USS *Macon* Mapping and Survey Expedition 2015

USS *Macon* on mooring mast.

Sparrowhawk F9C-2 biplane.

USS *Macon* officers complement circa 1935.

Submerged biplane wing with navy star still visible.

History

Between 1925 and 1933, Rear Admiral A. Moffett was Chief of the Navy's Bureau of Aeronautics. Moffett was a champion of the lighter than air flight potential of the U.S. Navy. Congress authorized the building of two large rigid airships, the ZRS-4 and ZRS-5. Goodyear-Zeppelin Corporation signed a contract with the Navy for the two airships to be delivered in thirty months and cost $5,375,000 and ZRS-5 was to be delivered fifteen months after the first for a cost of $2,450,000. Goodyear-Zeppelin completed the massive "Airdock" hanger at Akron which is still standing and is on the National Register of Historic Places.

The first built airship, ZRS-4, was named the USS *Akron* in honor of the home of Goodyear's new airship factory. ZRS-5's name came as an act of political supplication. Georgia representatives' Carl Vinson was, at that time, the senior member of the House of Representatives' Naval Affairs Committee and so the airship was named USS *Macon* in honor of the largest city in his congressional district.

The Akron-class airships (so named because *Akron*, ZRS-4, was built first) were actually experimental prototypes for a planned class of ten larger "super" airships. The airships had ten main circular frames and were constructed from stiff duralumin "deep rings." The rings were built from riveted duralumin girders and "pyramidal" sections. The interior space included twelve large gas cells made of cotton cloth and filled with helium lifting gas, the largest cell being 900,000 cubic feet. Propulsion was provided by eight German Maybach 12-cylinder self-reversing engines coupled to the Allison propeller transmissions with tilting gears.

The single control cars were divided into three sections: a forward pilot house, adjacent to the chart room, with a smoking room abaft. The main control car housed the primary steering gear. The control car held eight engine-order telegraphs for communicating with the engine rooms. The anti-aircraft machinegun emplacements were placed along the dorsal keel, the tail cone, the auxiliary control cab (lower fin) and the aft control car room. The main living areas were inside the hull on either side of the aircraft's hangar bay. There were several mess rooms for officers, chief petty officers and crew, and a propane-fuel galley and generator room. The captain's cabin and the radio room were housed immediately above the control car which was forward of the hangar bay.

The ability to carry aircraft expanded the

Loss of USS *Macon* and four Sparrowhawk F9C-2 biplanes

On the stormy night of February 11-12, 1935, USS *Macon* was returning to Moffett Field following a successful exercise over the Channel Islands. While over Point Sur, a gust of wind tore the upper tail fin away. The damage caused a loss of gas in the aft cells which forced the nose-high attitude. The crew's frantic dropping of ballast and heavy gear such as the radios caused the ship to quickly rise above its ultimate pressure altitude which caused gas vents to pop open and release more lifting gas. The crew also attempted to jettison the aircraft in the hangar bay with no success. *Macon* settled gently onto the surface of the ocean about three miles off the coast. All but two of the eighty-three crew were saved by nearby ships. *Macon* and its Sparrowhawks sank from sight. The subsequent inquiry focused on the upper tail fin which had been damaged ten months earlier. Witnesses included a lighthouse keeper at Point Sur lighthouse who observed the fin tearing away.

scouting range of the airships, and subsequently modified their mission from scout to base for the scout aircraft. The dimensions of the T-shaped hangar door in the airships' bellies determined the parameters of the airplanes: no longer than 24 feet with a wingspan no wider than 30 feet.

Sparrowhawk F9C-2 Biplane

The Navy placed an order with Curtiss-Wright for six aircraft. Following the evaluation for the aircraft, the Navy ordered six operational craft to serve on the USS *Akron* that was nearly completed. Following the loss of the *Akron* offshore of New Jersey in 1933, they were transferred to the *Macon*. The delivered F9C-2s were designated "Sparrowhawk" in keeping with the tradition of naming Curtiss fighters after hawks (ex. Hawk, Goshawk, Kittyhawk, etc.).

The Sparrowhawk biplanes were powered by Wright R-975-E3 engines with an upper wing span measuring 25 feet 5 inches and length 20 feet 7 inches. They were equipped with two thirty-caliber machine guns mounted over the engine. As the airship flew into the wind at approximately 80 knots (92 mph), with the retractable trapeze extended, the aircraft would approach from beneath. The aircrafts' "skyhook" had a guide bar that protected the propeller and served to guide the hook. Once the pilot captured the trapeze with the hook, a spring lock was automatically activated and the plane was secured. The airship crew then winched a "saddle" down an arm hold that attached at a pivot as the "elbow" of the trapeze end. The saddle stabilized the aft end of the aircraft so that it could be raised into the airship's hangar bay once the engine power was cut.

USS *Macon* Specifications

Nationality: United States
Type: Dirigible - rigid frame airship
Service: Military scouting
Class: Akron
Owner: United States Government
Builder: Goodyear-Zeppelin Corporation
Where Built: Akron, Ohio
Christened: Mrs. William A. Moffett
Commissioned: June 23, 1933
Hull Material: Duraluminum – cloth skin
Power Plant: 8 Maybach gasoline engines
Horsepower: 560 each
Length: 785 feet
Beam: 132 feet 10 inches
Height: 146 feet 2 inches

E/V *Nautilus* ROV Survey 2015

The USS *Macon* site was discovered in 1990 by the Monterey Bay Aquarium Research Institute in collaboration with the U.S. Navy. The first archeological survey of the site was completed by Monterey Bay National Marine Sanctuary in 2006.

Macon's remains lie partially embedded in sand bottom approximately seven miles south of Point Sur in 1500 feet of water in Monterey Bay National Marine Sanctuary. The wreckage is distributed into two discreet mounds, separated by a distance of 820 feet. The entire site encompasses approximately 60,867 square feet.

The 2015 USS *Macon* survey is a joint-organizational project led by co-principal investigators from three of the stakeholder institutions in this project: NOAA, the Naval History & Heritage Command and Ocean Exploration Trust in collaboration with OceanGate Foundation.

This project is to archaeologically survey the wreck site of the *Macon*, the U.S. Navy's last Akron-class ridge airship. The project's primary goal is to provide ongoing stewardship of this wreck site by updating site documentation to supplement previous years' surveys. The USS *Macon* site contains some of the oldest known aviation material submerged in saltwater in the United States. The USS *Macon* site was assessed and deemed eligible for the National Register of Historic Places in 2006, and was listed in 2010.

The secondary goal is to study and benchmark site formation processes for an early modern-metals aviation site. A detailed study of the site formation processes, along with a sample comparison to 1991 sampled metal, will inform general archaeological knowledge of the potential longevity of aviation sites in deep water. The survey's documentation methods will include creating an updated site map photomosaic, on-site photography and video, post-survey 3D modeling, and materials and samples study.

Photomosaic and microbathymetric mapping will be conducted from Exploration Vessel (E/V) *Nautilus* and ROVs *Hercules* and *Argus*, owned operated by the Ocean Exploration Trust. The survey of the USS *Macon* site will stream live video and interaction with the science team via the Nautilus Live website (www.nautiluslive.org).

Photo: Robert Schwemmer NOAA

E/V *Nautilus* in San Diego for the California Borderlands Cruise. The 211-foot ship is equipped with the latest ocean technology and hosts the crew and science team.

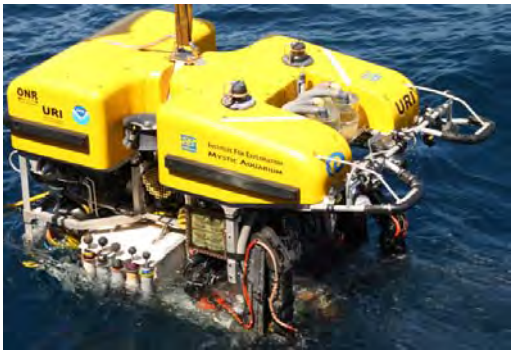

Photo: Ocean Exploration Trust

During the 2015 mission to survey the *Macon,* the ROV *Hercules* will be used to map, survey and recover an artifact with its two manipulator arms.

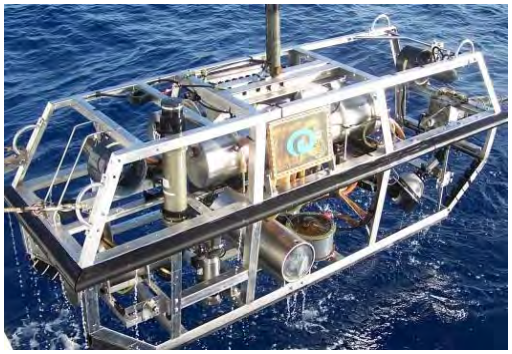

Photo: Ocean Exploration Trust

Argus is a stainless steel towsled-style ROV that will be used in conjunction with ROV *Hercules*. *Argus* absorbs the roll of the ship, steadying ROV *Hercules*.