

The Capitaine Caussin, in her hangar at NAS Guipavas, France, was one of several different types of French airships operated by U.S. Naval Aviation forces in France during WW I and in the post-war period.

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## V. World War I

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Operations during WW I were conducted exclusively in the North Atlantic and some of its connecting bodies of water, such as the English Channel, Bay of Biscay, Gulf of Mexico and Caribbean Sea. There were two theaters of operations: the eastern seaboard of the Americas and European waters. Convoy duty was the connecting link between the two.

On the eastern seaboard of the Americas, LTA was operational at Naval Air Stations:

Chatham (non-rigid airship and kite balloon);

Key West (non-rigid airship and kite balloon);

Cape May (non-rigid airship);

Montauk (non-rigid airship and kite balloon);

Coco Solo (kite balloon);

Pensacola (non-rigid airship and kite balloon);

Hampton Roads (non-rigid airship and kite balloon);

Rockaway (non-rigid airship and kite balloon); and

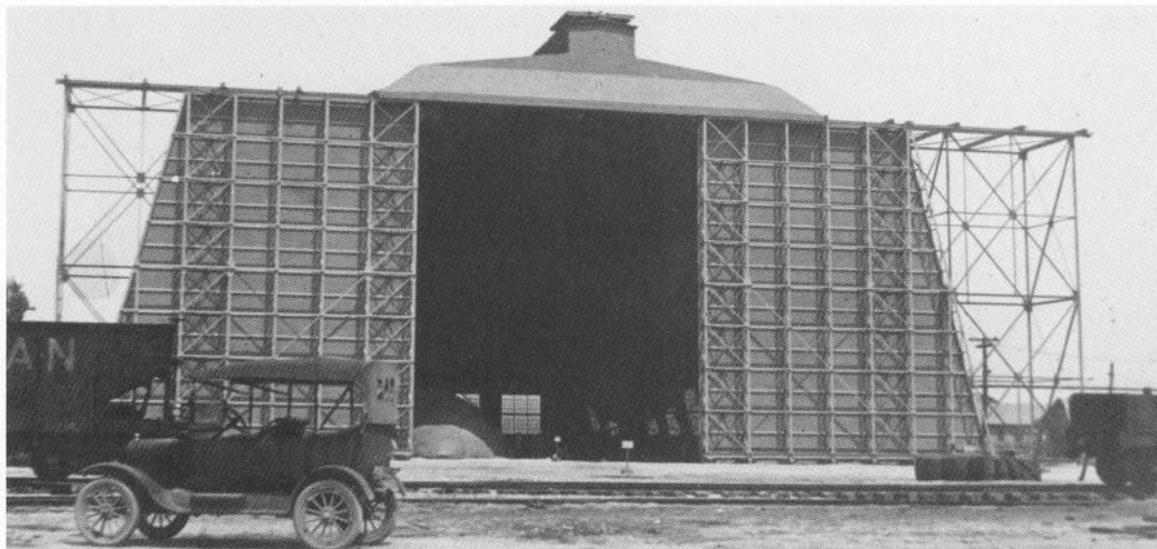
Halifax (kite balloon).

The air station at Akron was devoted exclusively to training, and NAS Pensacola primarily to training with a brief period during the war when its secondary mission involved some operational patrolling. NAS Hampton Roads served as a training and experimental station during the early part of the war, later becoming an important patrol station for seaplanes and LTA. Several other air stations served in a training capacity as well as in their primary mission of patrol. NAS Rockaway trained some dirigible pilots and was the primary advanced training center for kite balloon pilots.

The need for patrol stations was envisioned prior to America's entry into the war. Plans were drawn up to establish air stations to patrol and defend the eastern coast of the United States and adjacent waters against the submarine threat and to minimize the damage against shipping. Some of the air stations were engaged initially in training and later included patrol duty.

The first positive data concerning Germany's decision to wage submarine warfare in the western Atlantic was received in May 1918. Prior to this, U.S. Naval Aviation had concentrated on providing trained aviation personnel and

Right, an LTA hangar at NAS Hampton Roads, Va., circa 1918. Note the airship being inflated in the hangar. Below center, close-up view of the Capitaine Caussin's control car and its crew.



equipment overseas to take part in the antisubmarine warfare (ASW) campaign against German subs in European waters.

Airships and kite balloons were used in patrol operations by the nine air stations listed above. These were primarily American-built. However, some of the kite balloons were of British or French design built in the U.S. All the airships assigned to air stations in the United States were of the B-class except the British dirigible O-SS, bureau number A-1029. The O-SS was destroyed by a fire in the summer of 1918 shortly after it had been received at NAS Hampton Roads.

The LTA craft (airships and kite balloons) were used in conjunction with seaplanes and flying boats to help protect shipping by detecting the presence and position of submarines and warning surface vessels of the threat, as well as attacking the submarine with bombs or guns. The location of mines and their destruction were other important missions for LTA. The dirigibles were used to great advantage in patrol and escort work. The cruising radius was much wider than that of seaplanes, which provided longer escort capability and thus more protection. Their ability to hover enabled them to detect objects which might otherwise have escaped the vigilance of observers in the more rapidly moving planes.

The B-type dirigible was handled by a crew of three: a pilot, an assistant pilot and an engineer. The kite balloon was designed to carry as crew a kite balloon pilot and an observer. In many instances, during actual operations, the kite balloon held only one person who probably acted as both. Armament and equipment for

dirigibles on patrol consisted of the following: Lewis guns and bombs (bombs were fused for contact or hydrostatic settings); radio transmitters and receiving apparatus; flashlights and flares; very pistols with red and green cartridges; life preservers, emergency rations and water; aircraft signal books and local charts; carrier pigeons; and photographic apparatus.

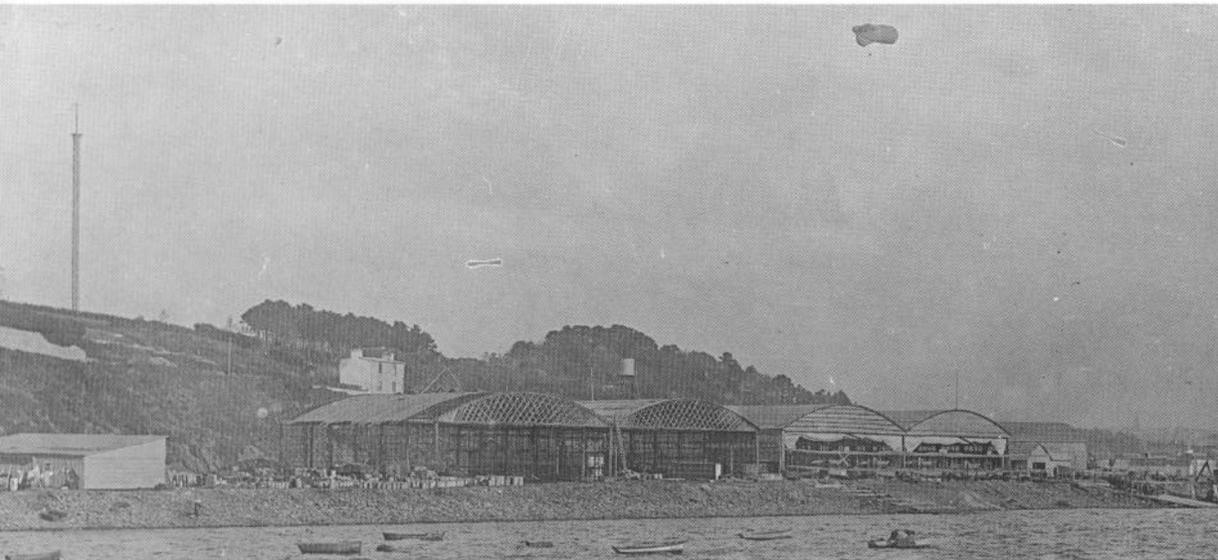
The three types of patrol missions assigned to LTA craft operating off the coast of the United States were standard patrol (routine search in an assigned area); emergency patrol (flown in response to the sighting of a submarine, to an SOS, or on a search and rescue mission); and escort patrol (escort for ships and convoys).

The majority of naval patrols conducted during the submarine campaign of 1918 off the East Coast of America produced very few encounters with German submarines. The patrols were successful, however, because they were a deterrent to offensive operations by German submarines.

The connecting link for Naval Aviation between the eastern coast of the United States and the shores of Europe was primarily the kite balloon. The balloons were used in a limited role by ships that escorted the convoys across the Atlantic.

U.S. Naval Aviation's LTA activities in the European theater began with the assignment of Lieutenant Zachary Lansdowne and Lieutenant Junior Grade Ralph Kiely to England for dirigible pilot training in August 1917. Both men completed their training and were graduated at Cranwell, England, on November 15. In September 1917, Cdr. McCrary and Lt.Cdr. Maxfield were





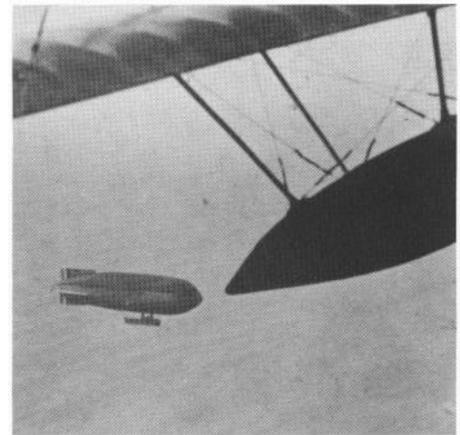
Left, a view of NAS Brest, the primary American kite balloon station in France. Note the kite balloon in the upper right-hand corner. Below, one of the French-built and American-operated airships on patrol off the coast of France during WW I.



assigned to the U.S. Aviation Detachment in Paris. The two men represented the U.S. Navy during conferences with the French on the establishment of a U.S. dirigible station in France.

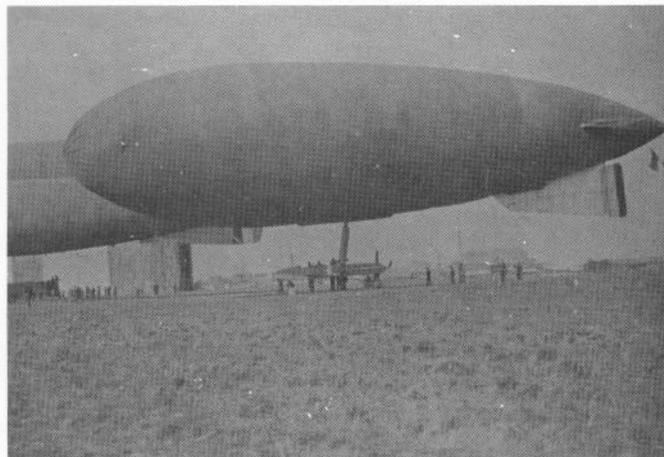
The first contingent of dirigible pilots arrived in Europe in November 1917 — all were from the first LTA class at Akron. They included: Ensigns Strader, Talbot, Whitehouse, Brewer, Little, Deland and Hamlen. Ens. Hamlen was ordered to Headquarters, Paris, for duty in connection with dirigible operation, schools and training. The other six were ordered to Paimboeuf for LTA operations. This was the beginning of U.S. LTA operations in Europe that continued until December 1918, when two U.S. airships escorted President Woodrow Wilson on his arrival there after the war ended.

In the European theater during WW I LTA operated only from air stations in France and Great Britain, carrying out ASW, patrolling and escorting convoys in the waters of the Bay of Biscay, English



Channel and St. George's Channel. The U.S. naval air stations were Brest, Paimboeuf, Guipavas, Gujan, La Pallice, La Trinite (all located in France) and Castletownbere (Berehaven) located in Ireland. Several other air stations had been planned but they never materialized.

NAS Paimboeuf was the most significant station for dirigible



Two French airships, the AT-1 and VZ-3, on the field at NAS Paimboeuf, France. These airships were transferred to U.S. naval forces and played an important role in patrolling the Bay of Biscay.

operations. Plans for establishing this dirigible station under U.S. Navy control were discussed in October 1917 between the French and the Americans represented by Cdr. McCrary and Lt.Cdr. Maxfield, but progress was slow. Lieutenant F. P. Culbert was assigned to Paimboeuf for flight duty with the French on November 10, 1917. He was followed by an American detachment on November 30, 1917. Permission was obtained on December 2, 1917, for Lt. Culbert and three other personnel to receive flying instruction in French dirigibles at Paimboeuf. On January 4, 1918, Maxfield arrived to take command of the American detachment there. The French Astra Torres dirigible (AT-1) arrived on January 30 from Rochefort with Americans comprising part of the crew, followed on February 3 by the Zodiac Vedette dirigible (VZ-3) transferred from the French station at Guipavas.

The first patrols were made on February 24, 1918, while the dirigibles and air station were still under French control. As more Americans arrived, the French gradually withdrew their personnel for duty elsewhere. During this period of transition, the station was under dual control.

Paimboeuf was established as an American naval air station on March 1, 1918, the same day the French ceded the dirigible AT-1 to the Americans, the first to be received by U.S. Naval Aviation Forces in France. Lt.Cdr. Maxfield was designated commanding officer, Lt. Culbert executive officer and six members of the first LTA class from Akron were assigned as pilots there. The AT-1 under American control made her first flight on March 3. On March 20 the French transferred the VZ-3 to American control.

NAS Paimboeuf engaged in a variety of operations with its assigned dirigibles. Besides patrol duties and training, the air station performed experimental work. On June 9, a submarine listening device was tested aboard the AT-1. The Assistant Secretary of the Navy, F.D. Roosevelt, visited the station on August 17, 1918, and made a flight in the AT-1.

On October 1, 1918, another of the airships under American control, the AT-13, encountered a German submarine during patrol operations. The airship had escorted a southbound convoy from Brest and then returned to her area of patrol. En route, the AT-13 had conducted practice shots with her 47mm gun. On

the second round, the firing spring broke and the gun was out of commission. However, the airship continued on to her patrol station. The AT-13 picked up a northbound convoy and began providing escort coverage. In order to avoid an approaching storm, the airship left the convoy for a short time, and it was during this time that she sighted the U-boat. The submarine immediately fired on the AT-13. There was no damage to the airship and, unable to return fire because of her inoperable gun, she rejoined the convoy to warn them of the submarine's presence and pursue her escort duties. The airships out of NAS Paimboeuf continued their patrols during the remainder of the war but no other submarines were sighted.

When the Armistice was signed on November 11, NAS Paimboeuf had three French airships in its operating inventory. They were the AT-13, VZ-7 and VZ-13. The VZ-3 had been transferred back to the French on September 26, 1918, and the AT-1 had been deflated and sent to the U.S. on September 10, 1918. During the war, the airships operating out of NAS Paimboeuf established record flight times for airships on station; an endurance flying record for one of the French-type dirigibles; and second best to the other French airship stations for total hours on station during the month of October. On December 16, 1918, the AT-13 returned to Paimboeuf after flying escort for the arrival of President Wilson in France.

Two other air stations had been designated to operate airships in Europe, Guipavas and Gujan. Gujan was established on February 3, 1918, and construction work began on February 20. Lieutenant L.L. Babbitt was assigned as commanding officer. The air station was scheduled to operate two dirigibles, but Gujan never became operational and never had an airship assigned. When the Armistice was signed there were three pilots detailed to the air station.

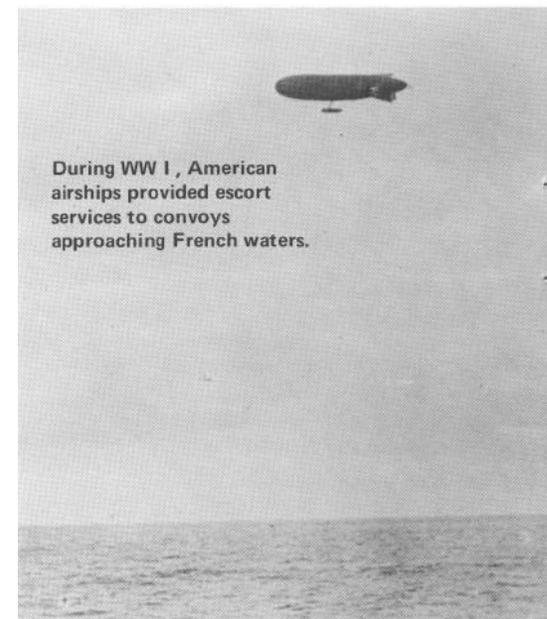
Construction on Guipavas began on March 11, 1918 and, on April 11, Lieutenant J. F. Maloney reported aboard as commanding officer. He was relieved by Lieutenant Commander Z. Lansdowne on October 30. Lieutenant Junior Grade M. P. Delano (a member of the first LTA class at Akron) also arrived on October 30 for duty as commanding officer of the *Capitaine Caussin* a French T-2 (Chalais-Meudon) type dirigible. The *Capitaine Caussin* was scheduled for assignment to NAS Guipavas when the air station

became operational. She was flown by pilots and crew from NAS Guipavas prior to her transfer from the French to U.S. Naval Forces.

NAS Guipavas became operational on November 11, 1918, and *Capitaine Caussin* was officially ceded to the U.S. Naval Forces on November 23, to be maintained and operated by American station personnel. The *Capitaine Caussin* and AT-13 flew out of the air station in support of President Wilson's arrival on December 13, 1918, the last official flight of U.S. dirigibles in Europe.

LTA activities in Europe also involved kite balloon operations at several air stations, including NAS Brest, La Trinite in France, and Berehaven (Castletownbere) in Ireland. A kite balloon station was under construction at La Pallice, France, but never became operational. A kite station had been planned for Lough Swilly, Ireland, but the plans were later abandoned. An LTA station that had been planned for Rochefort, France, was never developed by the U.S. because of the German offensive in March 1918 and France's need for the station.

U.S. LTA activities in Great Britain during the war centered on the training of Naval Aviators and personnel, and on kite balloon operations at NAS Berehaven. American Naval Air personnel received some dirigible training at Royal Naval Air Station (RNAS), Cranwell, England, while many kite balloon pilots were trained at RNAS Roehampton. There were no operational patrols by U.S. dirigibles in Great Britain. However, a British-built airship of the Submarine Scout Zero type was received and operated by the U.S. for



During WW I, American airships provided escort services to convoys approaching French waters.

training purposes at RNAS Cranwell. This airship type was the only one to operate in Europe during the war with an aircraft bureau number assigned, A-1030. All foreign-built airships operated by the U.S. Navy in Europe used the original manufacturer's designation and did not receive aircraft bureau numbers, except this one. She operated as a U.S. training airship for only about a month (January-February 1918) at RNAS Cranwell and then she was transferred to France. In England the majority of LTA activities involving Americans included Naval Aviators and associated personnel assigned to British units operating British airships out of Royal naval air stations.

NAS Berehaven, the only U.S. LTA air station in Great Britain, had been under construction by the British prior to being turned over to the Americans. It was designed to operate as a kite balloon station and provide destroyers with kite balloons for convoy and patrol duties. The British ceded Berehaven to the U.S. on April 26, 1918, with Ensign Carl E. Shumway as its commanding officer. It was operational by May 21. Practice balloon flights were made from towed trucks, since the air station was not located close enough to Queenstown, where the destroyers were based, to permit easy transfer of kite balloons between station and ship. Berehaven was not very active because of the transfer problem and the operational requirements imposed on destroyers which did not permit time for kite balloon operations on board. In July 1918, most of the U.S. LTA personnel and kite balloon equipment were transferred to

NAS Brest, France.

Berehaven later became a kite balloon station, again, supporting operations aboard HMS *Flying Fox* in late July and early August 1918. Berehaven then switched to support of balloon operations on board the American battleships *Utah*, *Nevada* and *Oklahoma* from late August through mid-October. The three battleships, operating from Bantry Bay, Ireland, had been sent to Europe to protect the Allied convoys approaching Britain. In the latter part of October 1918, preparations were being made to move LTA operations from Berehaven to Queenstown to make kite balloons more accessible to the ships located there. When the Armistice was signed, Berehaven had 16 kite balloons on board. The air station had been established in April 1918, began operations in May and, less than a year later, was disestablished February 12, 1919.

U.S. LTA operations in Great Britain were not as extensive as those conducted by U.S. Naval Aviation forces in France. The extent of American LTA development is pointed out by the differences between Great Britain and France in the number of stations and activities. At the time of the Armistice, one American dirigible station was operating, one ready to begin operations and another under construction in France. There were none in Great Britain. Two kite balloon stations were in operation and one under construction in France, while there was only one active kite balloon station in Great Britain.

In contrast to Great Britain, France had more American LTA stations during the

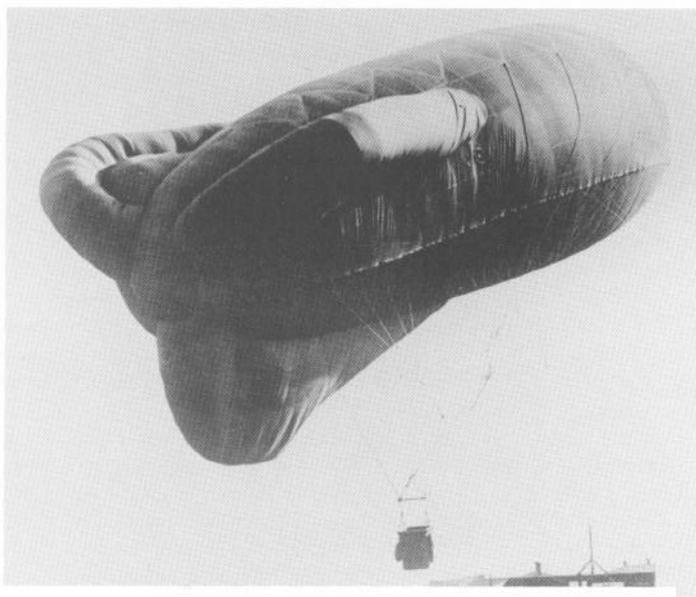
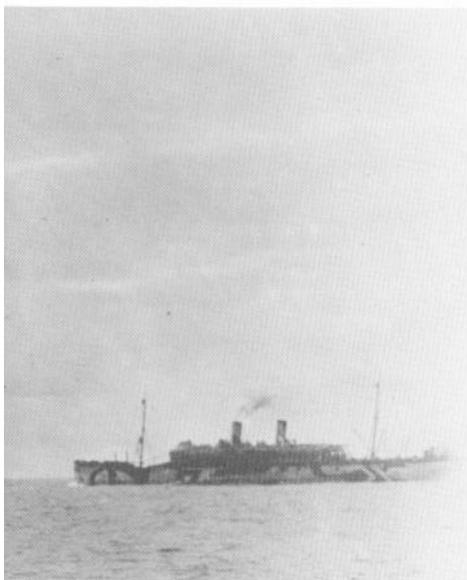
war. This was not necessarily because there was more enemy submarine activity in the Bay of Biscay. In fact, the most vital areas needing aerial ASW support were the waters adjacent to the coasts of England and Ireland. U.S. naval air stations were established in France after the arrival of the First Aeronautical Detachment.

Lieutenant Kenneth Whiting had been ordered to France as the officer-in-charge of the detachment, with very vague instructions as to his duties once he arrived. He initiated arrangements with France to establish many of the air stations that eventually came into existence. If the Allies had jointly, instead of separately, worked out a comprehensive plan for the establishment of U.S. air stations in Europe, more U.S. stations might have been developed in Great Britain because of the submarine threat in English waters.

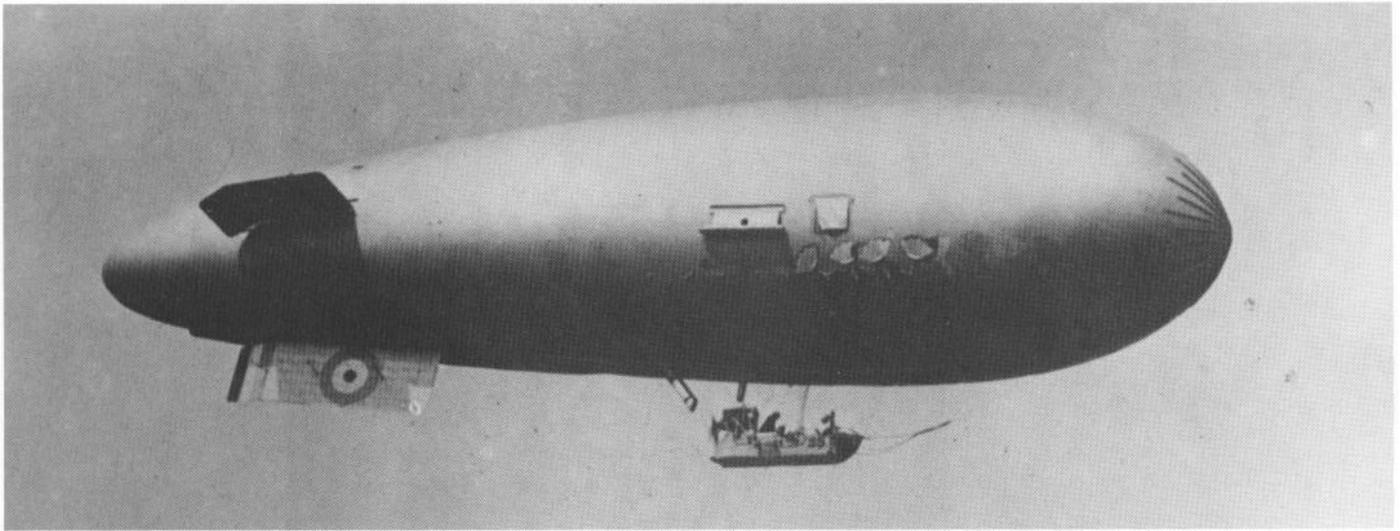
U.S. Naval Air forces were successful in working with French air units to eliminate the submarine threat from French waters, specifically the Bay of Biscay. When the Armistice was signed, there were six U.S. LTA stations operating or under construction in France.

Three U.S. air stations in France were dedicated to the operation of kite balloons: La Pallice, La Trinite and Brest.

La Pallice was under construction when the Armistice was signed. Construction had started on June 23, 1918, and was expected to be completed by the end of November. But progress was seriously hampered by the delay in receiving building materials.



A Caquot M-type kite balloon used by American Naval Aviation forces in Europe during WW I.



**The British-built submarine scout Zero-type (O-SS) was used by American Naval Aviation forces. Note the difference in the construction of the control car compared to the airships built in France.**

On June 17, 1918, Lieutenant Junior Grade J. H. Dashiell assumed duties as commanding officer. Four kite balloons and two kite balloon pilots were on board the station on November 11, 1918, preparing for the start of operations. After hostilities ended, La Pallice was disestablished on January 5, 1919, and transferred to the U.S. Army.

Arrangements were made on March 14, 1918, for the establishment of the kite balloon station at La Trinite and construction began in April. The location of the air station had been selected to enable it to provide kite balloon support for convoys operating between Brest and La Pallice.

Ensign C. M. Johnson was placed in command, La Trinite was reported ready for operations on October 1, 1918, and the first kite balloon was inflated on October 18. Flights were made for practice and instructional purposes, but there were no active operational flights because there was no towing boat to carry the kite balloons out to destroyers escorting convoys. La Trinite had four kite balloons on board and one kite balloon pilot when the war ended. The station was demobilized on February 5, 1919, and the site was evacuated.

Brest was the most active of all the kite balloon stations in Europe. Lieutenant Junior Grade G. R. Romulus arrived in Brest on October 7, 1917, to begin preparations for establishment of the air station. Construction was contracted through the French and work began in January 1918. The station was designed to support two functions, kite balloon and seaplane operations.

LTA activity began with the arrival of a kite balloon detachment from NAS Castletownbere on July 4, 1918. This

detachment consisted of 12 kite balloons and accessories, 40 men and two officers to support the kite balloon operations. The detachment initially operated from the French kite balloon station at Lanninon adjoining the U.S. station. Later that year, equipment and operations were switched to the U.S. hangar at Brest, on October 19.

A Goodrich M-type kite balloon was inflated and flown from a French trawler on July 11. It was the first flight of an American kite balloon in France. Further flights were conducted in which the kite balloon remained aloft for the entire day. Modifications had to be made on the U.S. destroyers before they were capable of towing kite balloons. On July 20, 1918, the first trial flight was made on USS *Cushing*. The equipment functioned successfully and after several kite balloon transfers they were returned to the hangar at Brest.

The successful operation of the kite balloon on *Cushing* was followed by a five-day operational trip aboard *Cushing* beginning August 1. A kite balloon, four officers and seven men were aboard. Observational activities were limited due to the bad weather, but the trip provided useful experience.

*Cushing's* trip was followed by several other kite balloon excursions on other U.S. destroyers. On August 14, a kite balloon detachment left on USS *Ericsson* and had 64 hours of observation time from the balloon's basket during a 100-hour period at sea. Further experiments and testing were carried out on other U.S. destroyers. USS *Sigourney* experimented successfully with the Lidgerwood steam winch for kite balloon operations on August 18. One of the last tests to be conducted was on November

13 when USS *Benham* experimented with the Mumford steam winch and an R-type kite balloon.

At the end of the war, six destroyers, were operating out of Brest that were capable of conducting kite balloon operations: *Cushing*, *Benham*, *Ericsson*, *O'Brien*, *Wilson* and *Sigourney*.

Several other destroyers had been equipped with a winch for kite balloon operations. However, the necessary alterations had not been made to make them serviceable.

When combat operations drew to a close on November 11, 1918, there were 18 kite balloon pilots and 22 kite balloons assigned to NAS Brest. The air station was disestablished on February 15, 1919, and transferred to the French.

Three types of American-built kite balloons were sent to France: M, R and C. Several French Nourrice balloons had been ordered but were not completed before the Armistice was signed.

LTA operations in Europe did not get off the ground as quickly as heavier-than-air. However, their contribution to the war effort should not be underestimated. Out of the 15 operating U.S. air stations involved in sea patrol missions, there were only three that had patrolled more sea miles than the LTA station at Paimbeouf. These were Killingholme, England, and Ile Trudy and Le Croisic in France.

The dirigibles operated by the Americans did not have any U-boat sinkings to their credit, but neither did the convoys they escorted have any losses to

U-boat attacks. It appears that the surveillance support afforded the convoys by the dirigibles and fixed-wing aircraft kept the U-boats from operating successfully.

While no American-built airships operated in Europe during the war, a variety of French and English-built airships were operated in Europe by U.S. Naval Aviation.

The Submarine Scout Zero type operated for a short time as a training airship in England with the designation O-SS and was assigned bureau number A-1030. Other airships which operated under the American flag were the Astra-Torres types AT-1 and AT-13; the Chalais-Meudon type T-2 (*Capitaine Caussin*); and the Zodiac Vedette types VZ-3, VZ-7 and VZ-13.

The U.S. had several foreign dirigibles shipped to America during the war for experimentation, research and testing. These airships included the O-SS (A-1029), AT-1 (A-5472) and the SS-Z-23 (A-5563, previously A-1030). With the cessation of hostilities, the Navy shipped back several other foreign airships that had operated in Europe or had been contracted for prior to the close of the war, including VZ-7, VZ-13, NS-1, AT-13, AT-17, ZD-US-1, ZD-US-2 and *Capitaine Caussin*. The CM-5 had been accepted by the Navy but remained in France until she was sold to Goodyear in 1920. The ZD-US-1 was transferred to the Army

immediately upon her arrival in the U.S. in 1919. This Zodiac type (ZD-US-1) was the first dirigible built for the Navy with her bridge entirely enclosed. In 1922, the Navy transferred the ZD-US-2, which had been kept in storage, to the Army. The VZ-7 and 13 (A-5592 and A-5593) arrived in the U.S. in early 1919. They were later assigned and shipped to NAS Coco Solo. On October 6, 1919, Coco Solo requested that these two airships be stricken from the inventory because their condition did not warrant repairs. Most of the foreign built airships sent to the U.S. after the war remained in storage until they were surveyed and removed from the Navy's inventory.

No German U-boats were sunk by Naval Aviation during WW I. However, aviation is credited with providing positional data to destroyers and other surface craft that resulted in successful attacks against the U-boats. The evolution of LTA operations during WW I led to a postwar period of important developments in the Navy's LTA program. Various foreign-built airships were purchased for experimentation and evaluation. New American airship designs, some based on European developments, were constructed and their capabilities evaluated. Airships continued to operate during the postwar period, however, there was an extensive cutback in operations. Many of the flights were made primarily to keep personnel

trained in the operation of the airship and others were utilized for experiments. The training flights were also used to prepare personnel for manning future rigid airships proposed for the Navy in its 1920 fiscal year budget.

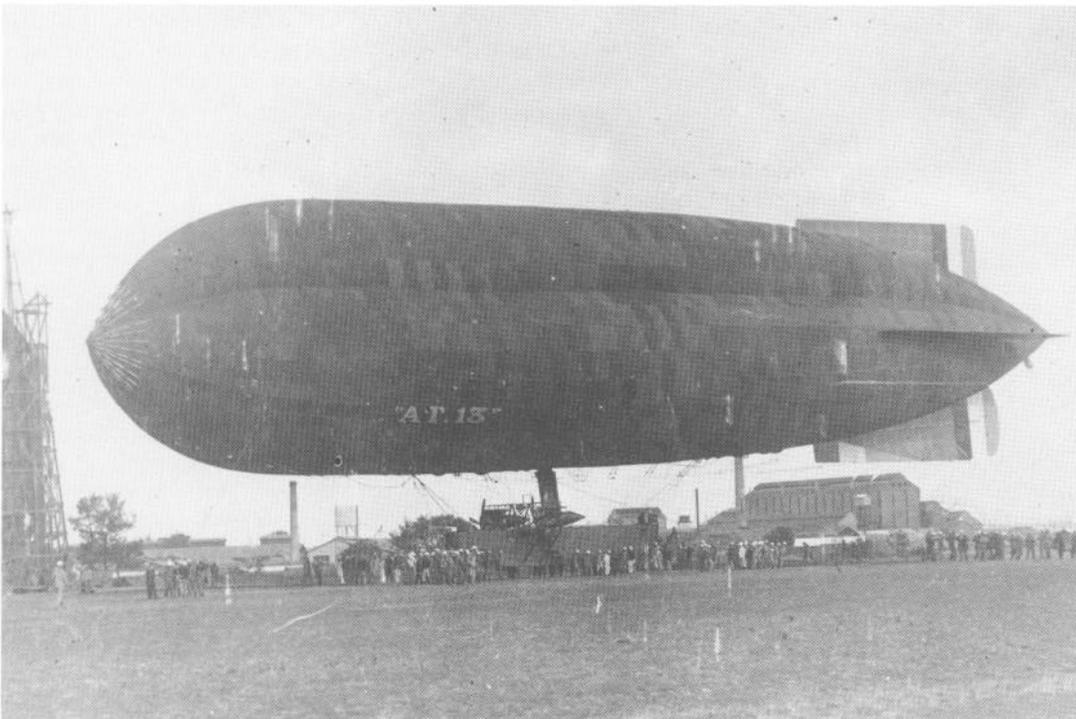
Experimental flights conducted by the Navy's non-rigids during the postwar period included: problems introduced by the use of helium in place of hydrogen; investigation of static discharges; minesweeping tactics; development and testing of torpedo launching equipment; testing new instruments and new fabrics for envelopes; mooring mast developments; water ballast recovery procedures and equipment development; meteorological experiments; rescue procedures; refueling and regassing of dirigibles from surface craft; and ground crew handling procedures and use and development of special equipment for handling airships. Non-rigid airship activity began to slow down somewhat in the postwar period as the Navy began to turn more of its attention to developing the rigid airship.

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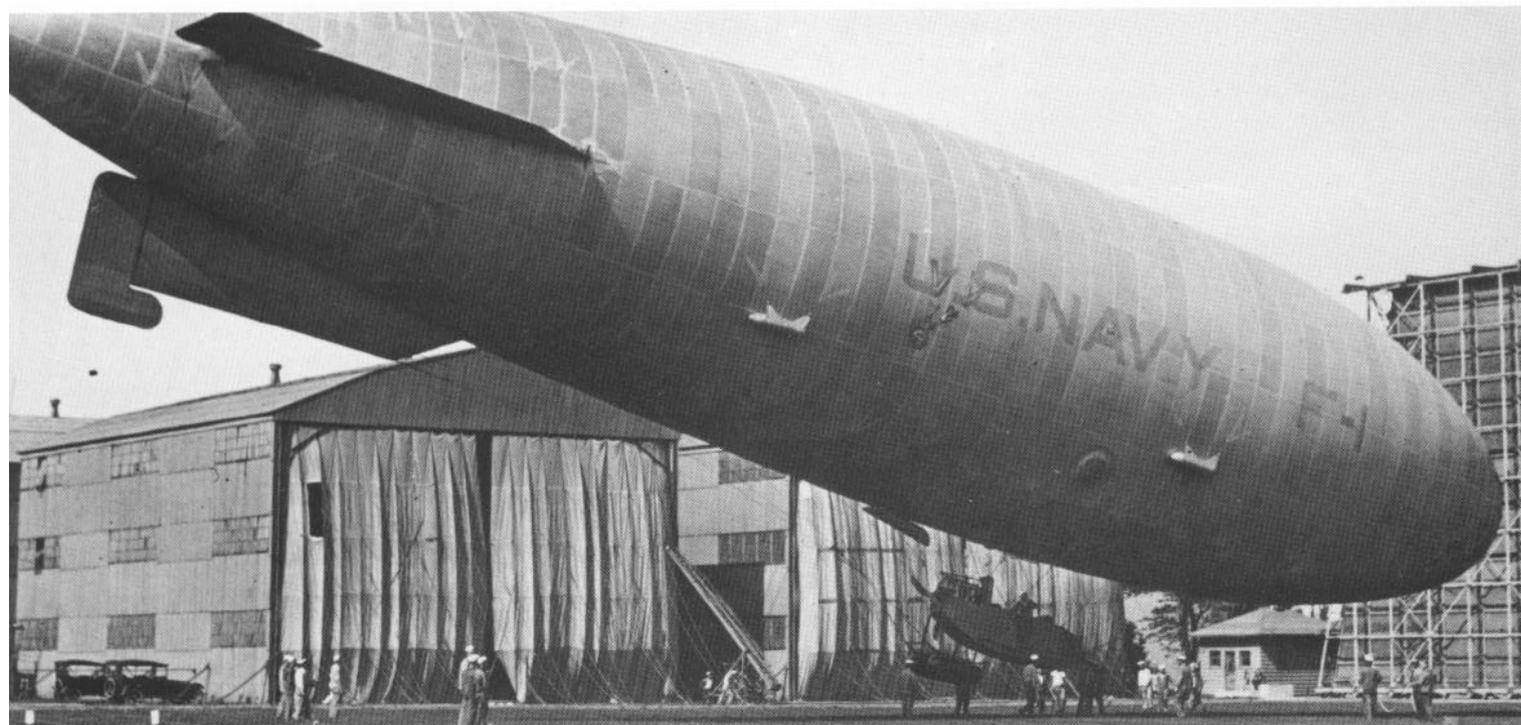
## VI. The C-class

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The evolution of the C-class non-rigid was the result of the need for a better ASW platform for convoy and patrol duties against the German U-boat. It was designed in the spring of 1918 by the



The French Astra-Torres type airship, AT-13, at the main American LTA base in Europe, NAS Paimboeuf, France.



The F series consisted of only one airship. It was originally constructed for commercial purposes by Goodyear and then acquired by the Navy.

Bureau of Construction and Repair's Aircraft Division and was a major advance over the B-class. The improvements in the C-class provided increased endurance for longer on-station time for convoy and patrol duties; more power for additional speed to handle head winds; and more power reliability with the addition of twin engines. It also had a much larger useful lift capacity which permitted a greater load of depth charges to be carried in its ASW role.

Contracts were placed with Goodyear and Goodrich for 30 C-class airships. The cars were to be built by the Curtiss Company. Only a few of the C-class were completed before the Armistice and so the design improvements were not tested under actual combat conditions.

The first C-class airship was completed in September and made her maiden flight on September 30, 1918. She was delivered to the Navy on October 22 after flying nonstop from Akron to Anacostia, D.C., where she was refueled and then continued on to NAS Rockaway, N.Y. This was the beginning of many "firsts" for the C-class airship: the first to carry an airplane aloft and launch it in flight; to demonstrate the practicability of aerial refueling from ships at sea by taking on fuel from a submarine chaser; to use helium as her lifting gas; to complete a transcontinental flight across the U.S.; and to make numerous record-setting

distance flights.

A C-class airship, the C-5, also was used in an attempted flight across the Atlantic. She was modified for the scheduled crossing and Lieutenant Commander E. W. Coil was assigned as commander. On May 14, 1919, the airship lifted off from NAS Montauk, with a crew of six, and headed for St. John's, Newfoundland. This flight was part of the test to determine whether they would attempt the Atlantic crossing. On the morning of May 15, the C-5 landed at Pleasantville, St. John's. The distance covered was 1,022 sea miles and the time in the air was 25 hours and 50 minutes. The flight had demonstrated the airship's long-distance cruising range, and the airworthiness of the C-5 to operate under varying weather conditions.

Permission was granted for the Atlantic crossing and the ground crew began the work of refueling and gassing the C-5. Wind conditions were gusty and variable during reprovisioning. After the ground crew experienced numerous handling problems, it became evident that the airship had to be deflated. The ripcord was pulled but there were problems with the pulloff patch on the envelope. Before any other action could be taken, another gust of wind parted the final lines holding the C-5. The airship drifted rapidly away, heading out to sea with no personnel on board, and was lost.

Lt.Cdr. Coil, in his report on the C-5 flight, indicated that the performance of the C-5 between Montauk and St. John's made a nonstop transatlantic crossing entirely feasible. Had it not been for the weather and the fact that a mooring mast had not been developed, the C-5 might have been the first aircraft to cross the Atlantic.

When the Armistice was signed, only a few C-class airships had been delivered to the Navy. Demobilization led to a reduction in the number of airships constructed and, eventually, only 10 were built of the 30 originally ordered. The last C-class was delivered on March 19, 1919. Two were transferred to the Army.

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## VII. New Airship Classes in the Post-WW I Period

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The postwar period saw developments in non-rigid airships that were more advanced than the capabilities offered in the C-class. The success of the C-class was tempered by criticism from pilots about certain unsatisfactory features. Criticism was aimed primarily at the control car which was crowded, noisy due to engine placement, and susceptible to propeller blasts. As a result, the D-class design was developed and authorized by the Secretary of the Navy on July 16, 1918. Goodyear received a contract to build three of the airships, the