

Ready to Mobilize

Part 1 of 2



Lexington (CV-2) leads Ranger, Yorktown and Enterprise — CVs 4, 5 and 6, respectively — in formation during the late 1930s.

By Capt. Steven U. Ramsdell

On September 1, 1939, the German blitzkrieg thundered into Poland and announced the return of war to Europe after 20 years of uneasy peace. Following the momentous events of the preceding weeks and months, the renewal of fighting was not unexpected. But across the Atlantic, the United States was staunchly resolved to remain out of the entanglements of foreign politics and war. That resolve shaped and constrained American policy until the Japanese raid on Pearl Harbor abruptly rallied public support for direct participation in the war. Once committed, the United States played a decisive role in the Allied defeat of both Germany and Japan, and Naval Aviation was among the

most potent military instruments in that victory.

As the first installment in a series which will follow Naval Aviation throughout WW II, this article is focused on the state of the U.S. Navy's air arm at the moment the war began in Europe. From this beginning subsequent installments, appearing over the course of the war's 50th anniversary, will describe the development of Naval Aviation and the combat action in which it participated.

The German invasion of Poland has been selected as our starting point because it is traditionally recognized as the beginning of WW II, and from that moment forward the possibility of American involvement in another world

war was based on concrete experience rather than speculation. Shortly thereafter American neutrality began to erode, eventually involving the Navy, before Pearl Harbor, in combat operations in fact if not in name.

On September 8, President Roosevelt proclaimed the existence of a limited national emergency and thereby initiated the accelerated process of preparing for war. The Navy and Naval Aviation were, of course, at the center of that process. Our objective at the outset of this series is to pin down the point from which the subsequent preparation of Naval Aviation for war began.

By every objective measure, Naval Aviation was unprepared for war in the fall of 1939. Popular disenchantment with the results of WW I and the government's commitment to austere federal budgets throughout the 1920s and the early years of the Depression restricted the development and growth of Naval Aviation. In 1926 the Navy was authorized to increase its aviation force to 1,000 aircraft and in 1938 to 3,000. But the results were far short of the Navy's estimated requirements for war with Japan, and the force on hand was minuscule compared to what turned out to be required to win a two-ocean war. By the middle of 1939, the Navy's inventory included only 1,316 combat aircraft.

Nonetheless, the situation could have been much worse. Despite the public mood and political climate of the preceding two decades, and the pace of technical developments in aviation

since the end of WW I, a solid foundation for the mobilization of Naval Aviation had been established and the momentum toward improved readiness for war was irreversible. Aviation was firmly established within the Navy, and Naval Aviation had taken on many of the characteristics of its maturity during the war ahead.

Few images of Naval Aviation during WW II are more striking than those of the aircraft carriers in action. They fought many of the war's fiercest and most decisive battles. Before it was over, the United States placed more than 100 of them in commission, including two dozen large fleet carriers. But in the fall of 1939 the Navy had a total of just five carriers. *Lexington* (CV-2) and *Saratoga* (CV-3) had been commissioned in 1927. They were laid down originally as battle cruisers but completed as carriers after the Washington Treaty of 1922 specified limits on naval armaments which would have sent both to the scrap heap otherwise. At 36,000 tons they were the largest carriers operated by the U.S. during the war.

Ranger (CV-4) was commissioned in 1934 as the first American ship designed and built from the keel up as an aircraft carrier. At 13,800 tons she represented the small carrier school of thought within Naval Aviation in the 1920s. The proponents of this view believed that the best way to keep an effective number of airplanes in the air was to have them flying from as many ships as possible. After *Lexington* and *Saratoga*, five ships of *Ranger's* dis-

placement could be built within the Washington Treaty limits. Bigger ships would mean fewer ships, perhaps not enough for effective operations.

That perspective changed even before *Ranger* was commissioned. Experience with *Lexington* and *Saratoga* demonstrated that maximum power could be concentrated in the air by launching strikes quickly from flight decks loaded, beforehand, with as many aircraft as possible rather than by moving planes up from the hangar deck one at a time for launch, which appeared to have the advantage of leaving the flight deck uncluttered and flexible. Plus, the large ships had the stability to launch and land planes in weather conditions far worse than previously imagined possible, and they proved the operational importance of higher speeds than *Ranger* could make. Thus, priorities for carrier construction shifted to ship and flight deck size and speed. The last two CVs to enter service before 1939, *Yorktown* (CV-5) in 1937 and *Enterprise* (CV-6) in 1938, displaced 20,000 tons each, and they were fast, as the fleet wanted.

Three more carriers were authorized, all in different states of development. *Wasp* (CV-7) was launched in April 1939 and commissioned the following spring. Her relatively small displacement of 14,700 tons was a compromise determined by the tonnage remaining under the Washington Treaty at the time of her design rather than by the intention to duplicate *Ranger*. Shorter than *Ranger* but with a larger flight deck and a little more speed,



Enterprise is loaded with biplane fighters and bombers, as well as the Navy's first carrier-based monoplane, the TBD Devastator.



Brewster's F2A Buffalo was the Navy's first monoplane fighter.

the last of these biplanes was delivered to the Navy in May 1939, shortly before the German invasion of Poland, and they remained in service with Marine Corps fighter squadrons until just before Pearl Harbor. Delivery of the first monoplane fighter to a fleet squadron, the Brewster F2A *Buffalo*, was made to VF-3 in December. And the Grumman F4F *Wildcat*, the first carrier-based fighter capable of slugging it out with superior Japanese *Zeros* (as it did almost single-handedly before the last half of 1943), was not seen in the fleet until VF-4 received the first copy in December 1940.

By 1939 the distinction between the missions of the carrier's bombing and scouting squadrons was rapidly disap-

Wasp was really a scaled-down development of *Yorktown*.

After the expiration of the Washington Treaty and its limits, *Hornet* (CV-8) and *Essex* (CV-9) were authorized in the Naval Expansion Act of 1938. In order to expedite construction, *Hornet* was laid down in late September 1939 as a full-scale repeat of *Yorktown's* proven design. *Essex*, on the other hand, was to be a substantial improvement which incorporated the most important lessons learned by the Navy about aircraft carriers. Her 27,000-ton design became the standard to which all the American fleet carriers commissioned during the war were built. But this innovation came at the expense of time. Her keel was not laid down until April 1941; she was commissioned on the last day of 1942.

When the war opened in Europe, the disposition of the carrier force reflected the Navy's strategic focus on the Pacific. The most formidable carriers were stationed on the West Coast with the fleet's Battle Force. Only *Ranger* was on the East Coast as part of the much smaller and recently formed Atlantic Squadron.

Therefore, at the moment the German offensive began in Europe, the U.S. Navy had on hand or on the way the carriers which met the Japanese offensive in the Pacific three years later. Of the seven carriers commissioned before Pearl Harbor (the five in commission in 1939 plus *Hornet* and *Wasp*), all except *Ranger* saw action in the Pacific before the Japanese were hammered to a stop on Guadalcanal in the fall of 1942. The strength of Naval Aviation proved to be adequate for this great test, but just barely. Four of the six carriers involved went to the bottom. However, *Essex* and her sister

ships were soon on the scene spearheading the Fast Carrier Task Force's drive to Japan.

The snapshot of carrier aircraft in September 1939 is significantly different from that of the ships themselves. In the case of aircraft, the critical importance of later additions to the fleet is most striking.

Aviators had known for a long time before 1939 that airplanes designed and built for one mission performed better than those built to perform several different missions. In the 1920s, carrier planes were developed for the missions of fighting (shooting down other aircraft), bombing, launching torpedoes and scouting. The air group on each carrier, identified by the ship's name (numbering air groups began in 1942), consisted of one 18-plane squadron for each of these types of aircraft. The squadrons were labeled respectively VF, VB, VT and VS and numbered for the ship to which they were assigned. For example, *Lexington*, the second carrier commissioned, was designated CV-2, so her air group consisted of VF-2, VB-2, VT-2 and VS-2. All of the carrier air groups had four similar squadrons, except those for *Ranger* and *Wasp* (whose group had just been established) which included a second VS squadron in place of the VT squadron.

The aircraft actually being flown in these squadrons in 1939 were in many cases a far cry from those which met the Japanese after Pearl Harbor. Carrier fighter squadrons were still mired in the biplane age, flying Grumman F2Fs and F3Fs. Names were not officially assigned to aircraft by the Navy until 1941, and neither the F2F nor the F3F had an unofficial popular name. First flown respectively in 1933 and 1935,



pearing, a fact reflected in the designation of the planes they flew: SB for scout-bombers. But in terms of the aircraft actually assigned to the squadrons, there was a substantial difference.

The bombing squadrons had crossed the threshold into the era of monoplanes. VBs 2, 3 and 4 were equipped with the first-generation scout-bomber monoplane, the Vought SB2U *Vindicator*. It had been in the fleet for almost two years and deliveries continued until the summer of 1941. *Vindicators* saw action after the war began but by then were being replaced as quickly as the production of newer types permitted.

Two bombing squadrons were al-

ready flying an aircraft which became one of the real combat champions of the war. The first Northrop BT-1s were accepted in April 1938, and VBs 5 and 6 were fully equipped with them in the next few months. By the time a refined model was ready, the XBT-2, Northrop had become a division of Douglas and the aircraft was redesignated the SBD *Dauntless*. This versatile workhorse quickly developed a reputation for ruggedness and dependability. As the principle carrier-based dive-bomber during the first half of the war, it provided the lion's share of the carriers' offensive punch in many of their most important battles. More than 5,300 of them were accepted for use by the Navy and Army before the line closed in August 1944.

The similarity in missions between the bombing and scouting squadrons did not extend to the vintage of their aircraft. The antiquated airplanes in the VS squadrons were the geriatric element of each air group. *Ranger's* two VS outfits were flying Vought SBU biplanes which had been in service almost four years and out of production over two. The scouting squadrons on the other four active carriers flew Curtiss SBC *Helldivers*, America's last combat biplanes. Even though they remained in production until the spring of 1941 and were still in limited fleet service at the time of Pearl Harbor, these *Helldivers* (a name used several times by Curtiss), like the SBUs, were in need of replacement by 1939.



Curtiss BF2C-1s of VB-5 in the mid-1930s. It was in biplanes such as these that the Navy perfected the dive-bombing tactics that proved so lethal in the war.

The torpedo squadrons were in the middle of the air groups' generational spectrum. They had all transitioned to Douglas TBD *Devastators* before 1939 and were still flying them two years later. The *Devastator* was a significant innovation when it became the first carrier-based monoplane to enter the fleet in 1937, but it was obsolete by the time the war began and was withdrawn from operational service after its disastrous performance at the Battle of Midway. Three squadrons of *Devastators* were wiped out by Japanese *Zeros* there. Unlike the fighter and scouting squadrons which had aircraft so out-of-date in 1939 that they were replaced before Pearl Harbor, or the bombing squadrons which had newer aircraft with more up-to-date performance, the torpedo squadrons suffered the fate of having planes that were too new to replace but too old to survive after the fighting began.

Scouting for the battleships and spotting hits for their big guns, considered absolutely essential for the success of the battle line by 1939, was performed from Curtiss SOC *Seagull* floatplanes. Observation squadrons, VOs, supplied a three-plane detachment to each ship. Similar services were provided to the cruisers of the Scouting Force by cruiser-scouting squadron (VCS) detachments, flying the same airplane. In operation, they were catapulted for takeoff and retrieved by winch after landing in the sea alongside the parent ship.

The position enjoyed by carriers and their squadrons within the culture of Naval Aviation was rivaled by the VP squadrons of patrol aviation, which had longer pedigrees. Pilots transferred between the communities frequently. As an illustration, Captain Marc Mitscher squeezed in command of Patrol Wing One between his command of the tender *Wright* and his arrival as the Deputy Chief of the Bureau of Aeronautics. His tour was just long enough to allow him to lead the wing through the important Fleet Problem XX of 1939. His later fame came as *Hornet's* first commanding officer and commander of the Fast Carrier Task Force's drive across the central Pacific.

Patrol aviation's importance was also apparent in the largest single contract awarded to date for Navy or Army aircraft — \$21 million in 1938 for Consolidated PBY *Catalinas*. First flown in 1935, *Catalinas* began to arrive in fleet squadrons in 1936 and were still coming off the production line when Japan surrendered. A few older P2Ys remained in fleet service until early 1941, and

newer and larger planes soon appeared which also rendered creditable service, most notably Martin PBM *Mariners*. But the PBYs formed the core of patrol aviation throughout the war. More of them were made than any other flying boat, almost 2,400, including 636 which were exported.

During the 1930s, fleet exercises consistently demonstrated the PBY's scouting effectiveness. With a search range far greater than that of any of the aircraft carried on ships, the PBYs could make a significant contribution to the fighting potential of the fleet itself. However, the exercises cast ever greater doubt on their potential to effectively bomb surface combatants without suffering unacceptable losses. (That capability was expressed by the B in PBY.) Unconvinced, the individual squadrons still stressed bombing practice in their training.

The 20 VP squadrons active in September 1939 were organized into five patrol wings. Their disposition, like that of the carriers, reflected the Navy's strategic orientation. Three wings were in the Pacific — homeported at San Diego, Calif.; Seattle, Wash.; and Pearl Harbor, Hawaii. Another was permanently assigned to the Canal Zone at Coco Solo. Only Patrol Wing Five at Norfolk, Va., was on the East Coast. From these bases squadrons regularly deployed to loca-

tions such as Guantanamo Bay, Cuba; Sitka, Alaska; and Midway Island in the central Pacific.

For greatest effectiveness, the PBYs needed mobile bases to quickly extend their protective umbrella, but the development of seaplane tenders had languished badly. The aging and inadequate tender fleet was composed of converted minesweepers, an ex-oiler, *Wright* — in commission since 1921 — and *Langley*, the Navy's first carrier now in her final incarnation. Consequently, a program to convert 14 flush-deck destroyers to seaplane tenders was initiated in 1938.

Seaplanes, however, were not the only solution to the long-range patrol problem. To many aviation officers, the performance and achievements of German Zeppelins during WW I demonstrated the great potential of lighter-than-air (LTA) craft — especially rigid airships — to add a new dimension to naval warfare, including long-range patrol. During the 1920s and 1930s, the Navy pursued a spirited LTA program to make that potential a reality, including the use of rigid airships as flying aircraft carriers. But the results were disappointing, even tragic. Of the five rigid airships constructed, only one survived to reach a nonviolent retirement from service, and skepticism grew throughout the fleet as to the survivability and usefulness of airships



The Consolidated P2Y-1 served in patrol squadrons until 1941 when it was replaced by the ubiquitous PBY *Catalina*.

in combat. With the crash of *Akron* in 1933 and the demise of *Macon* in 1935, the rigid airship program effectively came to an end.

In 1937 the airship program was revived when the Navy's General Board recommended that coastal patrols be resumed in nonrigid airships and a contract was awarded to Goodyear to build two new blimps, which became the prototypes for the wartime fleet of L and K dirigibles. Expectations for these blimps were considerably more realistic than they had been for rigid airships earlier. Both of them were flying out of NAS Lakehurst, N.J., in 1939 (along with a handful of older blimps), but regular production was not initiated until the following year.

Thus, the Navy had worked painfully through its infatuation with rigid airships and was headed toward a limited, but realistic, concept for the use of LTA craft. Safe, practical blimps had been developed and were in the inventory, and the difficult technical problems of operating them were largely solved.

The Naval Aviators with the most combat experience when the war began in Europe were Marines. Marine aviators had taken their fledgling force to Nicaragua and the Caribbean during the 1920s and early 1930s as part of a series of interventions. From that experience they began to work out the problems of supporting troops on the ground from the air. The dive-bombing techniques they pioneered for close air support were much like those that Navy bombing and scouting squadrons were practicing for attacks against ships.

The organization of Marine aircraft groups correspond closely to that of Navy carrier air groups, although they did not include torpedo squadrons. The First Marine Aircraft Group was stationed at Quantico, Va., and consisted of VMF-1, VMB-1 and VMS-1; the Second Marine Aircraft Group, composed of similarly designated squadrons, was located in San Diego.

Unlike the doctrine developed in part from their Latin American experience, the aircraft flown by Marine aviators in the fall of 1939 would not stand the test of time. Indeed, there were no bright spots in the inventory; it consisted entirely of biplanes. Like their Navy counterparts, Marine fighter squadrons flew Grumman F3Fs, and they had the dubious distinction of being the last units in Naval Aviation to turn them in for newer planes. The bombing squadrons were equipped with Great Lakes BGs, antiques which



The Goodyear L-1 nonrigid airship was ordered in 1937 as a trainer for follow-on airships.

had been out of production for nearly four years and out of Navy squadrons since 1938. The scouting squadrons had a mix of old landplanes and amphibians. Clearly, the Marines sorely needed new equipment if they were to effectively apply their know-how in modern combat.

By 1939 aviation had become an integral part of the Coast Guard, the third service in Naval Aviation. More than 50 aircraft were being flown from its nine air stations in support of law enforcement and relief activities, and they were becoming ever more important to the development of its search and rescue mission. The inventory included a mix of planes acquired from the Navy and those built specifically for Coast Guard operations. In the mid-1930s amphibians were teamed with cutters, which added a new dimension to Coast Guard capabilities. As tensions grew between Japan and the United States, the patrols of these cutter-aircraft teams in the waters around Alaska took on greater importance.

Among Naval Aviation's most valuable resources was the shore establishment which supported the operation of its ships and squadrons at sea. The carriers on the West Coast were homeported in 1939 in San Diego, and their air groups flew out of NAS San Diego when not embarked. *Ranger* had just moved to Norfolk, so her squadrons conducted their shore-based operations from the recently completed Chambers Field at NAS Norfolk. Patrol wings

were also stationed at these bases, plus NAS Seattle and the Fleet Air Bases at Pearl Harbor and Coco Solo. NAS Lakehurst was the only active blimp base. NAS Sunnyvale, Calif., later renamed NAS Moffett Field and home of West Coast LTA operations, was for the time being in the hands of the Army. The Naval Aircraft Factory and its field were located at the Navy Yard in Philadelphia, Pa., and the Training Command was securely established in its familiar surroundings at NAS Pensacola, Fla. The Navy's aviation test facility was a long-time resident of NAS Anacostia in Washington, D.C.

A substantial enlargement of Naval Aviation's shore establishment was already under way in 1939. In April \$65,000,000 was authorized for that purpose. Moreover, from the beginning of the New Deal, funds appropriated for the Works Projects Administration and the Public Works Administration were used widely to supplement allocations for Naval Aviation, including the construction of new facilities and the rejuvenation and reopening of existing bases.

New air stations were under development at Miami and Jacksonville, Fla.; Alameda, Calif.; Kaneohe Bay, Hawaii; and Corpus Christi, Texas; and NAS Cape May, N.J., had come to life again. Auxiliary and outlying fields began popping up around the major bases — Pensacola and San Diego first, then Corpus Christi and the others. Additionally, a network of 13

Naval Reserve Aviation Bases were scattered across the country to provide reserve Navy and Marine Corps aviators with the opportunity to maintain their flight proficiency and to support the flight training program. Altogether, this system formed a solid foundation for the mobilization of Naval Aviation ahead.

Maintaining an adequate number of pilots was an old problem for Naval Aviation. The output of the Naval Academy was not sufficient to keep the cockpits filled with officer-pilots of the regular Navy. During WW I, the vast majority of Naval Aviators trained were reserves, and shortly after demobilization, the reserve program was revived to meet the modest needs of the 1920s. However, numerous impediments prevented achieving more than limited success. In 1939 there were only 138 Naval Aviators in the Organized Reserve available for mobilization. Over the years the Navy experimented with other approaches to the problem. But none of them proved to be fully satisfactory, and the situation was exacerbated considerably by the needs of the expansion program. The solution came to center on the Naval Aviation cadets.

Initiated in 1935, the Naval Aviation Cadet program produced Naval Aviators from college graduates who agreed to serve on active duty for four years (including training) with the rank of aviation cadet. At the end of their active duty, they were commissioned in the Naval Reserve, paid a bonus and returned to civilian life. They agreed to remain unmarried while on active duty and to join a Naval Aviation Reserve unit after they were released. The cadets would augment Naval Aviation's corps of regular officers during peacetime and be available for mobilization in the event of war.

The cadets' performance exceeded almost everyone's expectations and made the program a success from the beginning. Within a year, it was recognized as a permanent fixture in Naval Aviation. However, the cadets became increasingly dissatisfied with their status and title, which was hardly reflective of their duties and responsibilities. They were often older, better educated and more experienced than the ensigns of the regular Navy to whom they were junior — a galling situation. The Naval Aviation Reserve Act passed in June 1939 included a provision to commission the cadets after one year of sea duty, but their discontent was far from resolved when all pending applications for release

from active duty were cancelled following the outbreak of war in Europe.

Nonetheless, a workable system to increase the number of pilots had been developed and was being refined. Although intended to produce fewer than half of the pilots in the fleet, the cadet program was suitable for quick and massive expansion. From the prospective of the requirements ahead, it was a timely development; there were only 1,068 Naval Aviators active in the Navy and 180 in the Marine Corps at the end of June 1939.

Enlisted pilots, known as Naval Aviation Pilots, or NAPs, were part of Naval Aviation from the early days in both the Navy and the Marine Corps, but uncertainty about the program was never far below the surface. NAP flight training was started and stopped repeatedly after WW I. The Bureau of Aeronautics generally resisted the program because of the higher attrition rate experienced by enlisted flight students and various limits placed on NAPs once they arrived in the fleet, but the number of pilots required and the difficulties of obtaining them by other means left few alternatives. Additionally, a minimum of 20 percent of the Navy's pilots were required by law to be enlisted. Therefore, most squadrons had a few enlisted pilots.

However, VF-2 was a special case. It had been organized specifically as a test to determine the level of performance possible from a squadron composed of enlisted pilots lead by officer-pilot section leaders. Twelve of its 18 pilots were enlisted. With this organization, it compiled one of the most distinguished records among the carrier squadrons until most of its experienced NAPs were transferred to training command duty after the war's opening battles, but VF-2's record did not change the Navy's preference for officer-pilots.

The prerequisite phase of the flight

training program helped show the way to the massive expansion of pilot training after 1939. Called "elimination training," this short introduction was designed to weed out, or quite literally eliminate, those not suited for the rigors of flight training before they arrived at Pensacola. It was conducted all across the country and became the principal activity of the Naval Reserve Aviation Bases during mobilization. This dispersion anticipated the spread of flight training later.

The flight training program had gone through numerous modifications over the years. In the summer of 1939, it consisted of five phases and took a year to complete. Students began their program in the Navy's first regular trainer, the N3N "Yellow Peril," configured with floats for primary seaplane training. Next came "primary landplanes" flown in N3Ns without floats. The remaining parts of the program were conducted in a variety of recently obsolete land and seaplanes. Following this regular course, pilots were given experience in modern fleet-type aircraft before reporting to their assigned squadrons.

With the alacrity and decisiveness required to meet the challenge of the mobilization ahead, the program was abruptly cut in half to increase output after the national emergency was declared. Primary seaplane training was omitted entirely, and after two phases in landplanes, students specialized in the type of plane they would fly in the fleet. This modified syllabus trimmed

Below. Consolidated's PBY Catalina was well established before the war as the Navy's principal patrol aircraft. Page 25, top. Grumman F3F-1s of VF-4 over southern California. The F3F was the last biplane fighter to serve in the U.S. armed forces. None remained in front-line use at the time of the Pearl Harbor attack.



Naval Aviation in WW II

the length of flight training to six months.

The Navy's lack of preparation for war when the Germans invaded Poland was the product of circumstances beyond its control. Given traditional American attitudes and the political and economic conditions of the preceding two decades, it could hardly have

been different. But the American system was aroused in the nick of time. The ensuing race between the approaching war and the advancing readiness of the Navy was a close call. In the heroic action after Pearl Harbor, the Navy won that race. Much of the credit for its victory belongs to Naval Aviation which, to a remarkable de-

gree, provided the forces used to defeat Germany and Japan at sea. Perhaps surprisingly, many of the ships and planes which carried it across two oceans, and the innovations which allowed it to expand to meet wartime requirements, were in place or under development before the war began in Europe. ■



Curtiss SOC Seagulls aboard USS Long Island during WW II. Although production ended in 1938, the SOC served with distinction throughout the war.