The first Fokker C-2 in original form with open cockpits and Wright J-4 engines. Enclosure was soon added, but distinctive arrangement of metal panels on nose was retained for all C-2/RA-1 through -3 models. (American Fokker 419)

The American Fokkers Part 3

By PETER M. BOWERS

The late autumn of 1925 was a significant period for The Atlantic Aircraft Corporation (The American Fokker factory) as it was for the American aircraft industry in general. It marked the birth of a new era in aircraft manufacture. The availability of cheap, war-surplus, military aircraft for civil use at a fraction of their original cost had effectively smothered the development of more efficient civil designs for several years. Not until 1925, when the wooden surplus types began to wear out, did a worthwhile market open up to new design. Many new models appeared in that year and some were to become the backbone of civil aviation for the next decade. Atlantic's first true civil design, the Universal (American Fokker Model 4, see Part 2), was perfectly timed to ride the crest of this new wave and, if anything, was slightly ahead of time, being a monoplane when such a configuration was considered daring.

Shortly after the Universal appeared, Atlantic received a terrific boost when the Dutch-built F-VII trimotor became the sensation of the 1925 Ford Reliability Tour. Tony Fokker then loaned this plane to the U. S. Army for tests at McCook Field. As a result of these tests, the Army and Navy each ordered three slightly modified versions. Fokker added some civil airframes to the military orders, on speculation, to make a production run of approximately ten. The assembly of Dutch-built F-VII's for civil customers plus completion of the DH-4M2 order made the little Teterboro plant a busy place in 1926. The war was a long way behind now, and the word Fokker had lost its stigma. The plant and the airplanes came more and more to be called Fokker rather than Atlantic, and at the end of the year the Fokker Aircraft Corporation of America took over Atlantic Aircraft, which continued to function as a subsidiary. The military airplanes on current and subsequent orders were delivered as Atlantics but were widely referred to as Fokkers.

American Big Business became ever more firmly ensconced in the management saddle when, late in 1927, control of Fokker was obtained by Western Air Express--a small west coast airline. In the boom that followed Lindbergh's flight in 1927, WAE was set up as a "model airway" between Los Angeles and San Francisco with backing from the Guggenheim Fund for the Promotion of Aeronautics. To assure itself of a source of modern airliners in a competitive market, WAE bought control of Fokker. Some subsequent Fokker designs were developed to the airline's specifications, and for the period that WAE was in control, Harris M. Hanshue, President of WAE, was also President of the Fokker Aircraft Corporation of America. Tony Fokker had the title of Chief Engineer.

By 1928, production requirements had far outgrown the original Teterboro plant. A smaller plant for wing

production was set up in Passaic, New Jersey, and a whole new manufacturing plant was established at Glendale, West Virginia, a suburb of Wheeling. (1) References to the Glendale plant weren't always qualified in the press, with the result that some publications assumed that Fokker had a California plant. Such was under consideration, along with a plant in Kansas City, but the depression and other company problems kept these developments from materializing.

MODEL 7 - This model is remembered chiefly as a military airplane, notably the U. S. Army C-2 series. Twenty-two of at least 25 built were military. An Army C-2 made the first San Francisco-Hawaii flight in June 1927, and the flight of the C-2A "Question Mark" in January 1929 touched off a boom in endurance flying with a 150-hour flight. The four Navy models didn't make headlines and the civil versions, which were oddly designated C-2 instead of being given a new civil designation, are the forgotten airplanes of the American Fokker series. Byrd's Transatlantic "America" is seldom identified in the press as a C-2, and is called an F-VII in company historical summaries. (2) One operated by Pan American Airways was sold as an F-VII. The first Army order resulted from Army testing of the 1925 Ford Tour F-VII and gave the new model its identity, "C-2", meaning Model 2 in the Army's C-for-Cargo series. Wings, tail and most details were the same as the 1925 trimotor, but the Army wanted a roomier fuselage and later 220 hp Wright J-5 engines. The Navy placed an order for three duplicates under the designation of TA-1 (T for Transport, A for Atlantic).

Principal recognition features (differing from the civil trimotor which later became known as the F-VIIA/3M) were the fatter fuselage, entirely different pilot's cabin and different arrangement of metal panels on the nose. The pilots were moved out ahead of the wing and the front end of the cabin was also moved forward. This put a window at the point where the side engine controls of the F-VII entered the fuselage so the conduit for these controls was lowered in the C-2 to come in below the window.

* CIVIL C-2 - Without government specifications and inspectors to contend with, Fokker was able to turn out the first civil C-2s ahead of the military orders. Since the brand-new J-5 engines were committed to the military, he fitted the first two civil C-2s with 200 hp Wright J-4s as used in contemporary F-VIIA/3M's. These were later changed to J-5s. The first civil C-2 had the pilots in separate open cockpits ahead ofthe wing, but this arrangement was changed to a large single cabin with glass enclosure before delivery of the first C-2 to Colonial Airways in late 1926. Since this was before license requirements were adopted, the C-2 had neither civil registration numbers nor an Approved Type Certificate (ATC).

One reason for the de-emphasizing of the civil C-2 designation was the 1927 licensing requirements. To avoid the cost and delay of running full certification tests on the C-2 to qualify it for an ATC, Fokker passed the civil C-2 off as the very similar F-VIIA/3M, which was allowed to operate in the United States as an approved Dutch design. Under a contract with Pan American Airways for trimotors. Fokker agreed to deliver three F-VII's; two Dutch-built and one American-built. (3) The Dutch planes were long-wing F-VIIB's with J-5 engines (NC-3314 and 5192). The "American" F-VII was one of the short-wing Colonial C-2s (NC-53) that Fokker had bought back and fitted with J-5s. PAA operated two C-2s; NC-53 and NC-55. Both of these were delivered to PAA with the designation "TRIMOTOR C-2" painted on nose and tail. The second one, also fitted with J-5s, was obtained separately. No C/N can be found for NC-53, but NC-55 had C/N 704.

The most famous civil C-2, of course, is Commander Richard E. Byrd's "America." Its story justifies a full-length article of its own. It is sufficient here to say

Pan American Airways' C-2, NC-53, which was purchased as an F-VII. Designation "TRIMOTOR C-2" can be read on the nose along with the original name "KEY WEST". The name was later changed to "GENERAL MACHADO" for the Cuban "Strong Man" of the times. The engines were Wright J-5s. (American Fokker Photo from files of Western Flying Magazine, 1950)

Commander Richard E. Byrd's transatlantic C-2 AMERICA, warming up for a test flight in front of the America Trans Oceanic Company's hangar at Roosevelt Field, New York. The letters "ATC" on the airplane were the initials of the company and did not stand for "Approved Type Certificate". (Stephen J. Hudek)

that it was built specifically for a New York-Paris transatlantic flight and was fitted with J-5 engines and a Dutch-built long wing. The story that Byrd had the Navy release one of its TA-1s on order for his use is disproved by Fokker reports of deliveries and the inventory of Navy aircraft for 1928 which shows all three in service. FAA records show the C/N for the "America" (NX-206) as plain 3, but this should be 703. A question arises here as to whether this is the third or fourth civil C-2. If this constructor's number series started on the hundred, as did some other civil Fokker series, 703 is the fourth airplane. If the series started with 701, it is only the third.

* ARMY C-2 - Of the three C-2s ordered by the Army (26-202/204), two were standard 8-passenger transports with the 63-foot F-VIIA wing and one, 26-202, was assigned to the California-Hawaii flight and fitted with a long (72-foot) Dutch-built wing because of the increased load and range requirements. (4) This wing had the flat center section of the long wings used on the XLB-2 and the F-VIIB described in Part 2 of this series. The first C-2 delivered, 26-203, was temporarily designated XC-2, during its testing period. The long-wing C-2, which the Army named "Bird of Paradise" for the transpacific flight of Lts Lester Maitland and Albert Hegenberger, was not delivered until April 1927. It was further modified and fitted with long-range tanks at Wright Field. In spite of the big wing and other changes, it was still called plain C-2. After the famous flight of January 28-29, 1927, it served in Hawaii for 10 years. It was then returned to the States by ship (the big wing was sawed into several pieces) for installation in the Air Corps Museum at Wright Field. It was burned in 1944 when its storage space was needed for something else.

As delivered, the three C-2s were olive drab over all and carried the old vertical Army tail stripes. The Army put the new horizontal stripes on 26-202 at Wright Field, but 26-204 carried the old ones as late as September 1927. (5) During the Pacific flight 26-202 was olive drab over all but was soon repainted with chrome yellow wings and tail as had become the custom.

* NAVY TA-1/RA-1 - Except for color scheme, the three TA-1s (A-7561/7563) ordered by the Navy for the Marines were duplicates of the short-wing Army C-2s. These did workhorse jobs in the Nicaraguan Campaign of 1927-28. Because the T-for-transport designation conflicted with T-for-torpedo, the TA-1s were soon redesignated RA-1 in the large transport category. All were redesignated RA-3 following engine change.

* ARMY C-2A - The success of the Army's long-wing C-2 led to an order for eight production versions under the designation of C-2A (28-119/126). These were built in the new Wheeling (or Glendale) plant. The first four delivered had the same close spacing of the J-5 engines used on the C-2s. This produced vibration and flutter problems because of the slipstream of the center propeller overlapping the side propellers. An attempt was made to alleviate the problem by using a smaller diameter three-blade propeller on the center engine. The last four were delivered with each side engine moved 21 inches farther outboard. (4) The last C-2A was fitted with different engines at Wright Field and redesignated C-7.

The best known C-2A, of course, is the "Question Mark" (28-120) which created a 150-hour endurance record in January 1929, by means of in-flight refueling. This, too, is a story worthy of a separate article.

* NAVY RA-2 - The Navy again followed the Army lead and bought three TA-2s (A-8007, 8008 and 8018, later RA-2)

Third U.S. Army C-2, 26-204, delivered in April 1927, in overall olive drab finish with the old Army tail stripes. The Army had two C-2s with the "short" 63-foot wing of the original F-VIIA trimotor. (American Fokker 519)

The BIRD OF PARADISE, the Army's first C-2, fitted with a long wing for Maitland and Hegenberger's flight from California to Hawaii in June 1927. (U.S. Army via Earl Vivell)

Marine Corps TA-1 was identical to Army short-wing C-2s. This one was fitted with a three-blade propeller on the center engine. (American Fokker Photo via E. M. Sommerich Coll.)

Most famous of the C-2s—the Army's C-2A "Question Mark" before setting world's endurance record. Photo taken at San Diego on December 22, 1928 with temporary, free-hand "?" painted on the fuselage. (U.S. Air Corps 11228A.S.)

The fifth Fokker C-2A, 28-123, on loan to N.A.C.A. at Langley Field, Virginia for tests of the N.A.C.A. engine cowlings, which were under development at the time. (N.A.C.A. 3285)

Top, Marine Corps' third TA-2, A-8018, which duplicated the Army C-2A's. This one is on its way to Nicaragua with a replacement wing for another airplane tied under its fuselage. Middle, short-wing Marine TA-1/RA-1 converted to RA-3 by change from 220 hp Wright J-5 engines to 300 hp Wright J-6s. This particular plane, A-7561, has reverted to two-blade nose propeller. Bottom, Marine TA-2/RA-2 also converted to RA-3 by change to J-6 engines with no distinction made for length of wing. Modification to this aircraft, A-8018, includes a large fillet between the tops of the nacelles and the underside of the wing. (U.S. Navy, U.S. Navy and Fred Bamberger)

which duplicated the C-2A's. These, too, went to Nicaragua and later were redesignated RA-3 following engine change.

* NAVY RA-3 - When the Navy replaced the J-5 engines in the RA-1s and RA-2s with later J-6s, they redesignated all of them RA-3. This gave the Navy a duplicate of the Army's original C-2 situation, with both long and short wing versions having the same designation. One additional RA-3, A-8157, was purchased new as such. (A photo of this plane is still being sought.)

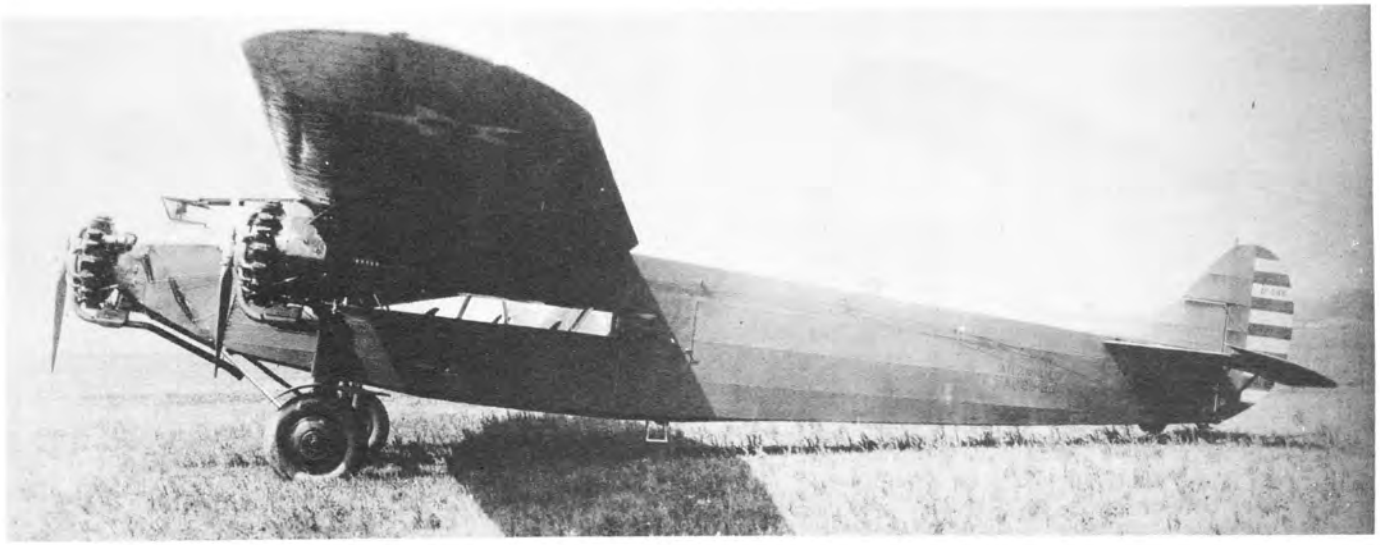
* ARMY C-7 - The last C-2A (28-126) was fitted with 300 hp Wright J-6-9 engines (R-975) in place of the J-5s at Wright Field and was redesignated C-7. It was temporarily designated XC-7 during testing. This configuration resulted in further production orders.

* ARMY C-7A - The C-7A, of which six were ordered (29-407/412), was the result of the XC-7 tests but was not a production version of the same airplane. It was a real mongrel. It had the C-2A/C-7 wing, C-7/RA-3 engines, a shortened commercial F-10 fuselage with F-10A rear end and, in its service form, XLB-2/F-10A bomber vertical tail surfaces. The fuselage differences were most apparent in the direct side view. The upper longeron of the F-VII series had a concave curve and a very noticeable downward slope just behind the wing. The C-2/XC-2 upper longerons were straight but had a downward slope from the trailing edge of the wing to the tail. On the C-7A, as in the civil F-10 series, the upper longeron was again straight but was level, or parallel, to the airplane centerline. The C-7A's were built with steerable tail wheels, and the lower longerons were reflexed near the tailpost, as on the late F-10A's, to accommodate this feature.

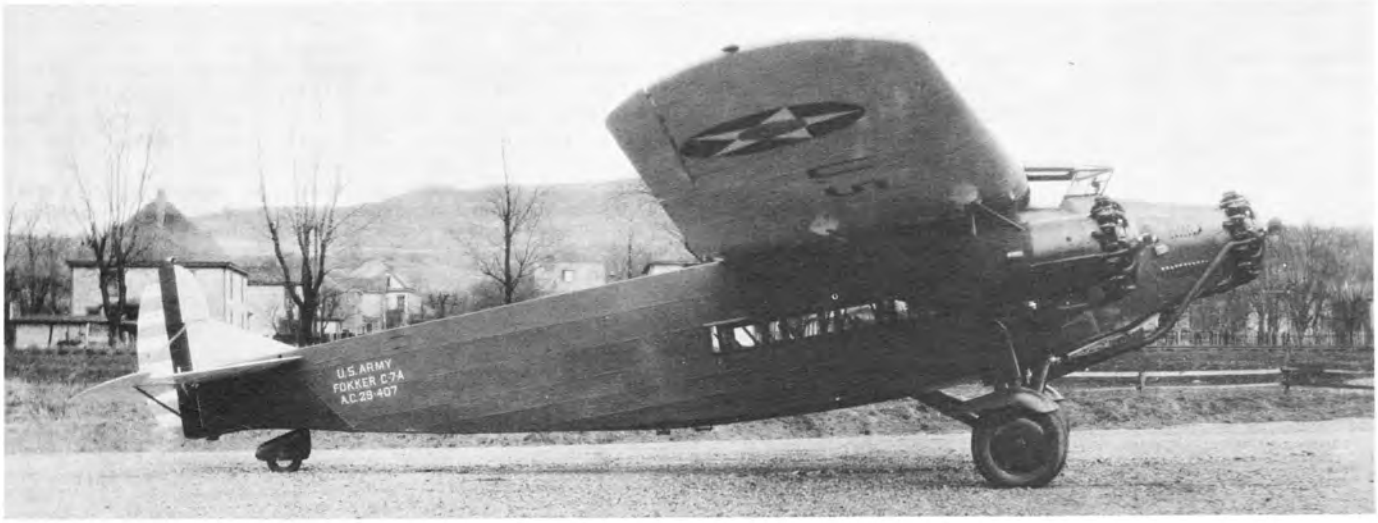
The original vertical tail on the C-7A was similar to that of the civil F-10. In spite of the lower weight and power of the C-7A compared to the F-10, the Army thought it didn't have enough vertical tail area so the entire vertical tail of the F-10A bomber, civil registration number and all, was tried. This oversize vertical fin, like that of the XLB-2 (see Part 2), did the job, and the remaining C-7A's were delivered with this tail shape.

* F-9 - This is an example of backward numbering. The F-9 (or F-IX) designation didn't appear until two years after the F-10 (or F-X) was well established. The reluctance to use the designation earlier may have been due to the existence of a Dutch Fokker F-IX model.

No civil American Fokker F-9 existed although the company tried to sell such a model and even advertised it in its 1930 catalog with photos. This was intended

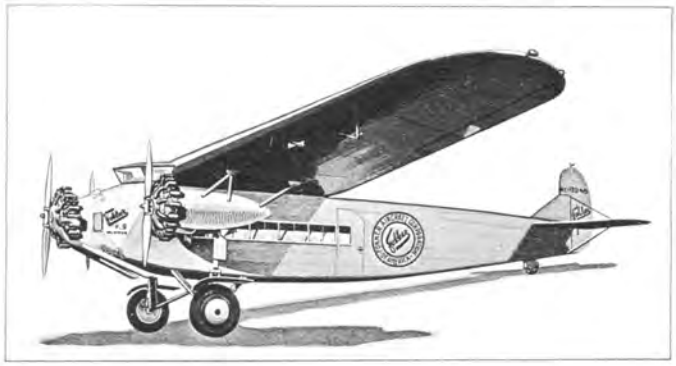


The last Army C-2A, 28-126, was sent to Wright Field for engine change and was redesignated C-7. While under test as XC-7 it carried the Wright Field test number, XP-545. (Wright Field)



The first C-7A, March 11, 1930, with original F-10 type tail. Fokker again "goofed" with the U.S. national marking, having the red centers of the stars touching the inner edges of the blue. (Fokker Glendale Plant 102)

First C-7A undergoing Army test with the vertical tail of the F-10A bomber. Note how dark the yellow wing photographs on orthochromatic film compared to its appearance on panchromatic film with filter in photo above. (Gordon S. Williams Coll.)



The 1930 Fokker catalog carried a photo (left) of the nonexistent F-9, which was a heavily retouched copy of an original photo of the sixth F-10, NC-8048 (right), changing Wasp engines to J-6s and eliminating Western Air Express makings.

to be a civil version of the C-7A which, with its 300 hp Wright J-6-9 engines, was somewhat smaller and lighter than the Pratt & Whitney Wasp-powered F-10A's then in production for the airlines. The F-9 was advertised as an 8-passenger plane at $49,000, the F-10A as a 12-passenger plane at $67,500. The catalog photos were a fine example of advertising short cuts. The exterior photo was merely of the last F-10 retouched to show the Wright engines with their distinctive front exhaust manifolds instead of the P&W's, and the interior photo was that of an F-10 cabin cropped to eliminate the two rear rows of seats. It is interesting to speculate as to what ATC number Fokker would have tried to use if he did find a customer for an F-9.

MODEL 8 - Somehow the American Fokker Company managed to produce two entirely different designs having the same model number and constructor's number. One never got beyond the prototype stage and was quickly dropped while the other became the company's major production model.

MODEL 8 "SKEETER" - This was a 1926 attempt to develop a small two-seat lightplane for personal use. No information other than the photograph is available from company sources, and no mention of it appears in the contemporary aviation press. The author first found the name Skeeter and the C/N 800 that established it as American Fokker Model 8 in FAA registration records. The registration number was 82. The French Anzani engine, readily identified in the photo, is confirmed by FAA records.

MODEL 8 "SUPER UNIVERSAL" - This was a direct development of the Model 4 Universal with higher power and with passenger seating increased from four to six. It became the most widely-produced American Fokker. Other than the prototype, which differed considerably from the production version, there were 80 Super Universals built in the U. S. Fourteen were built under license in Canada and approximately 29 were built in Japan.

Although the Super Universal was contemporary with the F-10, F-11 and other American F-models, it was advertised simply as the "Super Universal" and was not given an F- number designation. This continued the policy followed by the Universal and had nothing to do with the fact that there was a Dutch F-VIII model in production at the time.

* Prototype - The first Super Universal, built at Teterboro with C/N 800 and registration 3318, was essentially an enlarged Universal and retained the strut-braced wing. The pilots were enclosed by a C-2/F-10 type windshield instead of being in the open cockpit of the early Universals. Other than the higher power, a 420 hp Pratt &

The Fokker Model 8 Skeeter, a two-place lightplane powered by a French Anzani engine. There is no information available on this aircraft other than this single photograph. (Fokker Photo 376)

The prototype Super Universal. This name became offical for this one-only airplane, appearing in company publicity and FAA records, even though "UNIVERSAL SPECIAL" was painted on its rudder. "C/N 800" is above lower longeron. (Fokker Photo 686)

Whitney Wasp engine in place of the 200-300 hp Wright Whirlwinds, the major change was the addition of an extra structural bay to the fuselage to accommodate the additional passengers. The span of the wing, still with the non-tapered center section, was increased from 47'9" to 52'9". (6) The use of the older style of "elephant ear" horn-balanced ailerons seemed a step backward, and the Super Universal prototype was the only American-built Fokker monoplane to employ this feature.

The original designation of this elongated model was "Universal Special", but the name was soon changed to Super Universal. The Super Universal did not go into production in its prototype form, but the prototype was certificated, being issued Category 2 approval 2-3 on May 22, 1929.

☆ American Production - The production Super Universal was an entirely different airplane than the prototype. It reverted to the full-cantilever wing with straight taper from the fuselage to the rounded tips and ran the main landing gear straight from the wheel to the front wing spar in the manner of the F-VIIA's and B's. The fuselage lines differed from the prototype, and the pilot's enclosure was similar to that tried on the fifth F-10 and later adopted for the late-production Universals.

Super Universals, C/N's 801 through 880, were built at Glendale unter ATC-52. The first was delivered in November 1927 and the last in January 1931. (7) (The first delivery date may be for the prototype; the first production model was 4453, the "Virginia" of the first Byrd Antarctic Expedition.) This model was widely used by American business firms and small airlines, and FAA records show that 14 were exported. The 1930 catalog price was $21,800 as a landplane and $25,600 as a twin-float seaplane.

☆ Foreign Production - The success of the Super Universals in the export market, notably in Canada and Japan, led to agreements to manufacture it under license in those countries. The Canadian models were built by the Canadian branch of the British firm of Vickers at Montreal. Canadian Vickers C/N's CV-132 through CV-145 were assigned to the 14 built. (8)

The Nakajima firm in Japan built nine civil Universals as nearly as can be determined from registration records, which show C/N's 1 through 9. (9) Most were powered with Nakajima-built British Bristol Jupiter engines. These 450 hp radial installations in the Fokker

Production Super Universal, featuring a fully cantilever wing, at Alhambra, California, May 7, 1939. (Boardman C. Reed)

Canadian-built Super Universal on floats. CF-AFS had Canadian Vickers constructor's number CV-135. (P.M. Bowers Coll.).

American-built Super Universal seaplane, C/N 857, exported to Japan and fitted there with a Bristol Jupiter engine. Registration is J-BBPO. (Japanese Photo from Shiro Ogiwara)

Japanese-built Super Universal ambulance plane. With right-hand propeller, engine could be a P&W Wasp or a Japanese-built equivalent. (Japanese Photo from Shiro Ogiwara)

Super Universal of wartime puppet airline in occupied China was photographed in Peiping while being repainted in Chinese Air Force markings. With right-hand propeller, this could be American or Japanese-built. (Peter M. Bowers)

The XJA-1 Super Universal tested by the U.S. Navy in October 1928. Identification board is typical of Anacostia photos. Fokker made several markings errors, leaving off the wing stars and the name "U. S. NAVY" on fuselage. (USN AN-6751)

could be recognized by the left-hand propeller.

Some later went to Manchuko and flew with registrations consisting of the letter M and a number. Other Super Universals with J registrations were American-built. Some of these remained in operation on the puppet airline of occupied China to the end of World War II. (10)

Nakajima also produced approximately 20 Super Universals for the Japanese military services. Some were ambulances, some were bombing and gunnery trainers, and others were utility types. Photos show some with left-hand propellers, some with right-hand propellers.

☆ U.S. NAVY XJA-1 - In 1929, the U. S. Navy bought a production Super Universal "off-the-shelf" for evaluation as a utility type and comparison with other commercial types. Navy serial number was A-8012 and the designation was XJA-1, the J being a newly-adopted symbol to identify Navy utility aircraft.

MODEL 9 - This flying boat/amphibian was the only Fokker to carry separate designations for the American and Dutch versions. The American version was designated F-11 and the Dutch was B-IV in a continuation of the long-established B flying boat and amphibian series. There was also a Dutch F-XI model at this time. It had strut-braced wings like the American Universal and was also called "Universal." Like the American F-VII's, the F-11/B-IV's were a joint Dutch-American effort. The metal hulls, direct developments of the metal B-III hulls, were built in Holland. There is no evidence that any complete B-IV's were built in Holland. The Dutch catalog photos and entries in the Dutch section of JANE'S ALL THE WORLD'S AIRCRAFT show an American-registered F-11.

☆ F-11 - This was a logical monoplane development of the B-III pusher biplane flying boat and was assembled at Teterboro. The hull lines were generally the same except that they were developed into a full cabin design. Only one F-11, 7887, C/N 901, was built. (A C/N 900 appears in FAA records as aB-11 with Napier Lion engine.) The F-11 originally appeared as a six-place amphibian with unique retractable wheel-sponsons in the manner of the German Dornier boats. A wheel was mounted on the end of each sponson, which was lowered for ground operation. For water operations, the sponson retracted to the horizontal position and the wheel folded back and out of the way. This arrangement was not very satisfactory and was soon abandoned. The F-11 was then converted to a straight flying boat with conventional wing floats mounted much farther inboard than on contemporary designs.

The F-11 originally used a Super Universal wing in what was planned as a neat saving in engineering and tooling costs. The original engine was a 420 hp Pratt & Whitney Wasp. The F-11 was then converted to use a longer 500 square foot wing and a 525 hp Wright Cyclone engine and received Category 2 certificate 2-163 on December 6, 1929.

☆ F-11A - Three 8-place F-11A's (C/N's 902, 903 and 905) were built. These could be purchased as straight flying boats or as amphibians with separate fixed-wing floats and retractable landing gear. The other major difference from the F-11 was the use of a longer wing with 550 square foot area. This was the same wing used on the model F-14. Engines were advertised as the 525 hp Wright Cyclone and the 575 hp P&W Hornet. ATC-222 was issued to the Cyclone-powered F-11A on September 5, 1929. Price of the flying boat was $40,000 and the Amphibian $42,000. These were reduced to $32,500 and $33,775, respectively, when the depression began to affect airplane sales in 1930. The last F-11A was delivered in June 1930. (7)

☆ F-11AHB - This designation shows up in FAA records for two airplanes, C/N's 904 and 906. No documentation has been found to explain the additional letters in the designation. A latter-day collector's photo shows one with a modified vertical tail, but this would hardly cause Fokker to change the designation. Since the FAA records show them fitted with the P&W Hornet engine, a guess would be that the letters HB stood for "Hornet B." C/N 904,

The first, and only, F-11 in its original configuration with short-span Super Universal wing, P&W Wasp engine and moveable sponsons that doubled as landing gear legs. (Fokker Photo)

The Fokker F-11, registered 7887, converted to a straight flying boat with wing floats, longer F-14 type wing of 550 sq ft and Wright Cyclone engine of 550 hp. (Stephen J. Hudek)

F-11A, C/N 902, registration X-148H, temporarily fitted with an F-32 type nacelle, carrying two Hornet engines. Photographed at Teterboro on March 5, 1930. (Fokker Photo 1493)

Fokker F-11AHB, C/N 904, registration NC-127M, powered with P&W Hornet engine of 575 hp. This was a deluxe model for famed boat racer and builder Gar Wood. (Courtesy Ben Haines)

which was registered 127M, was licensed 8-place under Category 2 Certificate 2-172 and C/N 906 (which later went to Canada) was licensed under 2-200 as 10-place.

* F-11A TANDEM - No special designation appears for F-11A, X-148H, C/N 902, when it was temporarily fitted with two Hornet engines in tandem. Again, no documentation is available, but the sequence of photo numbers and dates indicates that the purpose of the twin was not to serve as a test bed for the tandem engine installation of the F-32 transport but rather was an attempt to adapt the F-11 to the Coast Guard's requirements for a twin engine flying boat by fitting an F-32 nacelle to an existing single engine aircraft.

* ARMY C-16 - One Hornet-powered F-11A was sent to Wright Field for test by the Army Air Corps. Although this was a company-owned airplane and was tested on a bailment contract in 1931, it received the military designation of C-16. This was most unusual.

This particular airplane presents some other puzzles. The registration number, 843W, does not appear in FAA Fokker records. It carries the markings of Western Air Express in the Wright Field photos. This could hardly have been a publicity move resulting from WAE's control of the company since General Motors was not in charge. WAE did operate amphibians on its Los Angeles-Catalina Island run, but there is no airline record of an F-11 being used although some old-time employees seem to remember one. (11) Airline fleet experts in A.A.H.S. have no confirmation of one, either. The airplane must be F-11AHB, C/N 906, which was licensed 10-place as an "Air Ferry." This ties in with the short Catalina route.

MODEL 10 - This was the first American Fokker model on which the engineering number and the sales number got together. The F-10 appeared early in 1928 as a greatly improved F-VII trimotor developed to U. S. requirements. Originally designated "F-10 Super Trimotor" and "Trimotor De-Luxe", it was a 12-passenger airplane with 420 hp P&W Wasp engines and featured an entirely new fuselage and tail under an F-VIIB wing. According to Fokker records, a total of 65 F-10 series trimotors were built, 63 for commercial customers and two for the military. FAA records confirm the registration numbers for the 63 but list four additional C/N's.

Along with the Ford Trimotor, the F-10 was the mainstay of the U. S. airline business into the early 1930s. Production of the F-10 ended in October 1929. All F-10s were grounded briefly following the crash that killed famed Notre Dame football coach Knute Rockne on March 31, 1931. Never before had an airliner crash drawn national attention as this one did. It is still a milestone in airline history and is referred to as "The Rockne Crash."

A wing had broken in flight. Investigative techniques were not as thorough then as now, and emotion and personal opinion, plus charges of faulty design and poor maintenance, clouded the issue. The F-10s were soon cleared and went back into airline service after balance weights were added to the ailerons. The Rockne crash did great harm to the Fokker reputation and wooden wing structures in general. Actually, the trimotor was already on the way out, and the Rockne incident merely hastened the departure of the Fokker from the American scene.

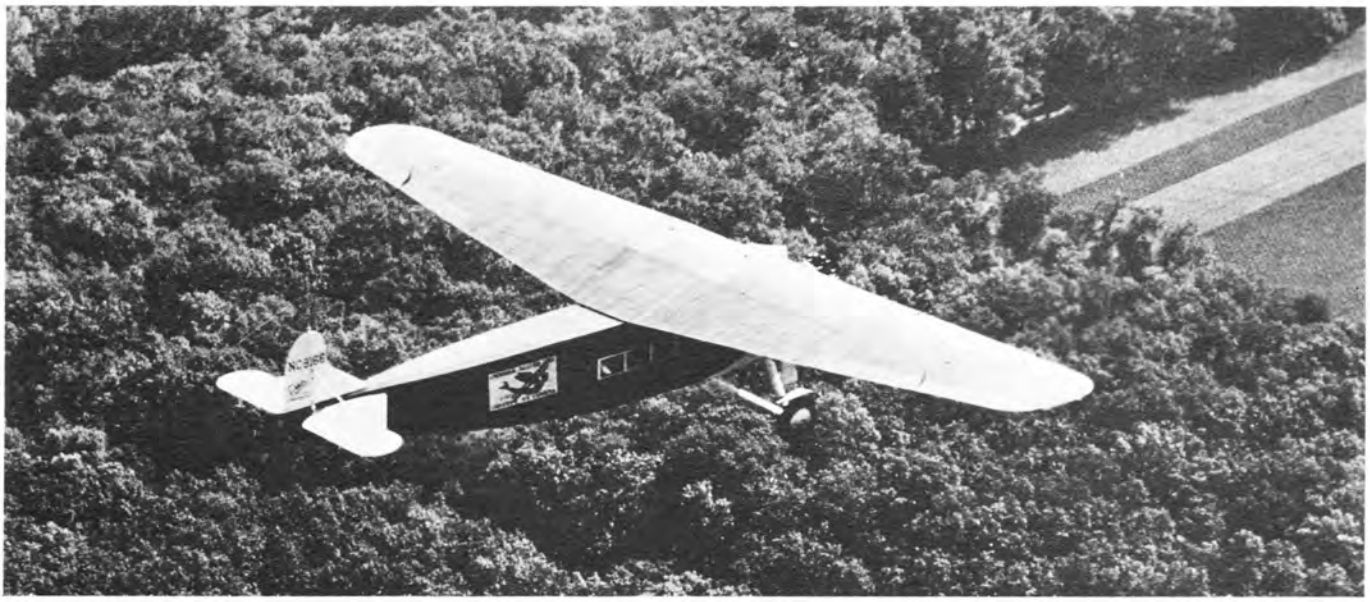
* F-10 - This designation appeared in great variety. Fokker documentation and advertising carried it both as F-10 and F-X (sometimes AF-10 and AF-X), and at times it was painted on the airplanes as "F-TEN." The F-10 used the F-VIIB wing, which was built in Holland. The rest of the F-10 airframe was built in Teterboro. There were

The third Fokker F-10, built for Western Air Express. C/N 1002, registration 5358. F-10s operated under Category 2 Approval certificates and went into service without the letters NC in front of their registrations. (Western Air Lines)

Built for the Richfield Oil Company, the number four F-10, C/N 1003, registration 5614, had lettering on nose and tail proclaiming it to be a "TRIMOTOR F-10 DELUXE". Company name was on outboard portion of nacelle. (Peter M. Bowers Coll.)

The fifth F-10, fitted with a modified windshield and used for awhile as a Fokker demonstrator. This plane was later sold to the Shell Oil Company and was subsequently destroyed in a hangar fire. (Wright Field 35235)

F-10A, NC-215M, C/N 1044, in Western Air Express colors, was used by West Coast Air Transport and Pacific Air Transport before flying for WAE. Lower longeron reflexed for use of a steerable tail wheel but tail skid retained. (Boeing 4421)



Universal Airlines' F-10A, NC-9166, C/N 1037, showing the straight taper of the F-10A wing from the fuselage to the tip of the wing. The earlier F-10 had parallel leading and trailing edges out to the nacelles. (Universal Airlines)

Early F-10A's had straight lower longerons as F-10s, later had reflexed longerons to accomodate steerable tail wheels. NC-9169, C/N 1038, retains a tail skid, shown on ground handling dolly, but has modified longerons. (Fokker Photo 1202)

The quickie conversion of a standard F-10A trimotor resulted in this experimental bomber. (Fokker Photo via Jesse Davidson)

The Army bought one F-10A, with straight lower longerons, and designated it C-5, serial 29-405. (USAAC via Stephen J. Hudek)

Standard F-10A delivered to Marine Corps as RA-4 in January 1931 with faired steerable tail wheel. (Fokker Glendale 454)

U.S. FOKKER MODEL NO.	SOLD AS	SPAN	LENGTH	WING AREA	ENGINE & HP	GROSS WEIGHT	HIGH SPEED	REMARKS
7	C-2/TA-1	63' 3"	48' 6"	617	Wright J-5 220	8,898	112	Contract date 2/2/26 Army C-2 wt 13774 lbs.
	C-2 SPL	71' 2¼"	48' 6"	718	Wright J-5 220	18,000	116	
	C-2A/RA-2	72'10-3/8"	48' 7"	748	Wright J-5 220	10,394	112.8	
	C-7A/"F-9"	72'10"	48' 1"	748	Wright J-6 300	11,026	139	
8	Skeeter	---	---	---	Anzani	---	---	
	Super Universal (Prototype)	52' 9"	35'11½"	---	P&W Wasp 420	4,500	---	Originally "Universal Special"
	Super Universal Navy XJA-1	50' 7-3/4"	36' 7"	370	P&W Wasp 425	5,271	138	Production aircraft
9	F-11	50' 7-3/4" (increased)	42'11"	370 (incd to 500)	P&W Wasp 425	6,000	125	One only to F-11A gross weight with Cyclone & longer wing.
	F-11A	59' 0"	45' 0"	550	Wright Cyclone 525	7,200	140	F-11AHB had 575 hp Hornet. Tested by Army as C-16.
10	F-10	71' 2"	49'11"	728	P&W Wasp 420	11,500	141.6	Last 2 of 7 to F-10A
	F-10A	79' 3"	49'11"	850	P&W Wasp 420-450	13,100	154	
	RA-4	79' 3"	49'11" (plus)	850	P&W Wasp 450	12,850	150	Navy version F-10A

only seven of the basic F-10 model, C/N's 1000 through 1006. These were licensed under certificate 2-2 on January 7, 1929. The last two were converted to F-10A.

WAE, for whom the F-10 was developed, was the first (and only) airline customer for the original model. Two went to oil companies; C/N 1003 (NC-5614) to Richfield Oil Company and C/N 1004, (NC-8010) to Shell Oil after a period as a Fokker demonstrator during which time it featured a different windshield.

* F-10A - An improved version of the F-10 with a longer American-built wing. F-10A production was at Glendale, where 57 of the 59 civil models were built. The most notable recognition feature was the straight taper of the wing from the fuselage to the tip of the trailing edge and a distinctive cut-in of the leading edge between the nacelles and the fuselage. The early models had tail skids like the F-10s, but later versions had full-swivel steerable tail wheels. The line of the lower longerons was altered considerably to accommodate this feature.

ATC-96 was issued January 1, 1929, for 420 hp P&W Wasp engines but was modified in April to allow 450 hp Wasps. Standard price for the F-10A was $67,500.

Principal airline customers, other than WAE, which ordered 13 F-10A's new and acquired eight others, were PAA with 12, and American which obtained 16 second or third-hand from other lines. Universal Airlines used 15 new F-10A's.

* F-10A BOMBER - This was a quickie conversion of a stock F-10A trimotor to meet a military requirement and is said to have been completed in a week. (12) It was unofficially called "XLB-3" around the factory because it followed the concept and had the same oversize vertical fin as the XLB-2. (The Army had assigned the XLB-3 designation to Huff-Daland back in 1926.)

Again, no company documentation is available to spell out the history and nothing appeared in the contemporary press. FAA records show it as F-10A C/N 1040, X-9165. A photo of the first C-7A in Army service shows it fitted with the F-10A bomber tail, including registration number.

* ARMY C-5 - The Army ordered an F-10A, C/N 1023, and assigned the designation of C-5, Army serial 29-405. It was assigned to Bolling Field as a VIP transport in April 1929 but had a very short career.

* NAVY RA-4 - The Navy bought an F-10A for the Marine Corps under the designation of RA-4--even though the old Atlantic organization had become the Fokker Aircraft Corporation of America and then General Aviation, a subsidiary of General Motors, the Navy stuck to the old A-for-Atlantic manufacturer's designation. Although supposed to be a stock model, the service pilots found all sorts of faults with the RA-4. It was tail heavy, they said, and its controllability was inadequate. It was sent back to the factory several times for fixes and finally ended up with a longer nose for balance

Nose of Fokker F-10, C/N 1003, of the Richfield Oil Company. (Peter M. Bowers Collection)

purposes and acquired a redesigned vertical tail. (13)

FOOTNOTES:

(1) JANE'S ALL THE WORLDS AIRCRAFT, 1928.
(2) 1930 catalog of the Fokker Aircraft Corporation of America.
(3) Correspondence with Miss Althea Lister, Pan American Airways Historian, 1966-67.
(4) Wright Field Serial Document 3079: "Brief Description and History of the Fokker Monoplane Type Cargo Airplane", May 16, 1929.
(5) Photo taken at the National Air Races, Spokane, Washington, September 1927.
(6) Three-view drawing in the 1928 AIRCRAFT YEARBOOK, page 337.
(7) Fokker production figures prepared by Assistant Chief Engineer Charles Froesch in a report dated May 25, 1932.
(8) Canadian Civil Register.
(9) Air International Registers, 1933 to 1935.
(10) Correspondence with Richard M. Bueschel, 1967.
(11) Correspondence with Sidney Albright, Western Airlines Public Relations, 1966-67.
(12) Correspondence with Charles Froesch, 1964.
(13) U. S. Navy Test Report.

AUTHOR'S NOTE: The foregoing is the third part of a five-part series on the American Fokkers. Part 1, covering the imported models, appeared in the JOURNAL, Summer 1966, Vol 11, No 2. Part 2, covering American Models 1 through 6, appeared in the Winter 1966 issue, Vol 11, No 4. Part 4, covering Models 11 through 18, will appear in the JOURNAL early next year. Part 5 will then consist of a summation, corrections and any filling-in of holes by readers, and a complete listing by model number, C/N (for civil models), civil registration and military serial numbers.

Rather than delay this series by trying to run down all the details of every model, a few omissions have been made. Whenever possible, statements that are not common knowledge have been referenced to their source. Readers are cordially invited to comment on the material published so far and to submit corrections or additional information. This will be presented in Part 5. Reader contributions, whether original or abridged for publication, will be credited to the contributor.

EDITOR'S NOTE: It is hoped that all those who can will assist Pete Bowers in gathering together all the salient facts pertaining to the American Fokkers. His home address is: 13826 Des Moines Way South, Seattle, Washington, 98168. A diligent researcher and collector, Pete is probably the best known of all American aviation writers as a result of the vast number of articles he has created during the last ten years and for his more recent Putnam books.