", several of the tenders and squadrons at Saipan moved to Nimitz's next stop, the Palau Island Group. The *Chandeleur*, with VPB-216, VPB-202 and VH-1, arrived at Palau's fleet anchorage, Kossol Passage, on September 16, 1944. Hundreds of mines were being exploded before, during and after the tender had weighed anchor and the *Mariners* had landed. More rough water was experienced here, including a severe typhoon in early November. Patrols were flown to the visual tip of Samar, P.I. for the advanced coverage of the long awaited "return to the Philippines" at Leyte Gulf, so very few were cancelled because of weather. Torpedos were hung on PBM's for the first time, most guns were removed, bomb bay tanks were installed, and patrol ranges were increased as Halsey utilized the *Mariners* to their maximum range. No torpedo drops were made on these flights.

PBM squadrons at Palau were: VPB-16, VPB-17, VPB-18, VPB-21, VPB-202 and VPB-216. Tenders were: *Chandeleur*, *Curtis*, *Coos Bay*, *Casco*, *Kenneth Whiting*, *Hamlin* and the *St. George*. I have included tenders and squadrons that may have participated at nearby Ulithi which was taken in October. To this date, every PBM squadron in the Pacific Fleet was equipped with the PBM-3D. They were extremely underpowered and I am sure that every PBM squadron CO was reporting this limitation. The navy and Martin Company had been aware of this, and, as early as 1943, two "fixes" had been authorized. These two fixes would give the *Mariner* capability to more nearly reach her designed limits to insure safe operation with the heavy loads in "Pacific" sea states that were being encountered in the assault "support" roles being assigned to the PBM's.

The first major fix to arrive in the fleet was the PBM-5 model equipped with Pratt Whitney R-2800 engines. This model had been requested by the navy on September 15, 1943. Martin engineers had, first thought a new higher single tail might be required but this proved to be unnecessary. Orders for

the PBM-5 were given in January 1944. The first fleet delivery was made in August 1944 and by the war's end five hundred eighty-nine 5's had been delivered. The PBM-4 was "considered" for Wright 3350 engines but because of engine unavailability it was not developed.

The second "fix" had an earlier authorization letter date. This was for a test to determine take-off and operating characteristics of the PBM-3 airplane using 3000 pounds of assisted thrust produced by two 1,500 pound liquid jet units. Aerojet Engineering Corp. of Pasadena, California designed and constructed these units, which were tested at California's Salton Sea on July 16-17, 1944. The units burned for forty-two seconds and improved take-off time from 44% to 60%, depending on weight of the aircraft. Tests were highly successful, including a demonstration that these could be installed from rearming boats. These units, known as JATO (Jet Assist Take Off), proved to be invaluable in shortening the take-off time and distance for the *Mariner*. JATO was first used on a VPB-19 *Mariner* during the Iwo Jima invasion when a PBM-5 was able to get off the rough water with the film that had just been shot atop Mt. Suribachi. Kammen's summary of the Iwo Jima Operation reads:

(Note: See Table.III at the end of the text-Editor.)

Before the Iwo Jima assault, PBM's had moved to the Philippine Campaign during the fall of 1944. Squadrons were still equipped with PBM-3D's.

Ref. 2

The PBM squadrons for the Philippine Campaign were: VPB-17 at Leyte, Luzon and Tawi-Tawi; VPB-20 at Morotai, Leyte and Manila and Tawi-Tawi; VPB-25 at Leyte, Mindoro, Cavite and Lingayen; VH-4, Lingayen Gulf. Nine tenders listed were: *San Pablo*, *Half Moon Tangier*, *Orca*, *Wright*, *San Carlos*, *Currituck*, *Barataria* and the *Pocomoke*. This was the longest campaign in the Pacific, starting in October 1944 and lasting to the end of hostilities.

Several PBM squadrons flew "Black Cat" missions in the P.I. One of these was VPB-17. From April 1945 to June 19 this squadron's primary mission was to "Black Cat" at night in the China Sea off Hong Kong or in the Hainan Straights. Their flights took off from Lingayen Gulf and made effective use of moonlight.

Most literature indicates that "Black Catting" was done only by PBY *Catalinas* and *Catalinas* certainly made that term famous. But the PBM's superlative surface radar, four 150 pound, six 100 pound G.P. Bombs, 3500 rounds of 50 calibre ammunition, eight fragmentation bombs, radar altimeter and the crew comfort of the *Mariner's* spaciousness made a big difference for PBM "Black Catting." The PBM's were black catting in areas with hundreds of islands, bays and rivers. PBM's could enter harbors and bays on radar at a very low altitude. The bomb run could be made on radar and the target was illuminated only after the 50 calibre guns had fired. Fog or absence of a moon did not cancel flights, thanks to the PBM's radar. Crew stamina had to be very high.

Let me pay tribute to the *Mariner* aircrewmembers. I never met one, nor did I ever fly with one, who did not believe that we had the finest seaplane ever built. All stations were not "hotel quality" but I never had a complaint during 1,500 hours of World War II fleet flying. Meals, on wartime patrol, were "out of this world".

One statement from the VPB-17 Archive history report reads: "One of our PBM's after a Black Cat mission on June 6, 1945 returned with 380 holes in the aft section of the plane with no crew injuries."

A tragic note is that after VPB-17 ended their extremely

hazardous Black Cat missions on June 29, 1945, Lt.Cmdr. Cutter took off on June 30 for a flight to Tawi-Tawi from Lingayen. Both engines failed just after takeoff and seven of the twelve man crew were killed.

As the fighting in the Philippines continued, with the USAAF B-29's bombing Japan from the Marianas and struggling into Iwo when in trouble, CINCPAC was ready to move to Okinawa which was easily within reach of the Japanese Kamikaze suicide pilots. Most PBM squadrons were now flying PBM-5 aircraft equipped with JATO. The PBM's role at Okinawa may best be described by an Associated Press news release that read: "Bold Seaplane Maneuver Prelude to American Invasion of Okinawa," April 1945.

"The largest and most daring seaplane maneuver in history covered the Okinawa operation for nearly a week before the invasion. Anchored in the East China Sea, seven tenders moored four squadrons of Martin *Mariners* which protected the American forces from surprise enemy movements of a vast armada engaged in Ryukyuan assault. Few Americans ever heard of the Kerama Islands and little has been said of the bold ventures of the flying boats of Fleet Airwing One, but those two unknowns figured in one of the Pacific War's greatest dramas.

Fleet Air Wing One *Mariners* had participated in invasions before, but this was the first time they had moved in on the enemy ahead of the Marines.

This was the situation: Okinawa was 1,400 miles from our Marianas base and less than 350 miles from the Japanese homeland. The distance was too great for land based air of the density needed; carrier based aircraft had other assignments and were not suited for the job-the answer was a floating sea plane base. So the small task group of three large tenders and four small ones sailed from the Marianas in mid-March. Strategists had chosen Kerama Retto, 14 miles west of Okinawa for the base.

It was a big day getting the China Sea home ready for the fat-bellied birds already enroute from bases as far away as New York is from Omaha. The big fellows arrived in small groups flying through weather that for awhile had threatened the whole Ryukyuan operation. They came primarily to patrol and search the China Seas and the Pacific Ocean side of the islands. They were to forestall any attempts to bring in sub-

marines, warships and aircraft against our invasion forces, which by then were enroute.

The ground forces lived in dust, freezing nights and sweltering days, and ate from cans and cartons, all the while fighting mosquitoes; but not many of them would change places with the tight-pants boys on the ships within range of Japan's home-based suicide corps, and not many fighter pilots would trade their 400 mile an hour planes for the lumbering gull-winged boats that spend 12 to 15 hours at a stretch cruising along Japan's shorelines.

The *Mariners* got a taste of everything in their first days at Kerama coming home with flak and bullet holes in them by the score. They battered their hulls on choppy waves and tore off their tails bouncing on swells, but they went on doing a glorious job."

(Note: See OKINAWA CAMPAIGN Table IV at the end of the text-Editor.)

Author's Note: VPB-13's PB2Y *Coronados* had established an enviable reputation during the Marshall Island Campaign with their bombing missions to Truk, plus other sector patrol work. They did not fly patrols from Saipan but were at Kerama Retto flying patrols for the entire Okinawa campaign, to continue their role to the end of hostilities. It was fitting that this squadron that had altitude, speed and bombing advantages over the *Mariner*, be "on scene", for this greatest seaplane operation in history, and to be tended by a ship, the *Kenneth Whittings* (AV14), that was named in honor of one of our earliest naval aviation pioneers.

(Note: See SEAPLANE TENDER CHARACTERISTICS Table V at the end of the text-Editor.)

From Kammen report (Ominato tenders)

Citing the AV10 *Chandeleur's* log, that tender went to General Quarters two hundred four times at Okinawa and was brought under enemy fire eight times. Twice it was necessary to get underway because of typhoons. Their squadron, VPB-21, with Cmdr. J. E. Dougherty, CO, sank nine enemy vessels, with three probables and damage to nine others. They damaged or destroyed many land targets, spotted the giant Yamato battleship on April 7, 1945 and sent the message to the carrier planes that sank her. They rescued twenty downed airmen, shot down at least one Japanese plane and flew over five hundred missions for a total of seven thousand hours. The *Chandeleur* had seadrome control from the initial assault until August 5.

VPB-26 tended by the new *Norton Sound* and commanded by LCDR Robert S. Null, had been put into commission with PBM-3D's in May, 1944 at Charleston, South Carolina as VP-26. Null had been one of the pilots making the sub kill on August 6, 1943. Like all others, it was changed to VPB in October, 1944. They received PBM-5's equipped with JATO and Loran Navigational gear at Kaneohe Bay, Hawaii. They then began to move to the central Pacific bases. From Saipan, Lt. Cutet made a flight to Iwo Jima on "D-Day". He executed a full stall landing in very rough seas that collapsed the plane's tail section. Cutet hurriedly taxied to an old World War I DD (seaplane tender), the *USS Williamson*. The *Williamson* picked up the crew, put the *Mariner* in tow and succeeded in delivering it to the new tender *Hamlin*. There to tend VPB-19's planes. The *Hamlin's* crane put the *Mariner* aboard and kept it there until they reached Saipan, three days later.

Lt. Turner (crew 11) combined with Lt. Walker (crew 17) to sink the first ship, an eight-hundred-eighty ton freighter, for this squadron on June 10. On June 15, (crew 8), with pilots Lt.'s Turner and J. A. Clews, made the first strike against the mainland of Japan by a seaplane along the coast of Shikoku. On June 17, a two-plane section, (crew 15), with Lt. Jake Bach and (crew 15) with LCDR Coy, attacked a shipyard sixteen



AV's crane lifting a PBM-5 "Black Cat" aboard ship for repairs. (Photo USN/Martin via Bruce Barth)

miles south of Kochi. The shipyard was destroyed, six ships sunk, besides considerable other damage. The *Mariners* were on the prow!

These were only two of many missions flown by VPB-26 during the last three weeks of June.

VPB-26 was to become the first American squadron to be based and to operate from Tokyo Bay. The *Cumberland Sound* was the first tender to enter Tokyo Bay on August 18. LCDR Null led the first six VPB-26 planes to Tokyo Bay on August 30 to be tended by the *Cumberland Sound*. This squadron had completed seventeen months of activity without the loss of a single man, without serious injury and without a single aircraft lost to enemy action or at sea away from their base!

This squadron has organized a reunion group of their own and held their eighth reunion at Long Beach in 1983. Nearly one hundred were in attendance.

VPB-27 and VPB-208 furnished three PBM's each for an experimental torpedo mission from Kerama Retto on the night of April 27, 1945. A Japanese supply force had been spotted in the Yellow Sea nearly eight hundred miles away and beyond the range of the carrier's torpedo planes.

Each PBM carried two wing-mounted torpedos and the mission required a night flight at 500 feet to avoid radar detection. When the PBM's radar sighted their target they were to increase speed to 200 knots for a minimum of five minutes, select a target and, with wings level, drop their torpedos. The briefing officer stated to the six crews that they expected three crews to return. The planes flew in loose formation and located the targets after five hours. VPB-208 (by coin toss) made the first run, completely surprising the Japanese ships as proven by a sudden explosion of lights, not unlike those seen at the Los Angeles Coliseum on the fourth of July. Most of the ships were clearly visible.

VPB-27's three planes raked the decks of ships with their twin 50's and were able to select larger targets. Co-pilot Irvin Cooper (Los Angeles) of Patrol Plane Commander Elgie's *Mariner* recalls, "as we leveled our wings and dropped our torpedos, our plane was rocked with an explosion. Shrapnel flew through the cockpit, breaking a hydraulic line that splattered red fluid throughout the cabin. Our ordnance man, first thought to be bleeding, proved only to be "well oiled".

Dozens of holes were later found in our hull, and a shell had ripped a man-sized hole in our wing. The flight home was a wrestling match with sloppy controls and the possibility of losing a wing. The sturdy *Mariner* survived the flight and, as we landed, two tender boats came alongside and helped us get to a large tender that hoisted us up on the deck for major repairs."

"Credit for VPB-27's three planes was given for sinking one and a half ships. All six planes returned, proving once again that if you are trained properly, fly a rugged airplane and someone is watching over you, that you can exceed the briefing officer's expectations."

A congratulatory message was received from CTG 51.20 the next day, addressed to VPB-27 and VPB-208, dated 28 April 1945 that read: "The task group commander takes the greatest pleasure in offering an enthusiastic "well-done" to the pilots and crews of VPB-27 and VPB-208 who braved heavy enemy fire to strike at the well defended Jap convoy last night. The admiration of all hands for the valor of the act is exceeded only by their gratitude for the safe return of all who participated. Confounding the silk purse-sow's ear principle, they manufactured excellent strikers out of ASP planes. In their hands, PBM's made history last night."

I have not forgotten the deeds of other PBM squadrons nor of the other types of seaplanes that participated. The accounts

that I have detailed were used because their documentation was available to me. They illustrate some of the accomplishments of the largest and most important seaplane operation in history. Okinawa operations included "nightmare" missions, similar to Black Cat flights. VPB-27 was an all "nightmare" operation. Their aircraft were painted black and operated from very low altitudes, at night, on the prow for any enemy vessel.

A less colorful, but more dramatic role for the *Mariners* at Okinawa was their performance in air sea rescue, usually referred to as "Dumbo." Again, from the Kammen report: "Air sea rescue operations from April to August at Okinawa show one hundred thirty-two of a possible one hundred eighty-six downed airmen rescued. Sixty-three of these were picked up by Dumbo PBM's, eighteen by Patrol PBM's, forty-four by surface ships and five by VOS. Thus, the *Mariners* picked up twice as many men as all other types of rescue! Most successful of these squadrons was VH-6 which made thirty-three open sea landings, (twenty-one of these were near the enemy's shoreline), being under fire during seven of these rescues. They often made rescues in swells of ten to twelve feet and a few when they exceeded fifteen feet."

On June 6, one of their planes had to land in fifteen to eighteen foot swells. As they checked for damage while in the water, water was breaking "over" the plane. A JATO takeoff was successful with minor flap damage. A Dumbo account, taken from D.C. Quinn's article from *Air Classics*, May 1976 reads in part: "Let me give you an example of how rugged the PBM was. One day there was a shipboard ceremony honoring our squadron Executive Officer, Jim Blemenstock, a pre-war All-American football player from Fordham. Jim was pronounced the "taxi-champ". He had landed in Kikai, a small Japanese Island hornet's nest, about 200 miles north of Okinawa and picked up a downed pilot. The water was so rough that his engines broke. Their mounts weakened and tilted down. This prevented takeoff although they could still function. He proceeded to taxi back to Okinawa, mission accomplished."

One day, our crew was ordered to rendezvous with an Air Force PBY near Amam-o-shima, a Japanese-held island in Kikai. The PBY was circling a downed pilot. Naturally, the sea was too rough for the PBY to land and so we went in and made the rescue. The ocean was rough. We poured on 52 inch-



Martin PBM-5A was the amphibian version. thirty-six were built and four were converted. Some were used for liaison during the administration of the Trust Territories after WW II. (Photo USN/Martin via Bruce Barth)

es of manifold pressure, hit four JATO bottles and got in the air with great speed.

All of our missions had escort flights of Navy, Marine Corps or Air Force fighters. And, boy, did they hate that work! We were so slow that they had to throttle way back to stay with us. The Navy and Marine Corps boys covered us like a blanket. The Air Force escorts remained as small dots ten thousand or more feet above us.

On July 24th, our crew landed in Okbe Bay and made the first air-sea rescue pick-up in Japan itself. Quite exciting. Our *Corsair* escort shot down a Japanese *Zero* that made a run on us. We picked up an Ensign Hecht, of Barracksville, West Virginia, wherever that is.

The next day another of our pilots, Sam Davis of Panama City, Florida went up to the same inland sea area and learned that a VH-4 PBM had landed, picked up a pilot, and then couldn't get its engines started while sitting there on the water in Japan. Sam landed, picked up the downed pilot and the whole crew of the other squadron's PBM. Then his escort fighter told him he didn't think he could make it back to the Fleet. Although it was getting dark, Sam stayed with this escort. Sure enough, the kid ran out of fuel and ditched in mid-ocean. Sam landed and picked him up as well. Quinn was a first pilot in VH-3.

I think that most of you would agree with me that naval aviation during and since World War II is carrier oriented, carrier thinking, as it should be.

All seaplanes were considered fat-bellied, ugly and generally laughed at in most conversations. Those of us who flew them noticed that when we elected to land in the choppy waters of the open sea with swells that always ran out of the wind, usually to pick up a single person, that there was no laughter from our crew or from the man (or men) that we rescued. You cannot understand what the nerve-shattering experience of either an open sea landing or take-off is unless you've had the actual experience. (That operation is one that you rarely have seen in the movies or on TV). Kammen's paper included several pages of detail on these Dumbo rescues. Some of these were: (Ref. 3)

"June of 1945 and VPB-208 was still at Kerama. A *Mariner* from that squadron, Baker Two, on the morning of the 14th, was tugging at her buoy like a sleepy whale. Off in the distance she could see her tender, the *USS Hamlin*.

When the call came it was for a rescue mission. An army fighter pilot had bailed out about half mile off Kikai Jima, 200 miles northeast of the anchorage and under the guns of an enemy strongpoint.

Baker Two took off with seas running 10 to 15 feet. She slid up and down the swells at first like a roller coaster; then there were a couple of thuds as she got off.

When Baker Two arrived over the rescue point, a heavy sea was running. The pilot dumped all the gas he could spare and started down well covered by friendly fighters, circling their downed mate. The landing was routine - hard, water spraying high over the cockpit. The Radar was knocked out. The pilot in the water was picked tip. The PBM lightened of gas and with a fourbottle JATO take-off, got into the air after a five-second run. The jar that had knocked out the radar did not knock out the IFF but a tiny crack appeared in the delicate filament inside an IFF tube.

While the downed fighter-pilot was being picked up, enemy fire knocked down another fighter that had been covering the rescue by strafing the beach. Barker Two was informed of this and the pilot circled the area once and landed again. This time the plane had to land even closer to the heavy shore batteries. It was a good landing, five bounces and down. A rivet popped,

(Ref. 3 This account of a VPB-208 Dumbo mission is taken from the Naval Aviation News, March 1948.) one radio receiver went out and the crack widened inside the IFF tube.

Waves were breaking over Baker Two's wings. Three passes were made at the downed pilot; once he was picked partially from the water only to be dragged back. Enemy fire was creeping closer and shrapnel holes appeared in the plane. Another PBM was on the way to assist with fresh fighter escort. The fighters in the area in the area were leaving because of gas shortage. Baker Two had to get into the air now or not at all. The take-off this time was without JATO. The plane went up and down from swell to trough, sometimes disappearing below the level of the sea. Then she was bouncing from wave to wave. A take-off like that is a bit like running, a light tank through a series of cement barriers. The jolts knocked a fire bottle off the bulkhead and put a crease in the wing-tip floats. The IFF tube stayed intact.

The other PBM, a plane from VH-3, landed and picked up the survivor left in the water while Baker Two circled to mark the spot. Both planes returned after dark.

Back at base the seas were only five feet now; the landing was routine. Baker Two made the buoy and a boat came out from the tender to pick up the survivor and part of the crew. Four members of the crew stayed aboard on watch.

Early the next morning, a bowser boat came alongside and gassed Baker Two. Chow was brought out and the watch relieved. A few minutes later the PATSU maintenance crew from the *Hamlin* came aboard to check the plane. This maintenance crew fixed the radar gear and the radio.

Around noon a flat rearming boat came alongside from the ship with four blunt-nosed depth charges lying on the bottom. Two depth charges were loaded into each bomb bay. Additional .50 cal. ammunition was loaded aboard and the JATO racks were filled with fresh bottles. Baker Two was ready for a search patrol.

The sea was calm when the plane took off and she went into the air smoothly. She circled the ship once, then came back across her bow. In the CIC room, a man with earphones listened for an identification signal. It was there, he picked up a mike and said, "Baker Two, your lights are on, continue with your mission."

At 0200 in the morning the PBM was grinding around a short diamond-shaped sector watching the radar screen for a blip that might mean an enemy sub. A few thunderstorms were building up in the area and it was getting rough. As she came out of a rain squall, a sudden gust put a side load on the plane. It wasn't much, just enough to snap the thread of filament inside the IFF tube. At 0210, the pilot heard a message go out on the fighter network, "Bogey in sector 14-A. Calling Drake 6, vector 140 at angels 8."

The PBM's navigator checked the position given him by the pilot and nodded resignedly, "That us." A radioman listening for a signal in his set reported, "IFF is out, Sir." The pilot flicked a switch on his radio control box and called his tender, "Hello, Crackerbox, this it Baker Two, inform Octopus that Bogey in 14-A is a Chick, call off her dogs, call off her dogs. My "lights" are out, I'm returning to base."

The nightfighter Pilot couldn't hear Baker Two's message, but the fighter director called in time to prevent his making the run. The next day in carrier ready-room another fighter pilot was "giving those damned boxcar drivers hell!"

To move on to a lighter subject, let's examine the role of the *Mariner* in early occupational duties. I'll cite two first hand reports.

A VPB-19 PPC, Newell Twist who lives in West Covina, California, flew a mission to Wake Island from Eniwetok as

cover for the Marine Brigadier General's landing party that was to accept the surrender in Late August. Twist landed in the lagoon and beached his PBM on the sand, then stepped ashore, becoming the first American to return to Wake. He recalls that he was severely criticized for this "oversight" by the Marine General.

On 1 September, Squadron VPB-18 dispatched the first of a series of 51 round trips in the Tanapag-Tokyo shuttle service - the so-called "Tokyo Express". The first flight dispatched was crew 8 one day prior to the signing of the Peace Treaty. Between September 1 and October 3 when the service was terminated, VPB-18's planes were destined to carry 594 passengers, 133,434 pounds of air-mail, 55,607 pounds of parcel post, 53,126 pounds of priority freight, 10,753 pounds of officer messenger mail, 9,162 pounds of registered mail, 1,688 pounds of blood plasma, serums and vaccines, and 75 pounds of press copy for a grand total payload of 387,370 pounds. For this service, planes were stripped of all excess gear, armor, guns, etc., and equipped with wooden seats. Only three flights were cancelled, because of adverse weather conditions, and one flight was cancelled because of engine trouble. On more than one occasion, for a period of one to three days, the "Tokyo Express" was the only air service entering or departing the Tokyo area.

I took off from Eniwetok on September 7 as part of a two-plane VPB-21 crew replacement with a long-time fellow pilot, Lt. J.G. Roger Frangkiser who now lives at Shell Knob, Missouri, for Saipan and on September 9 we flew to Tokyo Bay. The next day we flew to join our squadron and, once again, the *Chandeleur* at Ominato Bay in Northern Honshu. We were the only PBM squadron assigned to Admiral Jack Fletcher's Task Force which was to occupy Northern Japan for these first few weeks. At Ominato, I flew one perimeter patrol around Hokkaido at five hundred feet and took quite a few K-20 photos, which I still have. On another day we flew a shuttle flight back to Tokyo. I will include portions of the *Chandeleur's* newspaper, the *Tender Topics*, that describe early encounter with the Japanese and an American POW at Ominato Bay.

A typhoon arrived in early October, before we could fly out and I found myself in my PBM with a skeleton crew, at a buoy as the winds developed. Our PBM was one of fifteen in the lagoon area. We had our engines operating for twenty-two hours, day and night, in driving wind and rain, to maintain our position of safety. One *Mariner* lost an engine, was blown to the shore rocks and broke in two at the waist hatch. This aircraft belonged to Lt. John Drover who lives in Monroeville, Pennsylvania. John and I met in 1982 at an AV-10 reunion in New Jersey (for the first time since World War II). I had a snapshot of his "severed" plane with me. He had not made a photo of it at the time. Needless to say, that photo was most meaningful to him. A few days after this typhoon, I was on my way home. That ended a flying career for me. I elected not to fly occasionally and, although it has been difficult, I have not been back in the cockpit at the controls since that flight.

In 1947 a few men who saw commercial possibilities were able to purchase seven PBM-5's as surplus at Norfolk for an air arm of a Columbian steamship line known as Naviera Columbiana Division Aera. They flew inland, using the Magdalena River as a seadrome and some of its sand/mud flats as loading areas. The *Mariners* were stripped and could carry up to 20,000 pounds for some of their stops. The airline was short-lived, according to "Chick" Tkachick of Dowingtown, Pennsylvania, who still flies as a flight engineer for Capitol Air. We met here when he found a local newspaper last April that had our PBM reunion story on the front page.

Some interesting post-war PBM operations included:

1. During Operations Nanook, a joint U.S.-Canadian exercise above the Arctic Circle in the southern Greenland area, during August-October, 1946, two PBM's operating from the *Norton Sound*, AVP-11, made flights over the polar ice cap reaching to within four hundred fifty miles of the Pole, the closest approach ever made by seaplanes. (Ref.: Nav. Av. News, Nov. 1946, pp 16)

2. In the summer of 1946, during Operation Crossroads, the first post-war test of the atomic bomb, PBM's of VH-4 and VP-32 provided varied support services for the task force, including transport, air-sea rescue, photography, radiometry and radio logical reconnaissance. (Ref.: Nav. Av. News, Nov. 1946, pp 31-33)

3. During Operation Highjump, six PBM's based on seaplane tenders operated in the open seas around the continent of Antarctica. In the period 24 December, 1946 to 4 March, 1947, these aircraft flying in sub-zero temperatures and in severe weather conditions, covered more than twenty-eight thousand track miles of polar unknown and photographed five thousand five hundred miles of coastline - distance greater than the entire coastline of the forty-eight states of the United States. (Ref.: Nav. Av. News, July, 1947, pp 2-5)

Bill Riley of Los Angeles, a member of AAHS since its beginning, has a complete illustrated (original) report of this operation, including the photographs shown of PBM's and DC-3 ski planes near icebergs. LCDR Robert G. Goff, Astoria, New York, sent me many personal photographs and recalled personal observations of his involvement. He was a *Mariner* PPC on this expedition.

During the Korean War, PBM's were the first patrol planes in the area and remained on duty throughout the war. They operated from Japan, Okinawa, the Pescadores Islands and from the mainland of South Korea. Both active and reserve squadrons were involved. The Navy Department lists the Korean squadrons as: VP-47 (in area when war started, 6-25-50 to 6-1-53); VP-731 (reserves) Feb., 1951 to Dec. 8, 1952; June, 1952 to Dec., 1952; VP-42 Aug., 1950 to June, 1952; VP-48 July 1953. Cmdr. M.F. Weisner, who was CO of VP-46 from July 1950, to February 1951, later moved to CINPAC, the position that Fleet Admiral Chester Nimitz held during WW II.



PBM-5R served with the Uruguayan navy for patrol and-reconnaissance duties. (Photo USN/Martin via Bruce Barth)

Later Korean squadrons were: VP-46 July 1950, to 1953; VP-40 June 1951, to Sept. 1952, changed to VP-50, June 1953, to July, 1953.

PBM's continued to have fleet deployment until 1956, VP-50, with CO Cmdr. J. "Dino" Economou, who resides in San Diego, was the last Pacific squadron. In the Atlantic, VPB-34 was the last *Mariner* squadron as it was decommissioned also in 1956. The *Mariner* was used in training at Corpus Christi until 1958.

I want to briefly mention the Martin Company's *Mars*, *Marlins* and *Seamasters* as they were important to the navy and our National Defense. Each of them would make a fascinating story. I have found one publication, Air Classics dated November, 1981, that presented an excellent story on the *Mars* planes that included many fine photographs. A *Mars* was the first aircraft in the world to carry three hundred passengers. The *Marshall Mars* established this world record when it flew three hundred one (301) passengers and seven crewmen to San Diego from Alameda in the late 1940's.

The P5M *Marlins* were kept deployed until 1967 with over 200 being produced. Martin developed the P6M *Seamaster*, four-jet seaplane as a mine layer. The two prototypes were lost in accidents but the five production YP6M-1's at Harvey Point performed well. A P6M-2 flew on March 3, 1959 and later one *Seamaster* was tested successfully as an aerial tanker.* Four more P6M-2's were being completed when the navy abruptly cancelled the entire program and all aircraft were ordered scrapped. An interesting proposal by Martin of a "*Sea Mistress*".

* Author's comment: "Wouldn't it be timely if the navy had a few *Seamaster* tankers to deploy in the Indian Ocean, and elsewhere?"

A follow-on of the *Seamaster* was described in detail in the U.S. Navy Proceedings dated June, 1983. The huge *Sea Mistress* concept would have had swinging nose hatches and would have been used in the transport of Army Forces that were eventually filled by Douglas C-133A's. It could have been refueled from submarines, under water fuel caches, aerial tankers or fixed fuel bases, and would have given the army rapid deployment capability to most areas of the world. It was designed to carry one hundred thirty-three tons of cargo for one thousand miles or ninety tons for three thousand miles.

An article in the *AAHS Journal Spring 1983*, gave an excellent account of PBM-5A's, with VR-21 during the post World War II years. A few PRM-5A's were equipped with reversing

props. This article described how PBM's were used to help administer the Marian Trust Territory. Capt. William Shriver, USN Ret., of Anaheim, was one of these pilots.

All of the PBM's have been scrapped except one PBM-5A, on loan from the Smithsonian Institute at the Pima County Air Museum near Tucson, Arizona. This PBM was used by VR-21 in the Mariana Trust Territory flights.

Two *Mariner* flying boats have been targeted by an Auburn, California plane salvage company that are submerged in Lake Washington near Seattle. One of these lies on its back in only seventy feet of water. I am sure that all *Mariner* enthusiasts will be watching for the news that one or both have been recovered and that restoration has begun. A former Coast Guard PBM crewman, Foster Lewis of Bellevue, Washington is keeping me informed of this activity.

The Coast Guard showed early interest in obtaining PBM's as their reputation for high sea state landings was becoming known. They were never able to obtain early production *Mariner* aircraft, but the PBM-3 and PBM-5 models continued in service for the Coast Guard after they were phased out in the navy fleet squadrons.

The quarter scale man-carrying model of the Martin Company, built in 1938, is intact at the Smithsonian's Silver Hill storage facility. Meanwhile, a former engineer at the Martin plant, John Nicolaci, who has since learned to fly, decided that the *Mariner* should take to the skies again, John, who lives in New Bedford, Massachusetts along with his partner, Fred Tuxworth, designed and built a one-tenth scale nine-channel radio-controlled *Mariner* flying boat. It is equipped with bomb bay doors, drops scale bombs and/or torpedos, and recently has been equipped with JATO. It flew for a PBM group at the VPB-26 Reunion held in Baltimore in the fall of 1982. John brought the model to Norfolk in 1983 and flew it for the PBM reunion group and hundreds of bystanders.

That's my account of the Martin *Mariner* and of some of the people that were fortunate enough to fly them, or in them. Inquiries, corrections, and/or different opinions will be appreciated.

The final Paragraph and chart (*Note: See chart at the end of the text-Editor*) best states the "unknown" role of the *Mariner*. This is the fact that more patrol squadrons were equipped with PBM's at the peak of naval aviation's greatest buildup than of any other type of patrol aircraft.

On March 31, 1945 there were 29 PBM-equipped squadrons in the fleet. No other patrol-type aircraft ever

Operational Statistics covering Saipan Operations

TABLE II

	VP16	VP18	VP202	VP126	Total	Percent
A. Total Missions Assigned	249	36	114	232	631	100
D. Total Missions Abortive		22	0	10	7	39
	6.2					
C. Abortive due to sea conditions		15	0	10	7	32
	5.1					
D. Abortive due to Red Alerts		4	-	-	-	4
	0.6					
E. Assigned missions not met due to lack availability of planes	3	-	-	-	3	0.5

Plane Losses

Table III

During the period under consideration the following losses have been sustained by the seaplane squadrons under this command. The cause of the losses as noted is the unofficial assessment by this command from all known facts.

DATE

SQUADRON

BU. NO.	DAMAGE	CAUSE	REMARKS
6/19/44 VP-16 48173	Sunk	Sea conditions-60% Personnel - 30%	Rammed by Bowser boat in fuel ing;unsheltered waters with high seas running
6/21/44 VP-16 45216	Shot down entire crew lost	Material; IFF inoperative.	Shot down by own surface forces at night.
6/24/44 VH-1 PBM-Dumbo	Sunk	Operational	Wingtip float torn off in attempted rescue landing in open sea.
6/25/44 VP-216 48185	*DBLR	Material	Propeller apparently shifted on fo shaft forcingsingle engine flight withwindmilling propeller. Open sea landing. Plane sunk.
7/10/44 VP-16 48200	DBLR	Operational	Attacked by P-61 night fighters. IFF reportedly operative.
7/31/44 VP-216 48205	Sunk	Material or Maintenance	Propeller loosened onshaft failed to feathers resulting in open sea anding. Plane sunk by rescue destroyer.
8/1/44 VP-202 48215	*DBLR	Sea Conditions	DBLR in landing at Saipan. 10'-15'swells
8/1/44 VP-216 48204	DBLR	Sea Conditions	DBLR in attempted take-off. 10'-15' swells.
8/3/44 VP-202 45242	DBLR	Operating Area	DBLR by strikingunmarked wreckage while taxiing in Tanapag seadrome area.
8/10/44 VH-1 PBY-Dumbo	Sunk	Pilot error	Crashed on landing after local test flight.

*DBLR - Damaged beyond local repair; to be returned to Oahu via surface or flown back after temporary repair.

PERSONNEL LOSSES

Patrol Squadron SIXTEEN lost an entire crew on the night of 21 June with the lose of plane number 45216, shot down by own surface forces; on 19 June this squadron suffered the loss of one crew member as a result of an attack by own fighters.

IWO JIMA 24 FEBRUARY– 8 MARCH 1945

	VBP-19 Planes on hand	Available	VH-2 Planes on hand	Available	Search flights	Miscellaneous**		Ferry flights between Iwo Jima and Saipan	
								Arrivals at Iwo	Departures from Iwo
Date									
24 Feb						1			
25 Feb									
26 Feb									
27 Feb	3					1		3 VPB-19	
28 Feb	12	2	2		2	1		9 VPS -19	
								2 VH-2	
1 Mar	12	8	2	2	7	2		1 VPB-19	1 VPB-19
2 Mar	11*	7	2	2		1			
3 Mar	12	8	2	2	7	1		2 VPB-19	1 VPB-19
4 Mar	12	7	2	2	4				
5 Mar,	10	8	2	2	7				2 VPB-19
6 Mar	10	8	2	2					9 VPB-19
7 Mar	1	1	2	2					1 VPB-19
8 Mar			2	2					2 VH-2

*1 plane was swept onto the beach and demolished during night storm.

**All except one itinerant are press flights.

Source: Action Report, 14 Feb–8 Mar 1945, CTG 51.9 Serial 057.

Table V

Class	Name	Overall length	Limiting Displacement (tons)	Limiting draft	Complement	Largest boom capacity(tons)	Fuel capacity (gallons AvGas)	Date of first commission	
AV	USS CHANDELEUR	492'	14,200	23'9"	1,075	22	312,500	11/19/42	AV10
	USS HAMLIN	492'	14,000	23'19"	1,077	20	312,475	6/26/44	AV15
	USS NORTON SOUND	540'	15,092	22'13"	1,247	30	278,030	1/8/45	AV11
	USS POCCHOKE	492'	14,120	23'19"	1,075	22	291,920	7/18/41	AV 9
	USS ST. GEORGE	492	14,000	23'19"	1,077	20	312,475	7/24/44	AV 16
	USS KENNETH WHITING	492'	14,000	23'19"	1,077	20	312,475	5/8/44	
AV14									
AVD	USS BALLARD	314'	1,900	12'10"	179	15	29,815	6/5/19	AVD10
								(ex	
DD267)									
	USS WILLIAMSON	314'	1,730**	13'6"	276	—	—	10/29/20	AVD2
								(ex DD244)***	
AVP	USS BERING STRAIT	311'	2,800	13'6"	367	10	84,340	7/19/44	AVP34
	USS CASCO	312'	2,800	13'6"	367	10	84,340	12/27/41	AVP12
	USS CHINCOTEAGUE	311'	2,800	13'6"	367	10	88,000	4/12/43	AVP24
	USS DUXBURY BAY	311'	2,800	13'6"	367	10	84,340	12/31/41	AVP38
	USS GARDINERS BAY	311'	2,800	13'6"	367	10	84,340	2/11/45	AVP39
	USS MACKINAC	312'	2,800	13'6"	367	10	84,340	1/24/42	AVP13
	USS ONSLOW	311'	2,800	13'6"	367	10	84,340	12/22/43	AVP48
	USS SHELIKOF	311'	2,800	13'6"	367	10	84,340	4/17/44	AVP52
	USS SUISUN	311	2,800	13'6"	367	10	84,340	9/13/44	AVP53
	USS YAKUTAT	311	2,800	13'6"	367	10	84,340	3/31/44	AVP32

*No limiting draft or displacement established; figure is maximum load.

**Full load displacement.

***Data taken from Ships Data U. S. Naval Vessels, 15 Apr 45, Vol. I was for destroyer rather than AVD.

Sources BuShips, Navy Dept.
Ships' Data U.S. Naval Vessels
Vols. I and III
15 April 1945

TABLE I V
SQUADRON MOVEMENTS AND LOCATIONS
OKINAWA CAMPAIGN

<u>Squadron</u>	<u>Arrived Kerama Retto</u>	<u>Based Aboard</u>	<u>Aircraft Type</u>
VPB-18	29 March	<i>ST. GEORGE AV</i>	PBM-5
VPB-21	29 March	<i>CHANDELEUR AV</i>	PBM-5
VPB-27	29 March	<i>YAKUTAT AVP</i>	PBM-5
		<i>ONSLOW AVP</i>	PBM-5
		<i>SHELIKOF AVP</i>	PBM-5
VPB 208	1 April	<i>HAMLIN AV</i>	PBM-5
VPB-26	26 April	<i>NORTON SOUND AV</i>	PBM-5
VPB-13	26 April	<i>KENNETH WHITING AV</i>	PB2Y-5
VH-3	29 March	<i>HAMLIN AV</i>	PBM-3R (6)
		<i>BERING STRAIT AVP</i>	
VH-4	24 June	<i>GARDINERS BAY AVP</i>	PBM-5 (3)
		<i>SUISUN AVP</i>	
VH-6	27 June	<i>PINE ISLAND AVP</i>	PBM-5(6)
		etc.	
VH-1	7 August	<i>PINE ISLAND AVP</i>	PBM-5 (6)
		<i>BERING STRAIT AVP</i>	

PBM SPECIFICATIONS

Dimensions		Weights		Performance	
Span	118 ft.	Empty weight	32,328 lbs.	Cruising speed	147 mph
Length	80 ft.	Gross weight	56,000 lbs	High speed	200-plus mph
Wing area	1,400 sq. ft.	Cargo capacity	4-1/2 tons	Service ceiling	20,200 ft.

AIR SEA RESCUES - OPEN SEA LANDINGS

Date	Unit		Wind Val.	Wind Dir.	Sea Cond.	Wave Ht.	Swell Ht.	Description
1945 1/17	VH3	18	070	ruf	20'			PBM3R - The swells were 3001 crest to crest. Forced landing in rough seas, into wind, flaps down. First contact 0 70 kts. on swell. Skipped, hit water again and bounced 5011 hit with violent impact. Plane sank in 15 min. Causet engine failure on search' nission."
1/20	VH3	18-20	085	ruf	20'			Swells 2001 c-c. Forced landing of search due to engine failure.Hit water 0 70 kts. and bounced. Hit water second time, nosedown. Underside of bow caved in. Sank in hours. PBM3R.*
3/3	VH3	10	170	mod			8-12'	Landed into wind, 1 light bounce, then vio-lent bounce to 501. Plane settled gradually to water; no damage. JATO, airborne in 9_ . sacs. with slight bounce. PBM3R.
3/11	VH4							Landing made i mi. from shore.Due to waves on small crests, the t.o. was extrerely rough and port prop. governor failed to function, requiring manual adjustment during flight. Pilot proceeded to'Lingayen Gulf.
3/14	VH4				rough & chop		8-12'	and landed after dark in rough water with wind 25-28 kts. PBM.' 9 Filipino women clinging to overturned native banca. Landed-close by survivors. T.o. in spite of rough seas and rolling swells. PBM3R.-
3/15	VH4						up to 20'	Seas quite rough,. little hope of rescue..However, in immediato vicinity of survivor the strong coastal current.seemed to have flattened the waves somewhat. Landing suo-cessfillly executed, and survivor taken aboard. While plane on the water, wind increased sharply and the water roughened by white topped waves and huge swells. Pilot real-ized risk in attempting t.o. and decided to taxi to N coast of Luzon 30 mi. to the S where better conditions might be found. Force of current immediately checked that move and by nightfall the plane was still 10 mi. from shore. For the next 48 hre. every effort to maneuver the plane into an area suitable for t.o. was blocked by the ever-increasing force of wind and sea. It was necessary for at least one pilot to "ride" the controls constantly to assist theme plane over the swells which were as high as 30'. One aileron was torn off and the bow began to leak. A destroyer sent to aid the <i>Mariner</i> was forced to turn back by damage sustained from the heavy sea. 3 days after landing all hands abandoned ship by life rafts and were picked up by PT boats. The plane later was due to extreme damage.PBM3R.
*Unsuccessful								
sunk								
4/1	VH3	15-18		smooth				JATO took place 200 yds. frets shore and. enemy installation. PBM3R.
4/4	VH3	2-4	SW				long	Upwind landing. x.-wind take-off. PBM3R.
4/5	VH3	20	NW	rough			15'	Difficult landing. T.o. upwind, full power and JATO. Plane struck 2 small swells, catapulted into air by large one in 5 secs.PBM3R.
4/5	VH3	22	N				18'	Couldn't see survivor's raft for the waves.. JATO bounced into air off swells. PBM3R.
4/5	VH3	20	NW	rough			12-15'	Landing rough with 5 bounces. JATO. PBM3R.
4/8	VH3	25	N	rough			mod	No JATO. Airborne after several bounces. PBM3R.
4/8	VH3	13	N				8'	
4/12	VPB18							Starboard engine mounting seriouely*damaged in landing. Pilot made skillful circular take-off and "nursed" plane back to bass.
4/14	VH3	5	N				slight	Landed with wind. PBM3R.
4/15	VH3	10	N				10-12'	PBM5. Landed in channel between 2 islands, JATO.
4/15	VH3	10	W				4'	PBM3R. JATO.
4/15	VH3	8	NE				mod	PBM5.
4/15	VH3	0					3	PBM3R.
4/16	VH3	15	NW	mod			gentle	JATO (2) into wind. PM5. 4/16 VH3 6-8 NW slight gentle PBH5.
4/17	VH3	8	N	smooth			smooth	PBM3R.
4/17	VH3	8	KE	mod			gentle	JATO. PBM3R.
4/18	VH3	15	SE	nod			mod	PBM5. Rescue made under continuous shore fire. JATO.
4/18	VH3	14	SE	chop			none	PBM5. JATO.
4/21	VH3	12-15	E				12'	Landed parallel to swells.- JATO. PBM5.
4/22	VH4							PBM3R. Plane landed within sight of enemy beach and taxied as close to white capped rolling surf as was safe.

Note: Hereafter all dumbos are PBM5's (except 2 August, PBY5A).

4/21	VH3	14	S	chop				JATO.
4/27	VH3	10	030	chop			4'	JATO (2).
4/29	VH3 10	E-	6-8	Firing from shore. JATO.				
4/29	VH3	18	120	rough			15'	Due to height of swells and waves, t.o. im. possible without JATO which threw plans off water.Fire from beach.
4/30	VH3	20					15'	Plane bounce 701 on first touching, but was. kept under control, and after several leaefts bounces, was brought down undamaged. JATO.
5/3	VH3	22	N				15-18'	First pass made 101 off the water when one wave slapped hard against the hull. On 2nd pass a relatively smooth spot was selected,but the plane stayed on only a second, being thrown off by next wavt. coming downa see-ond time in a fully stalled attitude, it struck a still larger wave, bouncing plane 10' in air before it came to rest on water, Survivors boarded,plane checked for damage, several minor dents found on tail surfaces.Meanwhile waves broke continually over the plane. Upwind or Z-vind t.o.impossible duev. to sea., However, waves too close ly spaced to permit downwind t.o., and plane thrown into air one second after JATO fired. After one more bounce, plane stayed down long enough to pick up 60 kts. at which speed it remained in the air. Slight damage to the flaps caused by water striking the surfaces, but plane returned to base.

5/4	VH3						mod	
5/5	VH3	25	N	very rough	15'			Plane took 75' bounce.but landed safely.Slight damage to tail from water striking surface. JATO.
5/5	VPB208							
5/10	VH3	6	N				slight	
5/11	VH3	10	E				4	
5/11	VH3	0					light	No JATO.
5/11	VH3	15					light	No JATO.
5/12	VH3	18	335		12			Swells closely grouped. Plane landed 0 65 kta. terrifically hard. Slain spar in rear of port and starboard engine mounts gave way) starboard stabiliser damaged. The plane's hull was buckled, and the port inboard flap.. gave way. Nevertheless, the plane was able to taxi to the survivors to pick them up. Plane remained on water 20 min. making ready., for t.o. It was inspected thoroughly, and while the serious damage resulting from the hard landing was apparent, it was decided attempt JATO t.o., firing all 4 rockets at once, instead of 2 at a time. The plane was thrown into the air in 9 secs. but hung. in a stalled position just above the water. By rolling on the forward tab, the plane was noted over, picked up a3.r-Speed, and was flown back to base.
5/14	VH3	15'	160				10-12'	One large swell bounced plane 70t back into air causing great damage,but plane was kept under control. JATO, safe return.
5/18	VH3	6-8'	NW				slight	JATO.
5/22	VH3	18'	SW		6-8'			
5/24	VH3	12'	S		6'			
5/24	VH3	20'	N				10'	JATO.
5/27	VH3	8'	220				mod	
5/31	VH3	8	S				4'	
6/1	VH3	10					mod	
6/1	VH3	10		long grd. swells				Plane thrown into air by one large swell and ; came down hard, impact smashing bombardier's virdow. Plane taxied 150 miles to base.
6/1	VH3	8	180				3-4'	JATO
6/2	VH3	20	S				4-5'	PB2Y (PB13) attempting to rescue survivor landed with tide and wind in opposite directions and surface choppy. One large swell threw it into the airs the left wing dropped and the plane came down losing the left wing tip float and the outboard prop. The plane capsized 10 min. later while taxi-ing, and the crew took to rafts.. The waves in the middle of the bay where it landed were 10-15' high, but the water was calmer near the east ern shore where the PEM3 landed in spite of shore fire. It then taxied to the middle of the bay to the downed fliers where rescue effected and normal JATO.t.o. made after 40 minutes on the water,
6/2	VH3	14	315				mod	T.o. made 300 yds. from Jap seadrome under heavy AA fire.
6/3	VH3	10-12'	120				4-5'	JATO
6/6	VH3	10	290				4E	Downswell landing.
6/6	VPB21							
6/8	VPB24							
6/10	VH3	10	175				2	JATO
6/14	VH3	15	190				8	JATO.
6/14	VPB208							
6/15	VH3	11	180				7	Swells closely grouped. Landed Irwind. 7G-wind JATO t.o., airborne in 6 seconds.
6/17	VH3	12	225				10	JATO.
6/17	VH3	15	220				8	JATO.
6/18	VPB21							
6/20	VH3						10	Found sea too rough to risk landing.to Explored shores of enemy island and landed 250 yds. off E coast of Tokuno and taxied to survivors 30 miles away. Downevell t.o.
6/21	VPB208							
6/29	VH4							Survivor encountered 100 tai. from China coast where water extremely rough and pilot circled! aorto time before locating an area where swells most regular and landed near survivor. On t.o. the area was considerably roughened and the plane caught a wingtip float in a large wave, breaking it off and throwing the plane over on its side. All efforts to stabilize the plane by sending men to the upper wing proved fruitless and the plane continued to tip, coming to rest on its aide with water rushing in. The plane was aban-doned and all hands were later rescused.a
7/2	VH4							
7/2	VH4			choppy			8-10	Considerable swells in area of imediats rescue but in lee of Mage Shins the sea was comparatively calm, so the lending was made there, and plane made 20 min. taxi to raft.Taxi back to Kage Shixa and t.o.
7/2	VH3	5	140				mod	One large swell threw plane 50t into air.and on hitting water again, the starboard bomb-ing window door was carried away. Plane again thrown into air'by impact, so pilot, with power on, made another circle before ' landing. JATO.
7/9	VH4							
7/9	VH4			very			12-15	Short rolling swells were diagonal to wind. rough JATO into wind, leaping over very large swell. Airborne in 5 sees. ,
7/10	VH3	22	210	closely			8-10	Plane thrown into air about 30' four times.groupedTail fin and rudder damaged, port flaps carried away; plane unsafe for flight. Taxied 145 mi. to base.
7/10	VH4 ,	20	SW				12-15'	Funning parallel to wind. No JATO.
7/10	VH4	18					8-10'	JATO.
7/11	VH4	18					8-10	Moving very rapidly.
7/11	VH3	15	S				8	Conditions were found too rough for open sea(Located between landing, so pilot returned to shore and island, not landed between 2 islands and taxied 9 mileswhere rescue made) to survivors. X-wind, take-off started, but JATO failed, and t.c. made downwind.
7/13	VH3	15-18	S				8	Took survivor and taxied 4 mi. to shore and made JATO in smoother water in 6 sees.
7/14	VH3	10	E				5	JATO

7/18	VF3	5			7-8'S	Taxied from raft to raft to rescue 7 non. JATO
7/18	VH3	8	065		2'	Jettisoned 1,000 gal. fuel to land. JATO. 7/23 VPB18
7/23	VPB18					
7/24	VH3	8	270	rough		Rough seas made take-off questionable and difficult
7/24	VH3	3	250			
7/24	VH4	14-16			5-7	The swells were low and well. spaced.'
7/25	VH4					Sank
7/25	VPB26	15	090		5	JATO (This was repeated on trip in). .
7/25	VH3	12	240	rough	8	Army OA-10 sank attempting rescue.*. It had picked up survivors, but pro-peller torn off by swell attempting take-off. All were ferried to Navy dumbo which made successful take-off.'
right						
7/25	VH3	8	SW		15	
7/27	VH4	25	060		10	Landed cross-wind"" croee-swell.
7/28	VH3	18	180		18	Cross-swell and cross-wind take-off.
7/28	VH3	4	180		4	
7/28	VH3	4	180		4	
7/28	VH3	5	135		mod.	'
7/28	VH3	0		calm		PM-5 (VPB21) attempting landing hit water hard; left float carried away.* dunned engines and plane hit hard, dropping left engine. On next bounce, right engine lost. Damaged dumbo sank. Second dumbo res-hands.
cued all						
7/29	VH3	17	070	rough	10	PBY unable to risk landing and take-offl awaited PBM.
7/29	VH4					
7/29	VH4	18	090		slight	After succee, eilml rescue, PEN landed in wake of USS MISSOURI out of fuel.* Waters too rough to accomplish gassing Mariner at sea and crew transferred to USS MW -and dumbo was sunk.
7/30	VH4	12	135		mod.	
8/2	VPB23				12	Survivors from USS INDIAnPOLIS were is water near Peleliu, PBY-\$A made an open-sea, power-stall landing and taxies! about among the survivors rescuing 54 men. At dark the engines were cut and the sea anchor streamed. Because of cumulative damage, it was decided not to attempt take-off, but tq scuttle plane.
8/8	VH6	10	100		8-10	Army OA-10 attempted to rescue eurvivor% and landed near shore in lee of island where the water was more calm. It was so damagedit bank 10 min. after landing. Navy, dumbo rescued P51 aurvivor and taxied 10 tai. to PBY crew. JATO.
8/8	VH6	10	090		4	Survivors rescued by boat and transferredto dumbo.
8/9	VH1	8	080		6	Cross-wind and cross-swell landing.
8/9	VH3	7	135		6	
8/9	VH4	0			smooth	
6/9	VH4	17	095		rough	
8/9	VH4	8	110		8	
8/9	VH4	6-8	090		6-8 mod.	
8/10	VH4	8	045		4	Landed into wind, cross-swell.
8/10	VH4					
8/11	VH4	12	330		nod.	Rescue by vessel= aurvivre transferred to dunbo.
8/11	VH1	14	300		calm	
8/12	VH1	10	360		calm	Hole shot in port rudder of Dumbo by Jap shore guns 1mi. away.
8/12	VH1	10	360		mod.	
8/13	VH1	10	340	rough	8-10	The sea was no rough another Jumbo was arked to stand by while first made repcue.
8/13	VH4	0			mod. cross swells	
8/15	VH1	6-8	080		6-8 mod.	

Soureest Rescue Squadron 3 War Diary;
 Rescue Squadron 4 War Diary;
 Air Sea Rescue Ryukyus Fleet Air Wing I 3/21-8/17/43;
 VPB-13 History;
 VPB-18 War Diary;
 VPB-23 History.

1941		1942				1943				1944				1945		
PLANE	31	31	30	30	31	31	30	30	31	31	30	30	31	31	30	31
TYPE	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	AUG
GRAND TOTALS BY TYPE: ATLANTIC AND PACIFIC																
PBY	21	10	15	16	15	12	10	10	10	9	10	8	1	1	0	0
PBM	1	1	1	1	4	9	9	13	15	13	24	25	27	29	17	17
PB2Y	1	1	1	1	1	1	2	4	4	4	4	3	3	3	3	3
PBYA	3	6	9	12	12	11	11	10	11	13	14	15	16	17	9	9
PB4Y-1	0	0	0	0	0	2	6	7	12	14	14	14	17	17	9	9
PB4Y-2	0	0	0	0	0	0	0		0	0	0	1	6	8	9	10
PV	1	1	1	1	1	3	10	20	21	22	22	23	25	25	16	12
REFORMING - TRAINING																
PBY*	0	0	2	0	0	2	3	2	1	1	1	4	1	0	0	0
PBM*	0	0	0	0	3	3	4	0	3	6	3	3	3	1	1	2
PB2Y	0	0	0	0	0	1	2	0	0	0	0	1	1	0	0	0
PBYA**	0	0	3	1	2	1	0	5	2	3	2	2	1	0	0	0
PB4Y-1	0	0	0	0	0	2	0	7	3	1	3	5	0	0	1	1
PB4Y--2***	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	2
PV***	0	0	0	0	0	13	6	3	4	5	6	5	4	1	2	1

* seaplane.

** amphibian.

*** land plane.

Sources Aviation Statistics - WW II, p. 11 of Tab D, prepared by Aviation History unit, DCNO (Air), Op-05A5G.

References:

Note: References were in-bedded in the text and are repeated below in most cases as a guide only. The Tables titles were taken from the source.-Editor

Ref. 3: From "Nimitz and His Admirals, How They Won the Pacific War", (Hoyt)
¹(Ref.: Drew Boronda, Sr., Martin Flight Engineer)

The Navy Operation Archives at the Washington Navy Yard have proven to be the most valuable source for PBM reference. I have their microfilm tape of the "Operational History of the Flying Boats - Selected Campaigns in World War II and Operational History of the Atlantic Campaign." This report was done by Michael G. Kammen for the Bureau of Aeronautics. There are over 250 pages to his paper prepared for the Office of the Scientific Historian, Lee M. Pearson. It selected Saipan, Iwo Jima and Okinawa in the Pacific Theatre because in each of these campaigns harbor and beach facilities were not initially available. I will refer to this Kammen report prepared in 1959 by using the symbol 1. Reference to the Fleet Air Wing One-Eighteen summaries' symbol will be 2. Other references will be detailed.

Morrison Vol. X, pp 195-197 reports the August 6 attack

VPB-216 war history written by their CO. CMDR H.E. Cook, Jr.

VPB-17 Archive history report

Associated Press news release that read: "Bold Seaplane Maneuver Prelude to American Invasion of Okinawa," April 1945.

D.C. Quinn's article from Air Classics, May 1976

Naval Aviation News, Nov. 1944, pp 14-17. (Details furnished by Capt. Richard Knott, USN, Head, Aviation Periodicals and History).

Naval Aviation News, Nov. 1946, p 16)

Naval Aviation News, Nov. 1946, pp 31-33)

Naval Aviation News, March 1948.

AAHS Journal Spring 1983