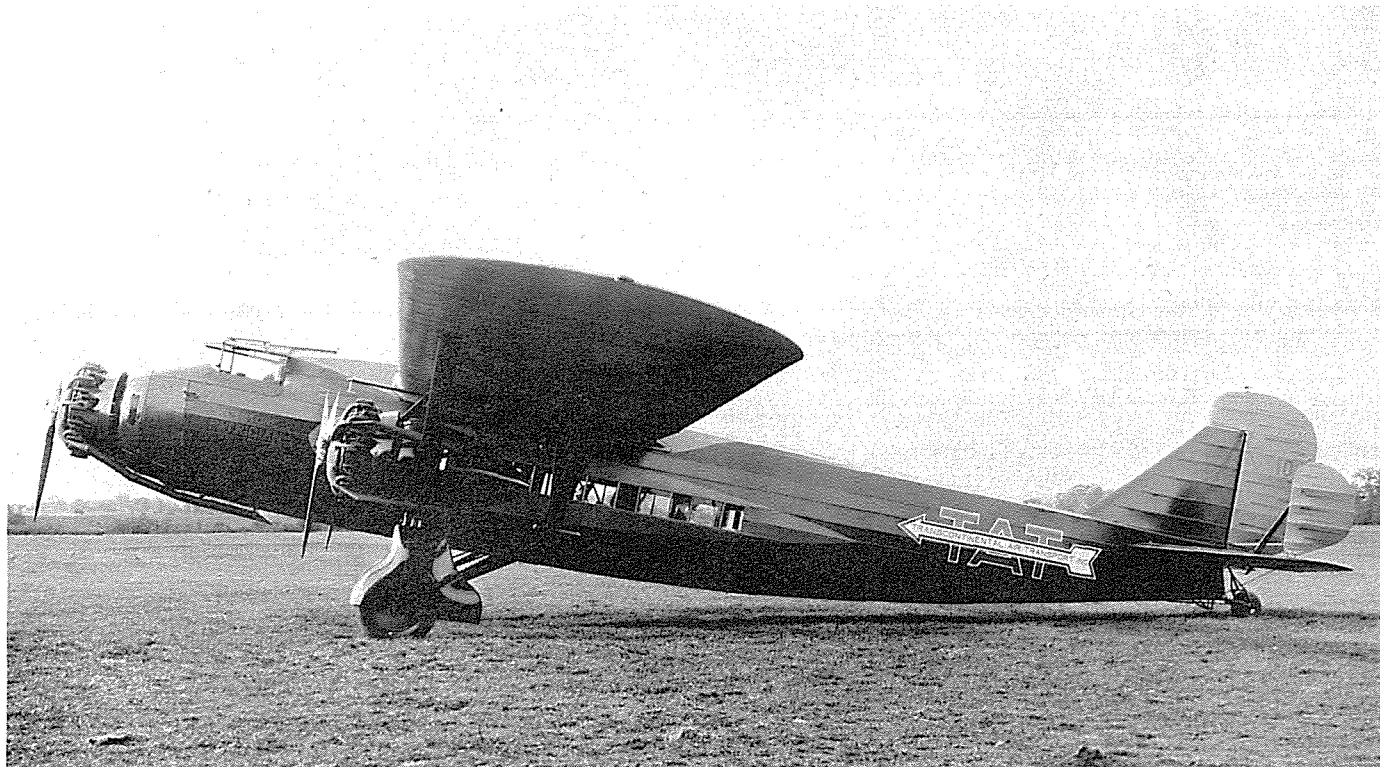




The stately Keystone K-78D Patrician, provisionally tested by TAT but never used in regular service.

(Photo — NASM #1061)

ANCESTOR AIRCRAFT OF TWA

By EDWARD PECK

PART FOUR

This concludes the presentation of pre-WWII aircraft of TWA by Edward Peck begun in his Research Project 6602.

Interwoven with the early development of commercial airlines was the appearance of new aircraft calculated to meet the needs of this burgeoning industry. Some, like the Keystone Patrician, came upon the scene a step or two behind the vanguard of aeronautical technology or at a time when the economic cycle was at low ebb, hence they were doomed to failure. Others embodied sufficient versatility to find a broadly based market among private and military operators as well — such as the Leonings, Sikorskys, and Stearmans. A few were even more fortunate. Pacing the industry with innovative techniques in design and construction, they established new performance records, fired popular enthusiasm, and reaped a harvest of favorable attention for the operators whose colors they carried.

Among the most dazzling stars in the airline firmament during the early 1930s were the Lockheeds and Northrops. They possessed an aura of glamour and dash seldom equaled before or since and, of greater importance, significantly advanced the state of the art.

Air travel then was a kind of adventure which it can never be again. Each airplane had a personality of its own and was almost a living, breathing thing worthy of individual attention and affection. Today's passenger seldom glimpses the whole airplane which he boards, passing directly from terminal to cabin through an enclosed loading corridor. The "aviation" has gone out of airline travel and airliners are no longer airplanes — only magnificent lounges spirited from one city to another in a way that isolates the traveler from the medium through which he moves. It was not always so . . .

KEYSTONE K-78D ATC 260

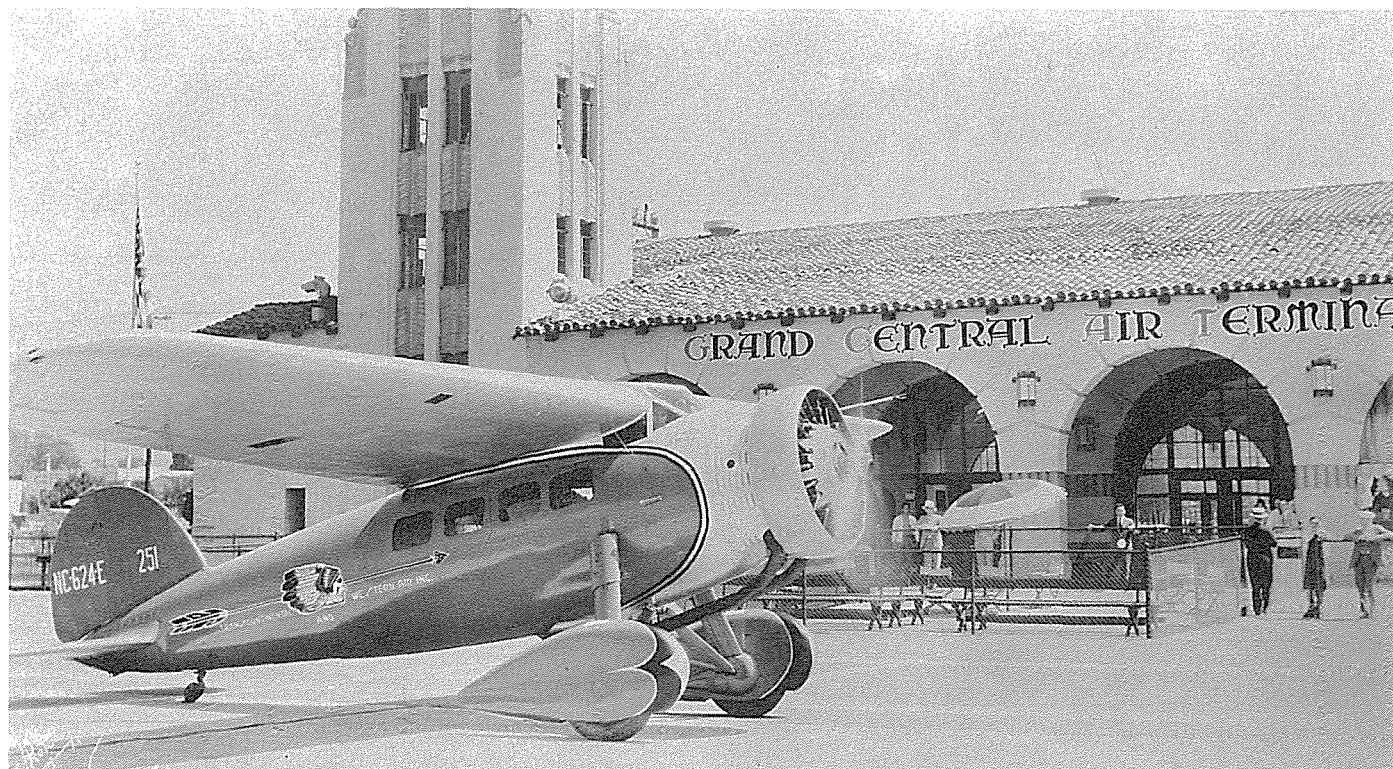
TAT's use of the Patrician was brief and not widely publicized. A twenty-one place airplane, the K-78D Patrician was larger than other commercial transports built in America, surpassed by the Fokker F-32 which appeared in 1929. Clinging to the old frame-and-fabric concept of construction, the Keystone cannot be regarded as a significant advance in transport design.

The prototype Patrician, designated K-78, came into being in 1928 and undertook a nationwide demonstration tour early the following year. Upon arrival at Los Angeles in March, the airplane was flown extensively by Charles Lindbergh — then TAT's Technical Committee Chairman.¹ Another who tested it then was Maddux Air Lines' operations chief D.W. Tomlinson who says:

"Lt. St. Clair Streett [on leave from the Army] flew one out to California to demonstrate to Maddux and TAT. I flew it at Glendale. Its performance was poor. On this flight Eddie Rickenbacker was sitting in the rear of the cabin and I was in the co-pilot's seat. Coming in to land, Streett failed to see high-lines a block from the airport and was headed straight for them. At the last moment I grabbed the controls and hauled back in time to clear the wires — one of two times in my life that I had to abruptly take away control from another pilot."²

The prototype apparently impressed Lindbergh enough to persuade TAT that it should extensively test a 1929 follow-on model known as the K-78D Patrician. Exactly how long

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The TWA markings on Lockheed Vega 5 reflect close kinship to Western Air Express, Glendale, Calif.

(Photo — Western Air Lines)

or in what manner it was used has not been determined. Different photographs of this TAT machine reveal some variations in its markings and slight structural modifications — which suggests that it underwent evaluation over an extended period. The K-78D did not measure up to the airline's expectations however. In modifying the Patrician's original design, Keystone engineers placed the K-78D wing farther aft which altered the airplane's center of gravity enough to make it noticeably nose-heavy and tail surface adjustments failed to substantially correct this deficiency. Power-on landing approaches were therefore mandatory, and TAT pilots objected to this characteristic because of the short airfields which they often had to fly into.³ Thus, the Patrician never entered regular service with TAT.

C/N	Registration	Airline	Fleet No.
206	NC-10N	TAT	Unknown

LOCKHEED AIR EXPRESS 3 ATC (none)*

While featuring the same monocoque fuselage of laminated, pressure-molded wood which Lockheed had developed for its revolutionary Vega, the Air Express was in some respects a return to earlier design philosophy. Pilots were at that time still more at ease in an open cockpit located well aft in the fuselage, so this configuration was adopted for the Air Express instead of the enclosed, up-front position in the Vega. Moreover, in contrast to the Vega's snugly fitted wing, the Air Express reverted to a parasol wing mounted on cabane struts.

The trade press reported in 1928 that the Air Express model had been developed specifically and exclusively for Western Air Express and that a large order was anticipated.⁴ The prediction was too optimistic. Western accepted the prototype in the Spring of that year and on June 6th it came to grief during its very first scheduled flight. With renowned humorist and flying enthusiast Will Rogers aboard, pilot Fred Kelly struck a protruding con-

crete marker when landing at Las Vegas. The airplane suffered extensive damage and was not returned to Western after repair at Lockheed.⁵

The Air Express, by its subsequent exploits, proved that it was a very good machine. Possibly it was not used further by WAE because of the airline's preoccupation with Fokker F-10 trimotors just then being placed in service and commanding much attention.

C/N	Registration	Airline	Fleet No.
5	4897	WAE	250

LOCKHEED VEGA 1 ATC 49

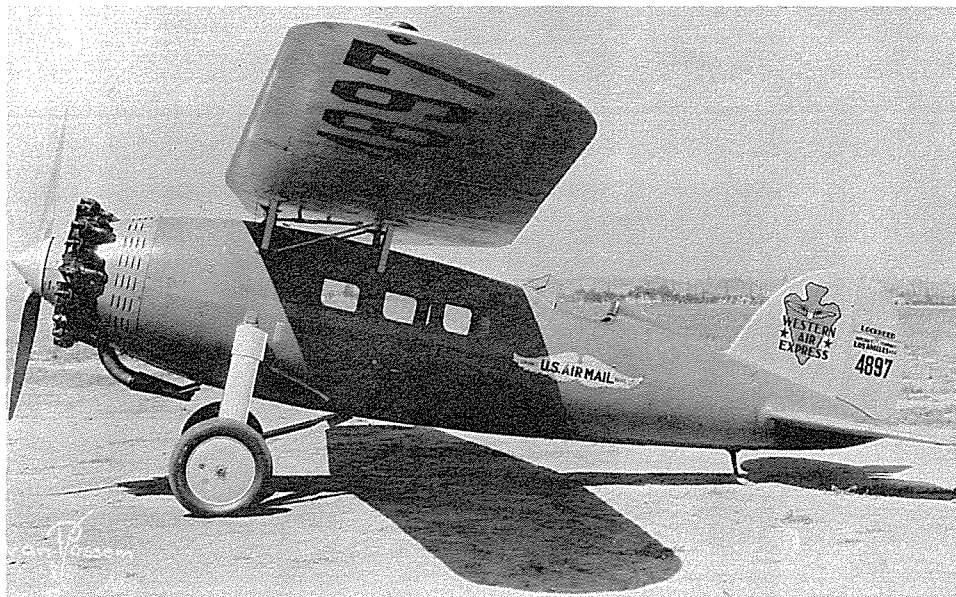
In July and August 1928 Maddux Air Lines added two Vegas to its growing fleet of aircraft. These were used for charter trips, a considerable market for this type of operation existing in the affluent Los Angeles/Hollywood area. Motion picture companies were among the airline's best customers, often flying personnel and equipment to filming locations. The movie stars themselves frequently chartered Maddux Vegas for personal jaunts to resorts in Arizona and Mexico.

NC-6526 was sold after an accident at San Diego in mid-1929. The other Vega continued in Maddux service until the airline merged with TAT, it then being sold in 1930. Following transfer among several later owners, NC-7044 spent its last years as a "rum runner" from Oklahoma to surrounding "dry" states and was finally scrapped in 1952.⁶

It might be noted that Vega NC-6911 carried TAT's insigne beneath its cockpit window for a time. This was a personal airplane of Amelia Earhart, a consultant to the airline, and not an official part of the TAT fleet.

C/N	Registration	Airline	Fleet No.
9	NC-6526	MDX	L-1
11	NC-7044	MDX	L-2

*This individual prototype was never issued an ATC or Memo Approval, but the model series was later awarded ATC102.



The first Lockheed Air Express went to Western Air Express in these earliest WAE markings. (Photo — NASM No. A 2047). Below — the Vega DL-1B is really Registration No. NC-483M though the rudder does not match the wing. (Photo — Richard S. Allen)

LOCKHEED VEGA 5 ATC 93

This was the earliest of several Vegas owned by Transcontinental & Western Air. Entering service with TWA on 11 December 1931, it carried the old Indianhead arrow style insignie adopted from Western Air Express. The fleet number 251 was also a continuation of the sequence begun with Western's Lockheed Air Express — thus underlining TWA's close ties with WAE. The same fleet number series was carried by every single-engine Lockheed used by TWA and in later years by its Electra and Lodestar research aircraft. It appears that this was the only Vega ever to be equipped with a "speed ring," all others either having an uncowed engine or a full NACA cowl. The airplane remained with TWA until 1933.

Wiley Post's Famed WINNIE MAE, a Vega 5C, still bears the TWA identification applied to it in 1935. Post had carried mail loads under TWA auspices during his high altitude coast-to-coast attempts.

C/N	Registration	Airline	Fleet No.
53	NC-624E	TWA	251

LOCKHEED VEGA DL-1B ATC 308

A trio of metal-fuselage Vegas was used by TWA, one acquired in 1931 and the others in 1932. These were the first Vegas built with aluminum alloy fuselages by Detroit Aircraft Corporation, although they utilized wooden wings supplied by Lockheed in Burbank.



NC-497H was damaged beyond repair on 31 January 1934 when, because of icing, it force-landed at St. James, Missouri. Neither this airplane nor NC-288W was equipped with Western Radio Range and Broadcast receivers. NC-483M was purchased by TWA in March 1932 and sold to Varney Speed Lines on 24 July 1934. NC-288W was operated during 1932 and 1933 only. All were used on various intermediate-length schedules while at least one was also sometimes flown as a personal transport for TWA executives.

C/N	Registration	Airline	Fleet No.
135	NC-497H	TWA	253
136	NC-483M	TWA	255
137	NC-288W	TWA	254

LOCKHEED ALTAIR DL-2A ATC (Memo 2-386)

Few individual airplanes have as long, varied, and colorful life as the Altair leased by TWA in 1931. The airline had been flying this racy-looking machine only a month when, on 10 October, it skid on its belly into a fence at Columbus, Ohio. Its wooden wing was shattered but the fuselage was one of the metal Lockheeds built in Detroit and escaped relatively undamaged.

Following this early mis-adventure the Altair was returned to the factory and rebuilt, and converted to a forward-cockpit Orion model in the process. The re-worked airplane did not go back into TWA service but was sold to Shell Petroleum Corporation and christened *Shelllightning*, piloted by the company's aviation manager Jimmy Doolittle. After two more accidents and repair by Parks Air College, the Orion *nee* Altair went to Paul Mantz in 1938. It participated in the Bendix races of 1938 and 1939 and was used as a camera plane in movie work. In 1943 Matt R. Peck acquired the durable airplane, but it changed hands four more times before being re-purchased by Mantz in 1955.⁷ After Mantz's death in 1965, NC-12222 was purchased by David Johnson of Peterborough, New Hampshire. By this time the Orion was in very shabby, unservicable condition but its latest owner had it in process of restoration in 1969.⁸ This former Altair is the only Orion which survives.

C/N	Registration	Airline	Fleet No.
180	X, NC-12222	TWA	252

TWA purchased three of these Lockheed Orion 9E airliners, the fastest of that era. (Photo — Trans World Airlines). The Lockheed Altair shown below, X-12222, was used briefly by TWA, then crashed and rebuilt as an Orion, is currently being restored. (Photo — Lockheed, courtesy of R.S. Allen)



LOCKHEED ORION 9E ATC 508

By one of those strange turns of chance, Will Rogers escaped injury in the crash of WAE's Air Express only to be killed in a modified Orion — and it a former TWA airliner. Wiley Post acquired NC-12283 from broker Charles Babb after the airplane had been flown by TWA for less than two years. With a Lockheed Explorer wing installed and pontoons fitted, the Orion carried Post and Rogers as far as Walakpi, Alaska on a projected round-the-world flight. Their tragic accident in the Arctic was extensively and well detailed by Allen.

The Orions went into service over TWA routes on 11 May 1933. With a cruising speed of 205 mph they were indeed the swiftest airliners of their day. Still, they seemingly could not out-run disaster. Within three months E.J. Noe died when NC-12277 crashed into the Missouri River at Kansas City in July. On 15 January 1934 H.H. "Dutch" Holloway was injured in NC-12278 as it bellied-in to a forced landing on the grassy plains near Albuquerque. TWA withdrew NC-12283 from service in February 1935. Six months later it lay wrecked in the shallow waters at Walakpi.

C/N	Registration	Airline	Fleet No.
192	NC-12277	TWA	256
193	NC-12278	TWA	257
195	NC-12283	TWA	258

LOENING C-2H ATC 91

To meet the requirements of operation from Avalon Harbor at Catalina, Western Air Express acquired its first C-2H amphibian on 11 March 1929 and another at the end of June. These had been ordered by Pacific Marine Airways the previous year — before that airline was purchased by WAE.⁹ For Western, amphibians were of greater utility than flying boats since they could be scheduled into the line's main terminal at Vail Field, and later Alhambra, rather than being limited to operation from Wilmington Harbor near Los Angeles. Hence, these overwater flights connected directly to mainland services and required no ground transportation shuttle between land and sea facilities.

Both Loenings served throughout their two years with WAE and were disposed of on 27 May 1931. Having sold its

Catalina route a month earlier, Western Air Express no longer had need of water-based aircraft.

C/N	Registration	Airline	Fleet No.
220	NC-9773	WAE	301
230	NC-135H	WAE	302

NORTHROP ALPHA 2, 3, AND 4 ATC 381 AND 451

Because of most of TWA's Alpha 2 and Alpha 3 aircraft were later modified to model 4 standards, it is necessary to group them here as a single series. Models 2 and 3, operating under ATC 381, could be identified by their uncovered wheels fitted to a split-axle type landing gear and four cabin windows on each side. The Alpha 4 was exclusively for mail and express and had only one window on each side. It featured cantilever, fully "trousered" landing gear similar to that of the later Delta and Gamma models. Although commonly regarded as a Northrop airplane, as indeed it was, the Alpha was built while that company was a division of Stearman Aircraft — hence they appear as Stearmans in government records. Stearman, in turn, was at that time a subsidiary of United Aircraft and Transport Corporation.¹⁰

The Alpha, a product of the consummate aeronautical genius of John K. Northrop, must surely be regarded as a major milestone in aircraft engineering. It was this airplane which, in 1930, introduced the concept of multi-cellular stressed skin wing construction to production aircraft — an idea originally conceived by Dr. Adolf Rohrbach in





One of the two Loening C-2H Amphibians which flew the Western Air Express route to Catalina Island. (Photo — Peter M. Bowers)

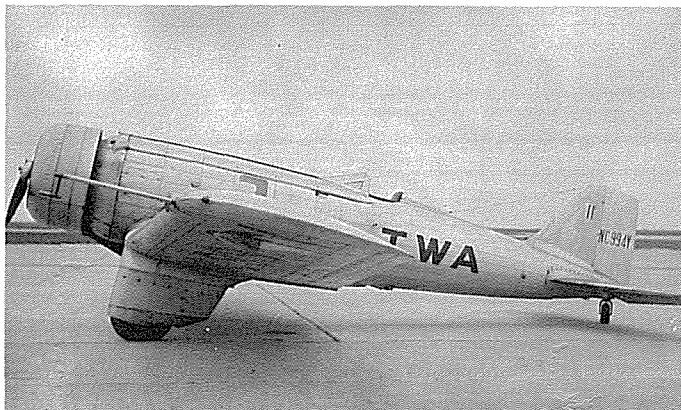
Germany.¹¹ This same principle was later designed into the DC-1 and was a significant factor in the outstanding success of that airplane. Early Douglas transports also employed the butt-joint attachment of wing panel to root which the Alpha pioneered, thus avoiding an awkward beam spar structure passing through the passenger cabin.

TWA placed its first Alpha in service on 20 April 1931 and operated the type over its entire system. Although it has been stated that the airline had fourteen such aircraft¹², only the thirteen listed here appear in registration records. Probably fleet number 13 was skipped, hence the number 14 being assigned to one of these machines.

Indications are that most of TWA's Alphas were either destroyed or severely damaged during their service life. NC-992Y crashed at Pittsburgh on 28 December 1933 and two are said to have been abandoned in the air.¹³ Two others, NC-11Y and one unidentified, still exist in restorable condition and their owner invites assistance in rebuilding them.¹⁴ The last Alpha was retired by TWA on 19 February 1935. Altogether, they flew a total of 5,413,736 miles in service with the airline.

C/N	Registration	Airline	Fleet No.	Model
2	NC-127W	TWA	14	2 & 4A
3	NC-11Y		12	2 & 4A
4	NC-999Y		5	3 & 4
5	NC-933Y		4	3 & 4
6	NC-942Y		3	3 & 4
7	NC-947Y		unknown	3 & 4
8	NC-961Y		2	3 & 4
9	NC-966Y		6	2 & 3
10	NC-985Y		unknown	4
11	NC-986Y		unknown	4
12	NC-992Y		9	4
16	NC-993Y		unknown	3
17	NC-994Y		11	4

Fully trousered landing gear of Northrop Alpha 4 distinguished it from earlier Model 3 at right.



NORTHROP DELTA 1-A ATC (Memo 2-456)

Although designed to accommodate eight passengers, the Delta 1-A was used chiefly by TWA as a mail and express carrier on transcontinental runs. By the time this and the Gamma models were manufactured Northrop was under the wing of the Douglas Aircraft Company and these airplanes are sometimes identified with the latter. TWA had only one of this type, placing it in service on 4 August 1933 for what turned out to be a brief career.

On 10 November 1933 pilot Harlan Hull was flying this Delta some 65 miles east of Albuquerque when its engine caught fire. A veteran of earlier forced landings, Hull radioed that he would attempt to bring the plane down. His efforts to save the Northrop were futile however, and he was forced to abandon it in the air. Press reports at that time stated that Hull's parachute cover had 24 holes burned in it and that the pilot 'chute was badly damaged.¹⁵ Nevertheless, he somehow managed to deploy the main canopy and reach ground safely. The nineteen sacks of mail which he carried were scattered over a distance of almost a mile.

Before its demise the Delta had accumulated only 453 hours of flying time. Harlan Hull was among those killed in the crash of Boeing's prototype 307 Stratoliner in March, 1939¹⁶.

C/N	Registration	Airline	Fleet No.
3	NX, NC-12292	TWA	15

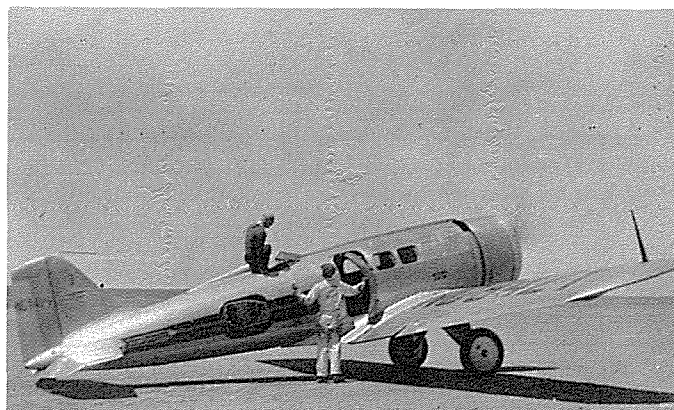
NORTHROP GAMMA 2-D ATC 549

On 13-14 May 1934 Jack Frye flew TWA's first Northrop Gamma to a speed record for cargo transports, covering the distance between Los Angeles and Newark in 11 hours 31 minutes. His 440 pound payload included the airline's first mail consignment since the disastrous airmail contract cancellations in February that year.¹⁷ Just as it had dramatized its final mail delivery under the old contract with a record-breaking flight of the DC-1, TWA seized the opportunity to headline its resumption of mail operations with a similar spectacular.

Concurrent with this publicity, TWA announced that it planned to buy six Gammas for one-stop overnight transcontinental mail service — contingent upon higher rates of mail pay for such an express service. As it turned out only three Gammas were acquired and two of those were used but a short time. The Boeing 247 and Douglas DC-2 were already altering the pattern of airline operation, ushering in a new era which soon made single-engine airliners obsolete.

By 1936 airline managements were considering the prospect of operations at greater altitudes than hitherto possible. During that year TWA's D.W. Tomlinson began intensive experiments in sub-stratosphere flight with the airline's one

(Photos — Bowers (l) and TWA (r))



remaining Gamma (NC-13758). Special modifications included the installation of an engine supercharger obtained on loan from the Army¹⁸. Flights at twenty to twenty-five thousand feet were initially undertaken. This ceiling was later pushed up to around thirty-five thousand feet in a program designed to study icing phenomena, turbulence, thunderhead penetration, powerplant efficiency at altitude, and the performance of radio navigation and communications equipment at those higher levels.

On one flight from Kansas City Tomlinson overshot New York and found himself 150 miles out over the Atlantic Ocean. Deprived of sufficient oxygen, fatigued, and troubled by static, he had misread the Newark radio range signal and erred by 180 degrees in his approach navigation. Only enough fuel remained after discovering the mistake to return to the vicinity of Princeton, New Jersey. There, in freezing rain and low visibility, he safely force-landed on a hillside.¹⁹ This last TWA Gamma, billed as the "Experimental Overweather Laboratory" was disposed of in 1940 — its research role having been taken over by Lockheed 12-A and Lockheed 14 flight laboratories.

C/N	Registration	Airline	Fleet No.
8	NR-13757	TWA	16
9	NC, NR-13758	TWA	17
10	NC-13759	TWA	18

SIKORSKY S-38A ATC 60

Western Air Express purchased this twin engine amphibian on 27 September 1928 for use on its route to Catalina Island. During the following month the \$46,075 airplane was ferried to California from the east by WAE's operations manager Corliss C. Moseley. With him on that trip was another famed flier Art Goebel.²⁰

For eight months the Sikorsky named FLYING FISH shuttled between Vail Field near Los Angeles, Wilmington, and Avalon Harbor on a daily schedule — replacing the Curtiss HS-2L flying boats previously used. Then, on 5 June 1929, pilots George Putnam and Dick Mitchell approached Catalina on a routine trip from the mainland. A landing checklist might have assured an equally routine conclusion of the flight. Instead, the S-38A settled onto Avalon Harbor with its wheels down and locked. All aboard survived the ensuing ordeal but the airplane was so badly damaged that it never flew again.²¹

C/N	Registration	Airline	Fleet No.
14-5	NC-8021	WAE	300

STEARMAN C-3B AND C-3MB ATC 55 AND 137

Western Air Express purchased its first Stearman biplanes in 1927. Most of these were based at Denver and operated over the Cheyenne to Pueblo C.A.M. route 12 which



TWA's sole Northrop Delta 1-A carried only mail and express until destroyed by a fire in flight. (Photo — Northrop, courtesy S. Hudek)

Western took over in December of that year, although the type also saw limited service between Los Angeles and Salt Lake City. Both the C-3B and C-3MB models were used. These were almost identical except that the C-3MB had night flying equipment and a mail bin replacing the front cockpit of the standard C-3B model. Several of the latter were subsequently converted to the night mailplane configuration but this fact does not always appear in the records.

WAE's fleet number 200 was totally wrecked at Denver on 7 May 1929 and its pilot, Ivan Houston, killed. On 6 January 1930 Mel Bowen washed-out ship number 204, but he survived and later flew for TWA. Records in Western Airlines' archives state that number 201 was also destroyed at Denver on 10 August 1930 while in the hands of N.T. McMillan. However, this same airplane (NC-3863) is also said to have been sold in 1946 to Jack M. Sweetster of Mojave, California.²² It would therefore seem that a "washout" became a "basket case" from which the airplane was reborn.

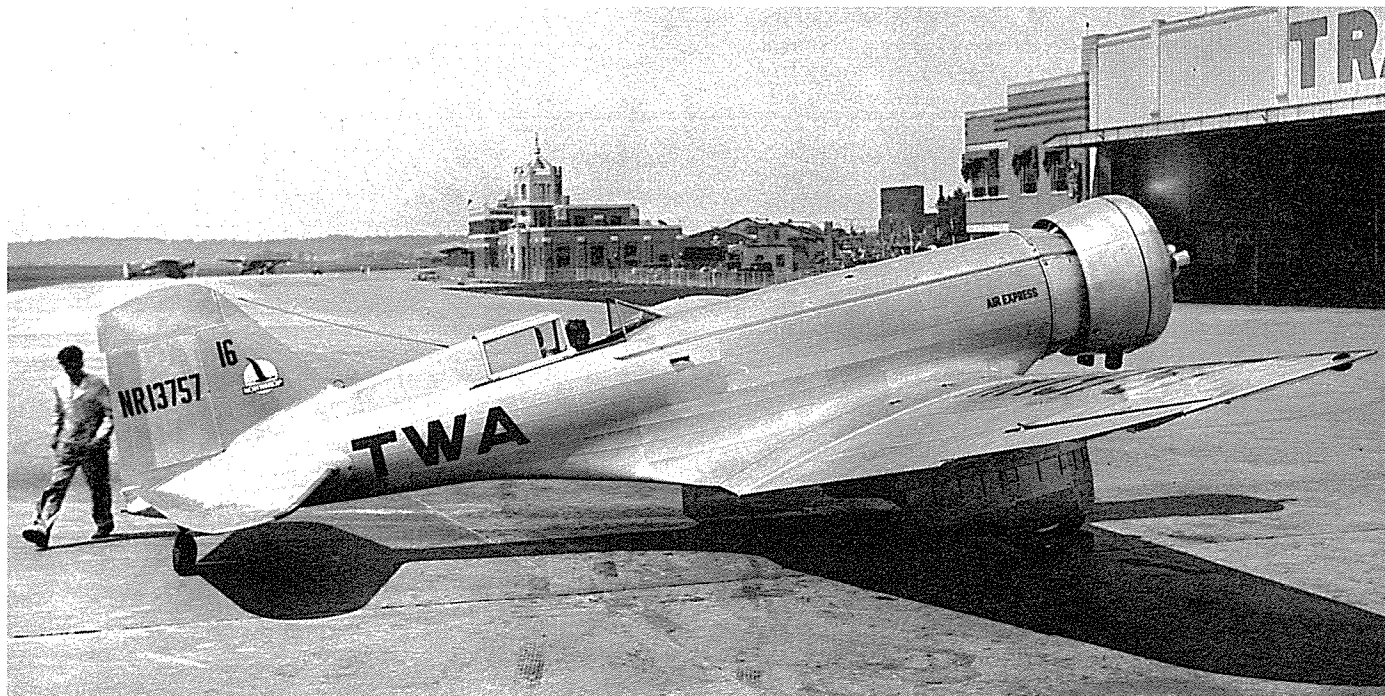
TWA also operated three Stearman C-3B aircraft but these were inherited from Transcontinental Air Transport rather than WAE. TAT had used them for route survey and liaison work, but in the hands of TWA they were also flown as instrument trainers with a hood over the rear cockpit. When assigning fleet numbers to its Stearmans TWA began where WAE numbers had ended — as was the case with the single-engine Lockheeds.

C/N	Registration	Airline	Fleet No.	Model
105	NC-3709	WAE	200	C-3B
106	NC-3863	WAE	201	C-3B Spec
108	NC-4011	WAE	202	C-3B
170	NC-6410	TAT & TWA	207	C-3MB
193	NC-6495	WAE	203	C-3B
228	NR-8814	TAT & TWA	206	C-3B
229	NC-8815	TAT & TWA	206*	C-3B
235	NC-8820	WAE	204	C-3B

TAT used the Stearman C-3B for executive transport. Right, a later Stearman C-3, converted to C-3MB for use as mailplane.

(Photos — TWA)





In this Northrop Gamma 2D, Jack Frye of TWA set a transcontinental record for cargo transports on 13-14 May 1934.

(Photo — G.S. Williams)

STEARMAN 4-D ATC 305

Originally built as a two-place model 4-D, this airplane was later converted to 4-DM configuration by substituting a fully enclosed mail compartment in the forward cockpit. In the latter form it qualified for Approved Type Certificate 326.

Western Air Express added this Stearman to its fleet on 22 March 1930. How long it remained in service with the airline is unknown, but it was not among those aircraft which TWA acquired from Western. It survives today and is being restored to its original WAE colors for Dr. Shelby Hicks of Merced, California.²³

C/N	Registration	Airline	Fleet No.
4011	NC-774H	WAE	205

EPILOGUE

Of the 184 individual aircraft listed in this study, only a half dozen — perhaps fewer — are thought to still exist. Within this short span of 45 years, 97% of these vintage airliners have disappeared forever. In the absence of any real concern or historical sensitivity where one would expect it to be most acutely felt, several of these survivors will surely follow their contemporaries into oblivion. The mortality rate among later models is no less appalling. The opportunity to preserve such rare treasures of early airline equipment having thus been ignored, only word and picture images will linger in the wake of their passing. Who of us, in retrospect, would not have saved the SANTA MARIA, the MAYFLOWER, or even a humble bark canoe of another pioneering period?

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ERRATA

In Volume 15, Author Ed Peck's review of the "Ancestor Aircraft of TWA" should have the following corrections:

1. Page 1 — Title dates should read "1925-1935."
2. Page 3 — Lower photo legend: delete "Vail Field."
3. Page 103 — Second and third photo legends reversed.
4. Page 107 — Line five should read "8 December 1926."
5. Page 107 — Under Douglas M-4 line six should read "23 January 1930."
6. Page 172, line 21 should read "... larger F-10 and F-10A Trimotors."
7. Page 177, Upper photo legend should read "TWA's Fokker F-32..."