

DN-1, THE U. S. NAVY'S FIRST DIRIGIBLE

by

Lt. Col. Robert H. Rankin, U. S. Marine Corps

Reprinted, by special permission, from the October 1957 issue of United States Naval Institute Proceedings.

Authoritative Jane's All the World's Aircraft for 1917 dismissed the U. S. Navy's first dirigible with the terse observation that it was of small size; that it was of no practical value; that it was interesting only as an experiment. It is noted that Jane's described the experiment as interesting, not as useful or important.

In view of the development of non-rigids by the Navy and their great usefulness today as patrol and escort craft,¹ the story of the Navy's first dirigible provides a short but significant footnote to naval aviation history.

The potentiality of dirigible airships as patrol craft had suggested itself to naval thinkers practically from the very advent of that type of aircraft. Unfortunately, airship development had seriously lagged in this country. Technical information and know-how was very limited. With the beginning of World War I, the security lid was snapped down on any worthwhile information from abroad. This condition was to obtain until we entered the war and began to receive information from the British. However, in 1915 when the Navy Department decided to place a contract for the construction of a dirigible, it had to draw up the specifications almost blindly.

The Connecticut Air Craft Company, of New Haven, was the lowest of three bidders, submitting a price of \$45,636 to build an airship which would, among other requirements, be 175 feet long, carry a crew of eight, have a ceiling of 3,000 feet, be able to alight on the water; be able to fly at a speed of 25 miles an hour for at least two hours and, finally, be capable of being moored to a mast. Today these requirements seem rather easy to meet. Nevertheless, in view of what was known of airship design and construction in this country in 1915, we now know that the requirements were virtually impossible to meet at that time.

Ordered in May, 1915, it was expected that the airship would be delivered in October of that year. However, it was not until two years later that the craft was finally completed. The contracting company consisted of a lawyer as financial backer, an amusement park operator as manager, and a "technical staff." This "technical staff" was composed of an Austrian, who claimed to have been a dirigible pilot, and two German mechanics who claimed to be Zeppelin experts. These men soon proved to be almost completely lacking in know-how. Design and construction finally became a farce through their inability to cope with problems. With outside technical assistance the craft was finally completed and delivered in 1917.

Designated the DN-1, the Navy's first dirigible was 175 feet long, with a diameter of thirty-five feet. The envelope, of two-ply rubberized cotton fabric, held 115,000 cubic feet of gas (compared to the more than 1,000,000 cubic feet gas capacity of modern Navy airships). The gondola, or car - a boat-like affair - was fitted fore-

and-aft with out-riggers. It was suspended from the envelope by a web of ropes and cables attached to the underside of the bag. Control was maintained by a horizontal elevator and stabilizer on each side of the after section of the envelope and by a vertical stabilizer and rudder beneath the after section. The gondola carried the engines, two Sturtevant 8-cylinder jobs rated at 140 h.p. each. Through a gear and shaft arrangement these turned two big four-bladed wooden propellers, one mounted on each side of the car.

Before test flights the craft was publicized as a "great contribution to the Navy's air arsenal." The rave notices which appeared in even some of the more conservative scientific journals read like Hollywood press agent copy. Actually the craft was a failure, proving to be far too heavy to lift itself off the ground. In addition to other things the envelope leaked badly. Contractor and Navy alike despaired of ever getting the contraption aloft. In a desperate attempt to reduce weight, one engine was removed and a sprocket and chain drive to the two propellers substituted for the gear and shaft arrangement. Even so, the craft could barely get aloft. Although the acceptance tests were unsatisfactory it was decided that the contractor had acted in good faith and the contract price was paid.

A few inconsequential flights were made but the craft was unsuitable even for training purposes. After a short time the dirigible was damaged while being maneuvered into its hangar by its inexperienced ground crew. The damage proved to be so great that repairs were not justified so the ship was broken up for its parts.

In spite of Jane's remarks it appears that the fiasco should not be considered complete. The whole thing did demonstrate that highly trained men are required for airship handling and that airship design and construction are complicated technical responsibilities which must be discharged by experts. Navy airship design was soon thereafter placed in the hands of its own technical personnel. With the cooperation of responsible and resourceful contractors, efficient ships were built which gave a good account of themselves during World War I and after. More important, a dirigible program was nurtured and projected through the years until today the Navy has a lighter-than-air program which has demonstrated its usefulness as an integral part of the defense picture.

1 During World War II, Navy dirigibles escorted 89,000 surface vessels. A total of 55,900 operational flights were made and the dirigibles spent 550,000 hours in the air. These craft are constantly being developed for anti-submarine work, a job for which they are well suited. Recently a late model airship, of the ZPG-2 type, established a new record by staying aloft for eleven days and flying 9,448 miles.

The following information is passed on as a matter of general interest, both were ads in a recent aircraft sales paper:

MESSERSCHMITT ME-109-G : Never cracked, 80 hours since new, minor repairs needed. Crated, ready for shipment. Complete oxygen system, armament and instruments, LF, prop, uses 73 octane fuel, cruise 480 mph, priced right, will sell. R.E. Ellis, 211 West 16th Street, Kansas City, Missouri.

GRUMMAN F8F BEARCAT: \$6,500. E. D. Weiner, 1270 Czeta Terrace, Los Angeles 46, California.