

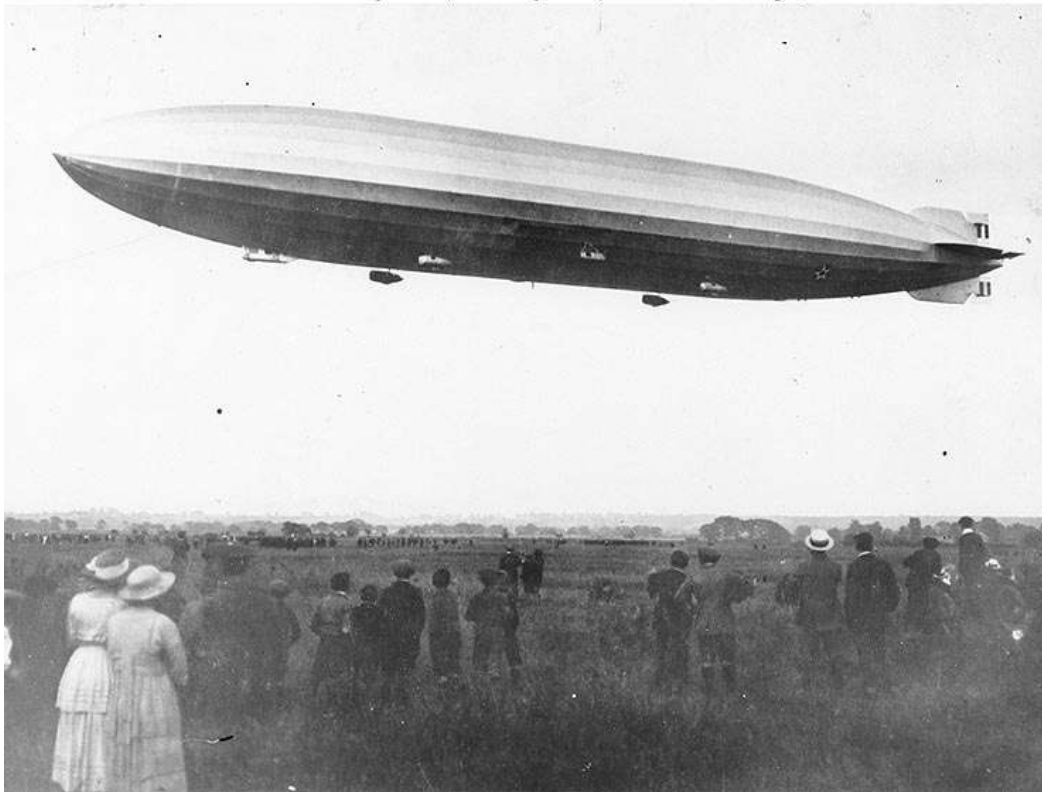
R38 (ZR-2) A-class airship

Role: Patrol airship
National origin: United Kingdom
Manufacturer: Short Brothers
First flight: 23 June 1921
Primary user: United States Navy
Number built: 1 (orders for 3 others cancelled)

The R38 class, or A class of rigid airships was designed for Britain's Royal Navy towards the end of World War I. intended.

Originally, the Admiralty ordered four such airships, for long-range patrol duties over the North Sea; but three orders (R39, R40 and R41) were cancelled due to the end of the war. Work on the first ship of the class, the R38, continued after the U. S. Navy agreed to purchase it. At the time of its first flight it was the largest airship in the world. The U. S. Navy's designation for the airship was ZR-2. Two months after its first trial flight, on August 23, 1921, the ZR-2 took off for an overnight flight out to sea. Upon its return on the 24th, it suffered structural failure while in flight over the city of Hull and crashed into the Humber estuary, killing 44 of 49 crew members aboard. .

Photo # NH 1216 Airship R-38 (U.S. Navy ZR-2) on its first trial flight, 23 June 1921

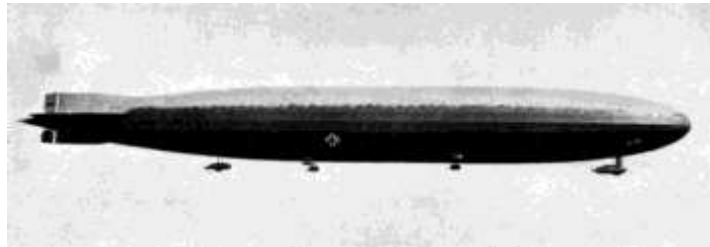


The R38/ZR-2 making its first flight trial on June 23, 1921

Design and development

The R38 class was designed to meet the British Admiralty's request for an airship capable of six days of patrol, at ranges of up to 300 miles from home base, and at altitudes of up to 22,000 ft. The contract for R38 was awarded to Short Brothers. The R38 was built at Cardington, Bedfordshire 1919. The original design was modified so that the airship could be built inside the Cardington shed. Two of the power cars were moved up to the sides of the structure to reduce the overall height, gas bags were reduced from 16 to 14 and fewer girder rings were used around the envelope.

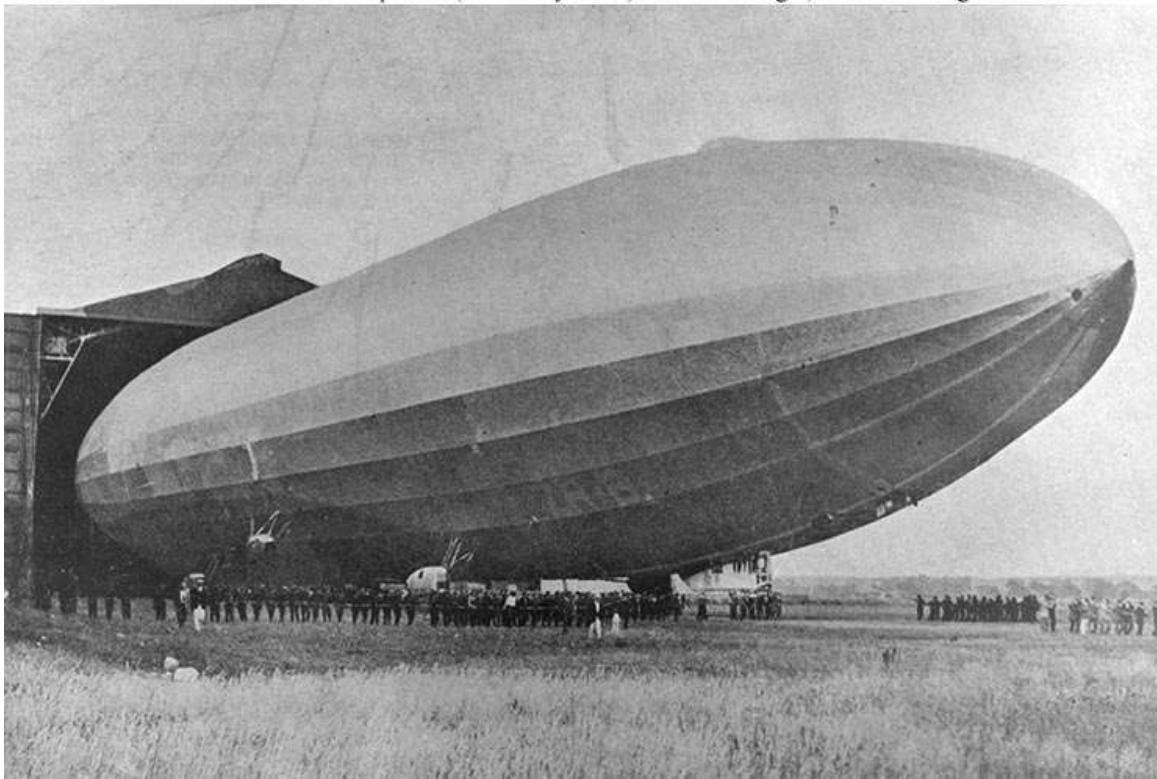
With the news that the R38 had been cancelled the possibility of buying it was investigated by the U. S. Navy. In October 1919 the Navy agreed to purchase of the airship and work on it was restarted. Changes in design required by the Navy included mast mooring gear. The additional weight at the nose was balanced by adding ballast at the stern. These modifications, along with other weight savings in the design made the aircraft weak longitudinally. Although the changes had been based in part on the design of German lightweight, high altitude Zeppelins, it was not realized that the maneuverability of these Zeppelins was deliberately restricted, especially in the rate and tightness of turn, due to the lightweight structure.



The Zeppelin LZ-112 (l-70)

Operational history

Photo # NH 42050 Airship R-38 (U.S. Navy ZR-2) leaves its hangar, circa June-August 1921



*The R38/ZR-2 leaving its hangar for trials, showing the top gun platform.
The ZR-2 designation is faintly visible*

The R38 made its first test flight on June 23, 1921. Officially it flew registered as R-38, but the U.S. designation ZR-2 was already painted on. It flew to RNAS Howden, where the full conversion to American livery was to be made. After some modifications to the rudder and elevators, a second test flight was made on July 17. While in the shed at Howden, to several of the girders was discovered. These were replaced and strengthened but there were increasing doubts being expressed about the design.

On August 23rd the airship was walked out and in the early morning took off on its fourth flight with an intended destination of RNAS Pulham, Norfolk where there was a mooring mast, which the RNAS Howden did not have. Due to poor weather conditions at Pulham, the mooring was cancelled and the airship ran some high speed tests at sea and then returned to Howden. The speed runs were successful and some low altitude rudder tests to simulate the effects of the rough weather that could be expected on the Atlantic crossing were conducted. While maneuvering over the city of Hull, eyewitnesses reported seeing creases down the envelope and both ends drooping. Then a fire started at the bow, followed by an explosion. The airship fell into the shallow waters of the Humber estuary. Sixteen of the 17 American and 28 of the 32 British crewmembers were killed. The five survivors were all in the tail section. A memorial was erected at Hull, Yorkshire.

Photo # NH 69230 Rescuers working on wreckage of Airship R-38 (U.S. Navy ZR-2), 24 August 1921



Rescuers scramble across the wreckage of British R-38/USN ZR-2, cutting into the fabric hull covering, near the tail, in an effort to save airmen trapped in the wreckage 24 August 1921.



Memorial to the R38 disaster in Western Cemetery, Hull, East Riding of Yorkshire, England.

Photo # NH 72411 Memorial to those lost in the crash of Airship R-38 (USN ZR-2)

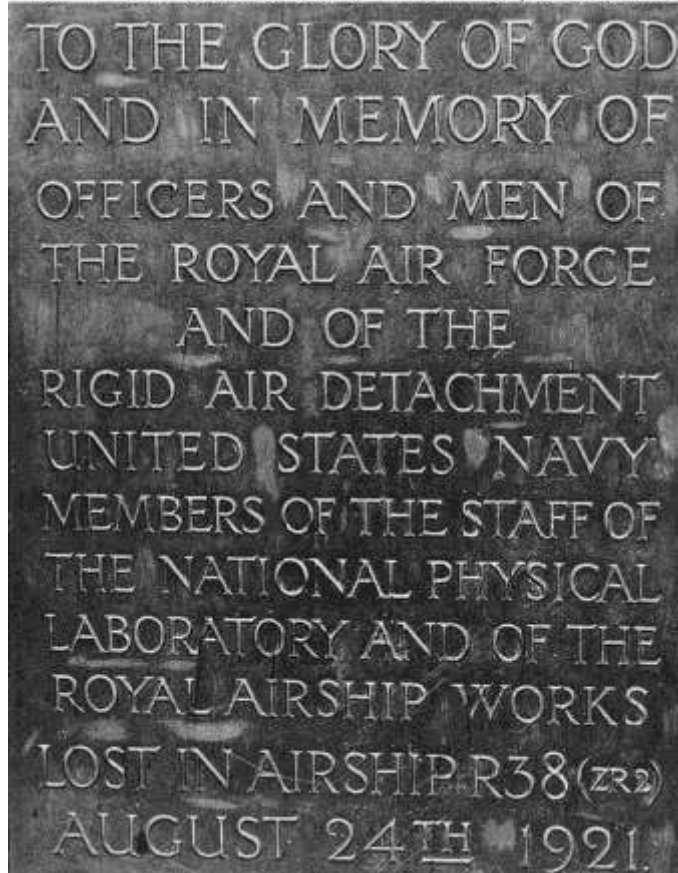


Photo # NH 72412 Memorial to U.S. Navy personnel lost in the crash of Airship R-38 (USN ZR-2)



Photo # NH 72413 Memorial to British personnel lost in the crash of Airship R-38 (USN ZR-2)



Plaques on the R-38/ZR-2 memorial

The Committee of Enquiry that was convened to investigate the disaster concluded that no allowance had been made for aerodynamic stresses in the design and that while no loads had been placed on the structure during testing that would not have been met in normal use, the effects of the maneuvers made had weakened the hull.