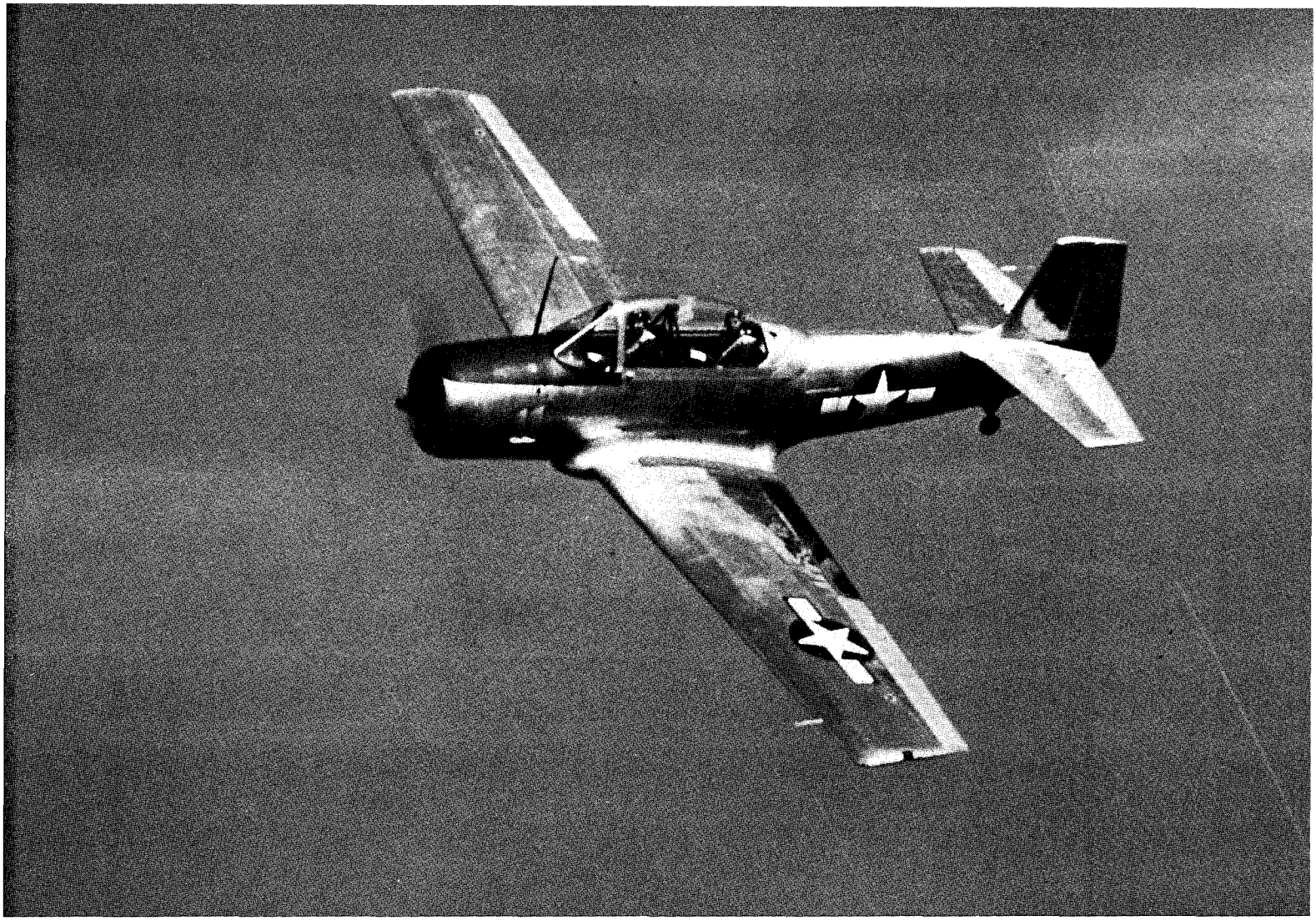


The T-31, T-34, and T-35 Competition

by Don Pellegreno

WHAT VERSION OF THE T-31, T-34, AND T-35 FLY-OFF competition have you heard? Which aircraft actually "won" the competition? For those of you who are not aware of what is being asked, let me provide you with some background information before answering the above question.

In the late 1940s, a fly-off competition among three new training aircraft occurred. They were the Beech Model 45 (T-34), the Fairchild XNQ-1 (T-31A), and the TEMCO TE-1A (T-35). The T-34 was eventually ordered in 1952. Since that time, numerous questions have arisen as to which aircraft actually "won" the fly-off competition.

My interest in this controversy was sparked by rebuilding the XNQ-1. It is, however, only through the efforts of Bill Conwell of Burlingame, California, that Army Air Force data came to light. As a Fairchild PT-26 trainer/owner, he became interested in the looks of the XNQ-1 and attempted to track down the possible existence of the other XNQs which had flown. Eventually concluding that the first XNQ-1 built no longer existed, he, more importantly, located a 500-page AAF microfilm titled "Case History of the T-31 Trainer" at Maxwell Air Force Base. Thus, a vote of thanks goes to him for locating this microfilm, the source of information for this article. (Footnote numbers throughout the article refer to documents in this microfilm file.)

Background—During the mid- and late 1940s, the Navy was interested in a trainer Fairchild built designated the XNQ-1 ("X" for experimental, "N" for Trainer, and "Q" for Fairchild). (See AAHS *Journal,* Vol. 22 No. 1, Spring 1977.) The Navy asked the Army Air Force to consider a joint Navy and AAF procurement contract. The Navy's request[3] went to the Army Air Force on May 3, 1946. On May 14, 1946, the AAF stated that the projected training plane program was still in a tentative state.[2] The interesting interaction that set the stage for what followed occurred at this point. During August 1946, the AAF informed the Navy that the XNQ-1 did not meet the requirements of the Training Command. Yet, the AAF specifi-

Fairchild XNQ-1—The large 6 on the tail indicates Serial Number 726726, the second aircraft flown, rather than 726725, the first one.
(Courtesy Kent Mitchell)

cations for a proposed new training aircraft did not appear until December 12, 1946. The proposal recommended that the Training Command develop a PT-BT combination-type trainer with tricycle landing gear to replace both the Consolidated Vultee BT-13 and the North American AT-6 type aircraft. First, consideration was to be given to the comparative cost of this new trainer with that of those already developed, and the AT-6 being utilized as training aircraft in the Training Command. Second, a comparison was to be made of the costs between developing an AT-6 like trainer and the same aircraft with tricycle landing gear.

The results of the cost comparison of the above-mentioned proposal were favorable to the XNQ-1 and a hypothetical trainer of the same initial cost as the AT-6, rather than using the AT-6.[7] The AT-6 yearly operating cost was considerably higher than the XNQ-1 and a hypothetical trainer of the same initial cost as an AT-6. The higher yearly operating cost for the AT-6 applied not only to the AAF but also the Air Reserve program.

Two other mentioned factors against the AT-6 were noise and groundlooping. Noted in the report was that many complaints "rolled in" about the excessive noise generated by the AT-6, especially near large cities. While the AT-6 was an excellent trainer, men in the Air Reserve considered it an old beaten-up "clunker," and a "cast-off." One can only wonder how this view was influenced by the mention of the Air Reserve program having 911 AT-6s and experiencing 200 groundloops per year. The report does not give the groundloop figure for other training commands. The final recommendation was for the AT-6 to be replaced as rapidly as possible.

During March 1947, the Navy once again invited the AAF to inspect the XNQ at the Final Demonstration and Service Acceptance Trials at Patuxent, the Naval Air Test Center.[8] The demonstration occurred on May 28th[13] and by June 3rd, the AAF was thanking the Navy for its hospitality and inviting the Navy to visit Wright-Patterson AFB. The AAF evaluation report of the XNQ noted the extremely clean design and ease of maintenance.[15]

Other positive factors were the ease of accessibility to the engine and accessories, the emergency landing gear system, the field of vision, and the well-arranged cockpit. Flying the XNQ had one of the evaluators noting his very favorable impression of the flight-handling qualities. The XNQ was thus considered satisfactory from an engineering viewpoint but of questionable value to the AAF. This was due to its light weight, low power, and conventional landing gear.[15]

The AAF was wanting the proposed PT/BT to be capable of 275 mph at tactical operation altitude, and have at least a 700-hp engine with a four-hour fuel endurance.[16] Still, the AAF considered the XNQ most desirable, but, more importantly, the report concluded with the mention of tricycle landing gear. The extra maintenance cost of the tricycle gear was considered minor compared to concerns regarding groundloops and operating expenses. Fairchild responded by requesting the loan of one of the two flying XNQs for installation of a larger engine.[17] Nothing was mentioned about the tricycle landing gear concern. Without examining the 7,000-plus pages of Navy records concerning the XNQ, one cannot conclude the absence of the Navy's role in the landing gear debate.

Finally, in September 1947, the United States Air Force (USAF) requested the procurement of XNQ delivery schedule,[19] as follows:

January 1950	44
April 1950	114
July 1950	176

By that time the XNQ was being referred to as the NQ, the "X" for experimental being dropped.[20] Subsequently, the NQ was officially designated the T-31A.[30]

In the fall of 1948, the AAF Training Division reported the flight training curriculum faced two serious problems.[23] The first was an unduly expensive curriculum using AT-6 aircraft and replacing it with the North American T-28. Not only did the T-28 not meet budget limitations, the large aircraft would aggravate wartime shortage of strategic materials. The second problem was the lack of a substitute for the North American B-25 as a twin-engine trainer. The solution was changing the ratio of single- and twin-engine pilots trained from 67/33 percent to 80/20 percent. The reduction of twin-engine pilots trained would prolong the availability of the B-25 for training. Introducing a lighter basic trainer (BT/PT) weighing from 3,500 to 4,000 pounds would further reduce training costs. The use of this trainer for the first 130 hours of training and the T-28 in the succeeding 135 hours in place of the T-28 for the total program would produce major economics in investment, maintenance, and gasoline consumption. Training Command recommended the T-31, and Fairchild indicated a willingness to install a higher-powered engine to meet the Navy and AAF requirements.

The procurement process moved to the level of identifying funds to be used for the T-31. In the fall of 1948, Stuart Symington, the Secretary of the AAF, presented to James Forrestal, the Secretary of Defense, a plan for making funds available for 100 T-31s.[27] The plan was subsequently presented to President Truman on November 22, 1948.[38] Thus, in December Air Materiel Command (AMC) was advised to proceed with immediate negotiations on the procurement of 100 T-31s. On January 6, 1949, Truman approved funds for the procurement of the T-31s.[64]

The first indication that there was even another aircraft to be considered other than the XNQ appeared in a November 12, 1948 memo.[32] It was pointed out that normal procurement channels had not been followed. First, because there were no military characteristics covering the aircraft under consideration. Second, "the Beech Aircraft Corporation [has], as a result of direct contact with personnel of the Training Command, modified their Bonanza aircraft so as to make it meet the expressed desires of Training Command." A competition of some type was requested between the Beech and the T-31, along with a set of military characteristics.

A news release and photographs of the Beech were sent to the USAF Procurement Division on December 9, 1948.[43] Near the end of December 1948, the Texas Engineering and Manufacturing Company (TEMCO) notified the Procurement Division of the availability of the prototype TE-1A for flight demonstration at Wright-Patterson.[51] By the end of December there was a memo from the Under Secretary of the Air Force supporting the "off-the-shelf" procurement of the Beech.[53] A memo delineating cost comparison between the Beech and the Fairchild appeared[56] in which a preference for the Beech was indicated

because of cost, proven reliability of Beech aircraft, and the tricycle landing gear. This memo from the director of Research and Development was definitely pro-Beech when the director stated, "This office cannot support any arguments in favor of direct procurement of the XNQ aircraft." He called for an appointed committee to evaluate existing and available aircraft within 45 days. One can only speculate about this sudden appearance of the Beech and of correspondence in favor of that aircraft and the appearance of the TEMCO TE-1A. Beech notified the Procurement Division at Wright-Patterson about the Beech *Mentor* on the 9th of December, and on the 30th of that month there appeared a Research Director's memo strongly stating the Beech was the best aircraft.

The results of that activity appear in the summary minutes of the Board of Officers meeting at the Pentagon of December 20, 1948, to January 6, 1949.[63]

"That an evaluation be conducted by AMC and the Training Command at the earliest practicable moment of the Fairchild and Beech primary-basic trainers and of the trainer of any other company in this category that can be in production within the allotted time."

It appears ironic that on the same day, January 6, 1949, President Truman approved the November 27, 1948 request of $109,220,000 for procurement of 48 F-89 aircraft, 110 F-94 aircraft, and 100 T-31 trainers.[64] General Kessler, however, approved the temporary withholding of funds for the 100 T-31 trainers.[66]

Having read and reread the 67 documents that led up to the competition fly-off of the T-31, the T-34, and the T-35, there are a few observations and comments to be made. First of all, the document file contains very few items relative to the Navy's desiring the XNQ. Also, there are no documents relative to the extensive tests the Navy must have done with the XNQ. Indicated in the file is the fact that the Navy was conducting Final Demonstration and Service Acceptance Trials during the first week of May 1947 and invited the AAF representative to be present.[8] Second, a negative view of the XNQ exists throughout the documents. While the tricycle landing gear appears to be a central issue, other comments lead one to believe there is an underlying issue not clarified by the documents. For example, a big issue was first made against the XNQ because of its low power, speed, etc. Yet, this argument does not appear later when the Beech enters the picture. A third point is the extremely positive evaluation of the Beech from the appearance of the very first document in the file regarding it.

The Fly-Off—Since the T-31 was up for procurement with funding forthcoming, the aircraft underwent an inspection alteration study by the USAF Inspection Board.[69] This inspection and subsequent report appeared before the call for a competition fly-off. A list of 100 alteration items was agreed upon. Grouping the individual items produced the following: Electrical, 25; Accessories, 15; Radios, 12; Fuel System, 9; Oil System, 6; Landing Gear, 6; Ground Equipment, 5; Airframe, 4.

The remaining 24 items were difficult to group, e.g., control lock, manifold purge valve, generator air blast tube, etc. Of the 100 items, I've concluded that 22 items were not altered on the existing T-31, and I'm unsure about nine items. The two most major items not altered are the horizontal stabilizer and cowling. The AAF desired the stabilizer to consist of two halves rather than one piece, and for the propeller to clear the cowling when it was open. None of the items reflect a design deficiency with the T-31. The only items proposed which seem to be poorly identified are egress panels. The AAF desired emergency egress panels in the big clear canopy. Fairchild countered with the possibility of jettisoning the canopy.

In early 1949, the AMC at Wright-Patterson AFB was given the task of first canvassing the industry for all existing training models and presenting them for full evaluation.[74] A board consisting of members representing AMC, Air Training Command, and headquarters was to evaluate competing aircraft against the minimum requirements of Military Characteristics. "Performance of aircraft will be thoroughly weighted against the mission, cost of operation, productibility, ease of maintenance, and unit cost." The AMC was to evaluate all technical data for competing aircraft and submit such to the board prior to meeting. "Navy representatives at subject evaluation will be left to the discretion of HQ, USAF."[81]

The plan for aircraft evaluation came from the Procurement Division of the USAF.[75] A major evaluation concept which appears, and is not really clarified and sets the stage for future difficulty, is: "In view of the fact that the airplanes to be evaluated will be the 'off the shelf' type and the evaluation will involve the inspection of an existing article, use of a point system is not recommended." This same document also reinforced the need to utilize the "Military Characteristics" provided by the Procurement Division.

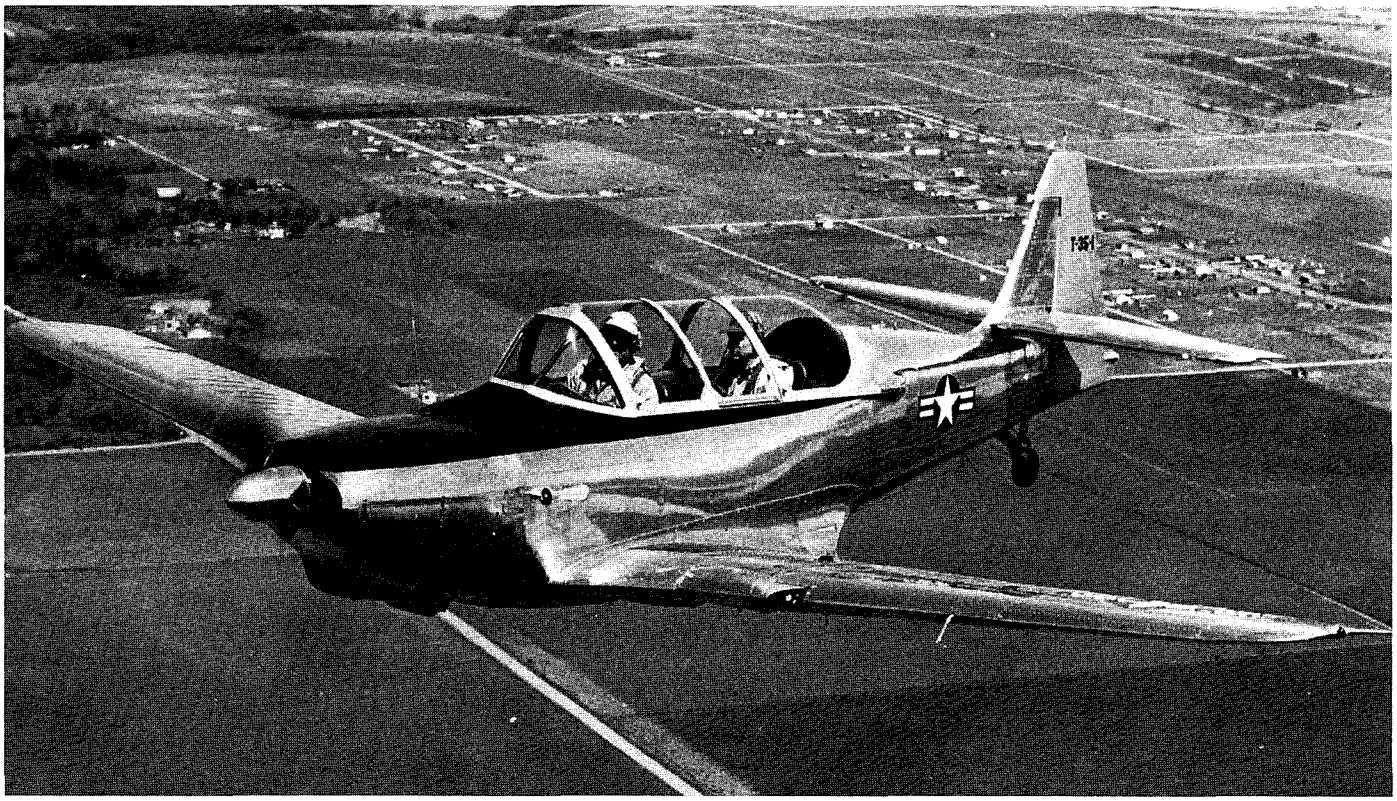
The military characteristics requirement included 125 kts (minimum), 4 hrs. fuel, tactical altitude, 7,500 ft., 900 fpm rate of climb, 1,500 ft. max. takeoff, 1,250 ft. landing, 55 kts max. stall, and 3,000 to 4,000 lbs. weight.[76] The flying characteristics called for basic aerobatic maneuvers and inherent stability. The instruments and lighting were to comply with standard Air Force requirements. Structurally, the aircraft should be designed to withstand hard usage and a variety of runway surfaces. "Retractable tricycle or conventional landing gear will be acceptable; however, tricycle is desired."

The Engineering Division of the Air Materiel Command (AMC) report appears first in the document file. Aerodynamically, the performance characteristics were acceptable, and, in all cases, the designer's figures were more conservative than those calculated by the Aircraft Laboratory.[72] The stability and control areas were also acceptable with the noting of no aft c.g. data being provided.

The evaluation report from the Maintenance Division of AMC is missing two pages. These two pages appear to have contained part of an evaluation summary, and information specific to the T-31.[78] The partial summary ratings are:

Nomenclature	Total Points	T-31	T-34	T-35
1. Fuselage	10	9	7	6
2. Wings, Flaps, Ailerons, Slots, etc.	11	9	8	10
3. Empennage	11	8	10	8
4. Flight Gear	12	10	9	11
5. Fuel System	4	3	3	1
6. Oil System	4	4	3	3

The list of recommended changes for the Beech T-34 and TEMCO T-35 does not appear to be different and each contains 34 items. The report concludes with, "In the 'as is' condition, the Maintenance Division considers the Fairchild aircraft the most desirable (reference overall superiority rating, paragraph 2) of the three aircraft evaluated."



Seen in a test flight over the Ohio countryside is the TEMCO T-35 in competition with the Beech T-34 and Fairchild XNQ-1/T-31.
(Courtesy R.E. Williams)

The Propeller Laboratory responded to AMC's request for evaluation of the propeller installation of the three aircraft with a five-member committee.[90] The committee's ranking of the three installations was Fairchild, TEMCO, and then Beech. Note was made of a solution to the cowling open propeller clearance for the Fairchild and the need for a spinner. The TEMCO propeller spinner was blocking access to two of the propeller flange bolt nuts. The Beech installation was criticized for inaccessibility of the propeller governor and excessive control level forces.

The Aero Medical Laboratory was represented by four individuals and gave the first rating to the Beech.[91] "This is the only one of the three which has tricycle landing gear. The two cockpit arrangements correspond quite closely to the cockpit standard requirements of the Air Force." The second rating went to the Fairchild because of the obsolete landing gear and visibility over the nose. The TEMCO was third because of the landing gear, cockpit layout, and only one cockpit could be opened at a time.

The report goes on to give principles proposed by the Psychology Branch. They very strongly supported the tricycle landing gear and the need to reduce landing and taxiing accidents. Cockpit control layout and the latest type of flight instrument and lighting should be used. A case was also made for three axis trim controls.

The Equipment Laboratory evaluation committee for AMC had one individual assigned to each equipment area.[92] The total credit points earned indicated a ranking of Fairchild, Beech, and TEMCO.

This Equipment Laboratory is similar to a previous report in that pages are missing. In this case, pages 4 through 7 are missing, and with a possibility of a page 10 also. It appears that the four missing pages must have clarified data given in the following table.

FAIRCHILD XNQ-1

Area	Points Allocated	Points Earned	% Earned
Instruments	30	22.5	75.0
Electrical	30	22.5	75.0
Mechanical	20	15.0	75.0
Ground Equipment	15	13.35	89.0
Parachute	5	4.50	90.0
	100	77.85	77.8

BEECH MODEL 45

Instruments	30	24.00	80.0
Electrical	30	9.00	30.0
Mechanical	20	16.00	80.0
Ground Equipment	15	11.25	75.0
Parachute	5	4.25	85.0
	100	64.50	64.5

TEMCO 7E-1A

Instruments	30	15.00	80.0
Electrical	30	6.00	20.0
Mechanical	20	5.00	25.0
Ground Equipment	15	6.90	46.0
Parachute	5	1.25	25.0
	100	34.15	64.5

The instrument rating area is the only equipment area in which the Beech rated higher than the Fairchild. Yet many of the publications of the day (1947) touted the Fairchild having the first military standard cockpit and instrument layout.

Fairchild XNQ-1 on photo flight at Oshkosh, 1992. (Courtesy EAA, Carl Schuppel, Photographer)

Bottom up—T-35 flown by Charlie Nelson. T-34s flown by Rod Daulton and Bob Morse. (Courtesy Charlie Nelson)

In the document file there is only a report for the Fairchild from the Aircraft Laboratory of AMC and none for the Beech or TEMCO.[96] However, the document does indicate that the Fairchild "receives Order of Merit *2* and a corresponding final grade of *86.05* percent." There are also percent grades for five areas:

1. Factor	Aerodynamics	Grade 73%
2. Factor	Structure	Grade 100%
3. Factor	Cockpit	Grade 85%
4. Factor	Landing Gear	Grade 92%
5. Factor	General Design	Grade 82%

Looking at the major headings under the Aerodynamics Factors in the following tables, one can only speculate why performance was graded at 75% and general aerodynamics at 70%.

PERFORMANCE 75%

Item	Min. Reqmt.	Contr. Guarantees
High Speed—SL	173 mph	166 mph
High Speed—TOA	173 mph	160 mph
Avg. Cruise Speed—TOA	144 mph	Satisfactory
Endurance—TOA	4 hours	Satisfactory
TOA	7,500	7,500
Rate of Climb	900 fpm	1,050 fpm
Service Ceiling	12,000 ft.	19,300 ft.
Takeoff*	1,500 ft.	950 ft.
Landing*	1,250 ft.	930 ft.
Stall Speed—SL	63 mph	58 mph

SL—Sea Level. TOA—Tactical Operating Altitude, 7,500 feet. Endurance—With 30-minute reserve. *Over 50-foot obstacle.

GENERAL AERODYNAMICS 70%

1. Rate of roll, poor; aileron deflection is restricted to approximately 18 degrees (although the specifications list 20 degrees up, 20 degrees down). This restricted angle is probably due to buffeting troubles.
2. At cruising speed there is a tendency of aileron buffeting for small aileron angles.
3. The airplane has a groundlooping tendency.

There are 10 Performance items of which two are not met. The other eight are met or exceeded. Thus, a weighting must have been given that placed more emphasis on high speeds at sea level and tactical operating level. For the General Aerodynamics, the stating of a groundlooping tendency is interesting. The actual aircraft does not have a groundlooping tendency, but could be groundlooped because of the gear configuration.

The Structure Factor has the Fairchild rated first "since it is designed to military standards and is the most rugged airplane in the competition." With the Cockpit Factor, however, once again there is conflicting information. The cockpit is in accordance with usual AAF standards, but the instrument arrangement is not satisfactory. Other publications of the times tout the cockpit arrangement and instrument panel layout as the first example meeting new military standards. The Landing Gear factor is marked down because of unapproved brake control units, brake linkage between cockpits, and poor accessibility to the shock struts. The General Design factor deficiencies are given below to allow reader interpretation of the ratings and comments.

GENERAL DESIGN 82%

Features	Appraisal (%)	Comments
a. Detail Design	75	Pulley bracket riveted in place; sheet formed and not removable; no clips or ties provided between stringers and bulkheads; elaborate fairings used at junctures of wing and tail surface with fuselage in addition to large fairing around landing gear; typical heavy conventional construction employing a multitude of stringers, bulkheads, ribs, etc.; control surfaces cloth-covered; no magnesium used.
b. Canopy	60	No escape panels; large single sliding bubble with manual operation from rear cockpit impossible; electrical actuation with air bottle for emergency; no external manual release.
c. Vibration	75	Anti-vibrating mounts inferior.
d. Flutter	77	Incomplete balance on aileron and elevator; rudder tab not quite irreversible.
e. Emergency Landing Gear	90	Emergency gear extends by gravity, but down locking not assured. (Grade would be 100 if proved.)
f. Replacement of Damaged Parts	90	No interchangeability of stabilizers; wing breakdown inferior.
g. Control System	90	No provisions to prevent start of takeoff run with elevator locked in down position, possibly causing the airplane to nose over.
h. Vision	60	7 degree 45-foot vision over nose; forward vision obstructed by windshield frames.
i. Hoisting	90	Cannot be hoisted with canopy closed.
j. Mooring	90	No fittings on landing gear.
k. Jacking	90	No jack points on tail, jack bar must be used.
l. Towing	30	Cannot use standard tow bar aft or from either main gear or tail gear.
m. Seats	100	An approved-type seat is specified.
n. Standard Parts	100	General compliance with AN and AF standard parts.

The Flight Test Division had six pilots fly each aircraft presented for evaluation.[97] No efforts were made to provide quantitative information on the operational characteristics. Comments were only made to "fly qualities of the aircraft with no effort to justify the airplanes as trainers."

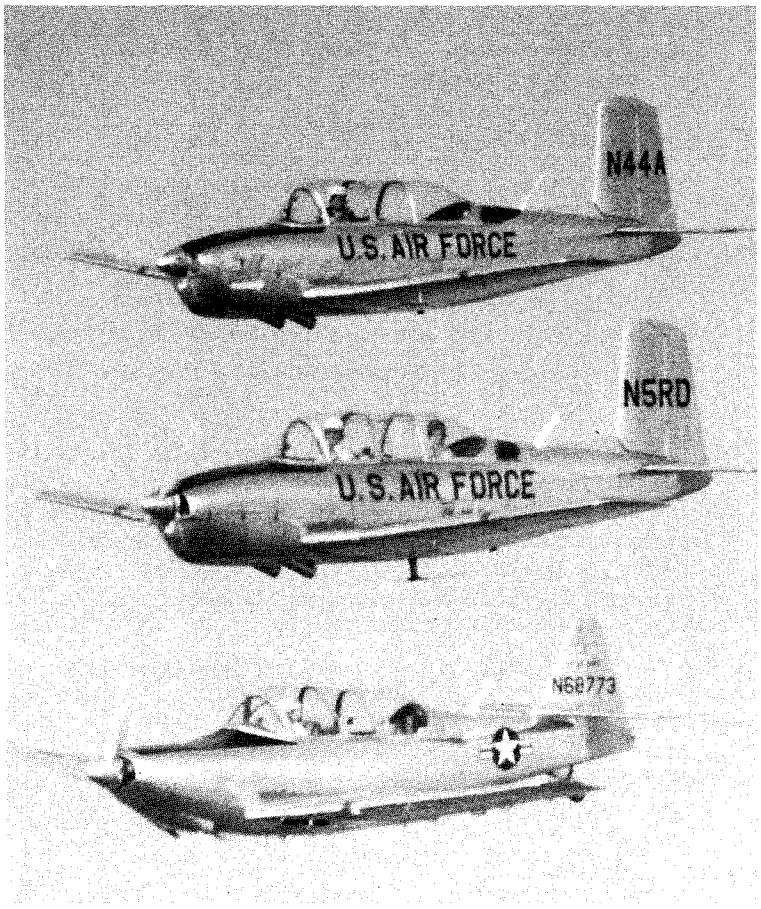
The TEMCO T-35 was quite limited in cockpit space, especially in the rear cockpit. While possible to taxi without making "S" turns, the restriction to visibility became noticeable while climbing at speeds for best rate of climb. The cockpit controls and accessories gave the appearance of being cheaply built, and did not conform with AN cockpit standardization. The high wing loading allowed operation in higher winds than normally safe for this class of aircraft. The takeoff distance was short and initial climb satisfactory. Control forces were light, coordinated, and provided good response. Limited acrobatics presented no undesirable characteristics except the loss of appreciable altitude caused possibly by a high power loading and poor stall characteristics. There was a high stall speed and a secondary stall occurring as high as 25 percent above the stall speed. Approaching a secondary stall, a pronounced buffeting appeared to originate in the wing center section, and without immediate correction, the entire lifting surface became ineffective. It appeared that this was caused by efforts to eliminate all tip stalls by slotting the tips and placing spoilers at the leading edge of the root section. Thus, there was excellent aileron control when the rest of the wing stalled. Yet, this was undesirable because the maximum lift coefficient was reduced and made aerobatics difficult without encountering the characteristic shudder.

Spin recovery is normal although somewhat difficult to be precise. Spin recovery of about two turns after a fully developed 5–6 turn spin is normal. Landings are quite normal and easily accomplished as the stall is abrupt and complete.

Like the other two aircraft, the Beech suffered from limited rear cockpit visibility. Ground handling was exceptionally easy at all speeds with the nose-wheel steering. Cockpit attributes made the pilot feel at home immediately. All controls were well placed with the exception of the flap control. It was possible to jam the headset and microphone cords because of the fixed guard on the side of the control. Takeoff and initial climb were accomplished with excellent visibility. Control forces and aircraft response were normal in all maneuvers with the ailerons requiring more pilot effort than the other two aircraft. The propeller control tended to overspeed in high rpm conditions. Engine speed varied with airspeed although the propeller was of the constant speed type. Excessive force was required to operate the propeller control.

The Fairchild had limited visibility, but it was still considered excellent for an airplane with conventional landing gear. The cockpit was very well arranged and presented the nearest conformity with the desired military cockpit.

The controls were accessible except for the rear cockpit trim controls which were behind the pilot's left thigh. Ground handling of the three aircraft was most difficult for the Fairchild. Directional stability during the initial part of the takeoff was positive because of the tail wheel lock. Takeoff ground run was exceptionally short, and the rudder was effective immediately at the start of the takeoff run. The Fairchild exhibited better climbing performance to 5,000 feet than either of the other two aircraft. Except for a "springy" feeling of the ailerons, all controls were normal. Aerobatics were easily accomplished; however, the airplane suffered from a low rate of roll with



aileron buffeting at high deflection angles. Spins were all but impossible to the left. (Another source indicated a half degree of extra twist in one wing over the other.) With ample stall warning, in all configurations, there is a decided break to the right. The stall speed is approximately 10 mph lower than the other aircraft. With one person aboard, conscientious effort was needed in order to do three-point landings. Torque effect was most noticeable on this aircraft, but was easily controlled in all flight conditions. In summary:

It is the opinion of the pilots of this Division that the Beechcraft airplane has the most reasonable flying characteristics and has no peculiarities of flight which would require correction. The Fairchild airplane would be a close second from the pilot's viewpoint with the TEMCO a rather poor third. It is desired to point out, however, that it was very difficult to make a comparative evaluation between these three airplanes since they represent almost three entirely different classes of aircraft, and each has advantages peculiar to the particular airplane and powerplant configuration.

A final report, Technical Evaluation-Single-Engine Basic Trainer, appeared on February 22, 1949.[98] This document consists of a five-page report and 15 pages of appendices. The working committee for this final report consisted of one representative from each of the AMC Laboratories and Divisions involved. The consolidated evaluation ratings appear below.

"The overall order of merit established for the competing aircraft from the technical viewpoint in subject Evaluation is as follows: A. Fairchild XNQ-1; B. Beech Model 45; C. TEMCO, TE-1A."

CONSOLIDATED EVALUATION RATINGS

Technical Consideration	Allotted Points	Fairchild	Beech	TEMCO
**Performance & Aerodynamics	200	146	200	96
Structural & Design	300	271	252	174
Powerplant Section, incl. Propeller	150	126	102	95
Equipment	100	78	65	34
*Radio	50	44	33	34
Maintenance & Repair	200	170	132	124
TOTAL SCORE		835	784	557

*Score based on use of Group I Radio Equipment. Use of Group II Radio affected total score by less than 1 percent.
Above tabulated score indicates order of merit for the competing aircraft in their present, "as observed" configuration.
It must be noted that merit ratings above will be affected upward if corrected action is taken as recommended by the Working Committee.
**Accounts for Flight Test Rating.

This was the report prepared for the Feburary 23-24, 1949 Evaluation Board, Basic Trainer meeting in which final evaluation of the three aircraft would occur. Besides the five Board members, the meeting also involved nine advisors as well as other representatives.[99] The Board, after discussion, reached agreement on evaluation considerations and percentages allocated to each area as indicated below.

FINAL EVALUATION & PERCENTAGES ALLOCATED

1. Ability to perform mission	10%	40%
2. Technical Consideration		
(a) Structure and Design	10%	
(b) Equipment	10%	
3. Maintenance		25%
4. Costs		15%
(a) Procurement	5%	
(b) Operational	10%	

Using the percentages appearing above, the results listed below represent a four-to-one vote of the Board members.

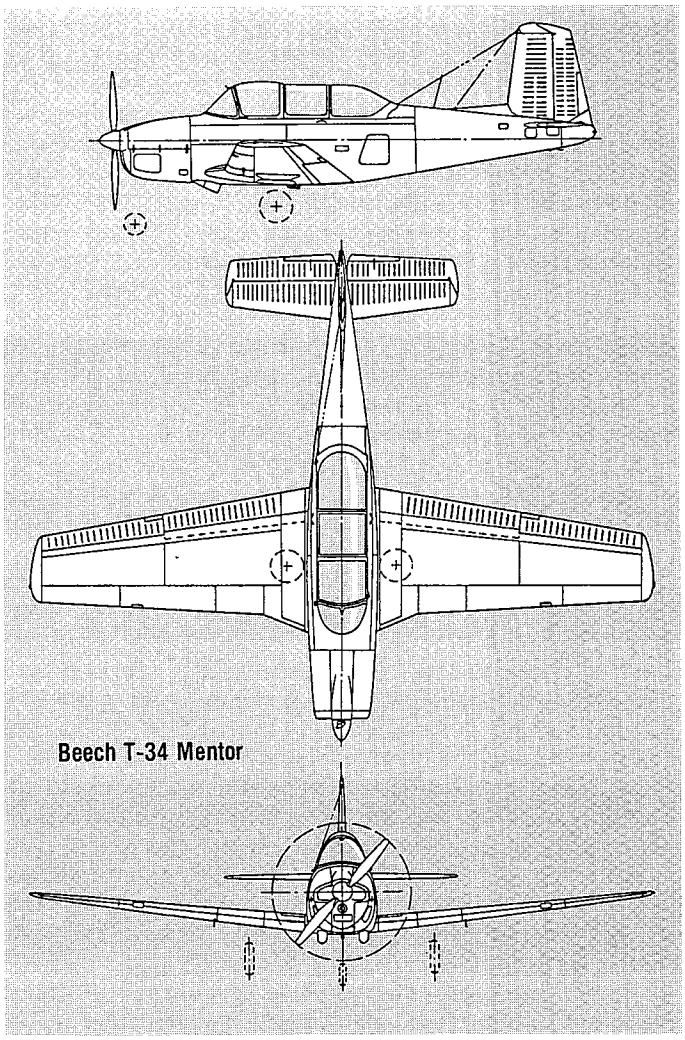
	Beech	Fairchild	TEMCO
4 Board members	1st	2nd	3rd
1 Board member	2nd	1st	3rd

Thus, the Board recommended procurement of the Beech. They also recommended a pre-procurement modification inspection be held. The purpose of this inspection was "making changes to the Beech to make the article more nearly conform to AN standards of design and equipment."

Still, on March 17, 1949, the chairman of the Evaluation Board, Basic Trainer, and Director of Training and Requirements sent a memorandum to the Chief of Staff.[102] Stated first was the fact that the Board had consensus with the TEMCO being rated third. The TEMCO was too light and too deficient in several flying characteristics to perform the training mission. The report then noted that he, the chairman of the Board, was the individual who voted the Fairchild first and the Beech second. General McNaughton then proceeded to outline his reason for overturning the Evaluation Board's recommendation.

The tricycle landing gear was the main deciding factor for the majority of the Board in selecting the Beech T-34. The flight instructor personnel of the Flying Training Division focused on eliminating groundloops. McNaughton stated that the overall Air Force accident rate would not be reduced, but only postponed. Not until 1953 or 1954 will there be no conventional gear aircraft in the Air Force, and it could be later if the Martin AM-1 or Douglas AD-3 are procured for the ground support mission.

The first Beech YT-34 (50-735) was used in an Army evaluation of armed trainers suitable for light ground support duties. (Courtesy R.E. Williams)



The reason the Board recommends procuring two Fairchilds with tricycle gear was the fear among the members that the Beech T-34 might prove too fragile. Also, in that the T-28 uses an untried engine, R-1300, the Fairchild with a GSO-580 Lycoming and a tricycle landing gear could be an emergency replacement for the T-28. The Beech also uses an unproved engine, Continental E-185-8. The Fairchild Corporation stated they could produce a tricyle landing gear model without difficulty and without significant increased cost. The Navy's lack of interest in the Beech, and their position of procuring the Fairchild if the Air Force did so, was also viewed as an important consideration. McNaughton presented an outline summary of

his reasons for overturning the Evaluation Board's recommendation:

a. The Fairchild is a handbook airplane whereas the Beechcraft is not.

b. The Fairchild has a proven engine; the Beechcraft has not.

c. The Fairchild airplane is considerably more rugged and will operate with less maintenance cost than the Beechcraft.

d. Students should be trained on the conventional-type gear until there are no conventional-type gear left in the Air Force.

e. The Fairchild aircraft can be converted to a tricycle gear without significant cost.

f. The relatively small differential in cost between the Fairchild and the Beechcraft should not be a deciding factor.

g. The Navy is not interested in the Beechcraft.

h. The Fairchild is a possible replacement for the T-28 in event that airplane does not prove satisfactory.

i. The Beechcraft aircraft will not provide a normal progression to a more advanced type aircraft for those students who have received training under the Reserve Officers' Training Corps Act of 1949.

j. The Commanding General of the Air Training Command favors the Fairchild aircraft and recommends that it should be given consideration for purchase over the Beechcraft.

Fly-Off Summary—The documents in the microfilm file leave no question that the Fairchild T-31 was the best aircraft among the three at that time, for any number of reasons. The degree that the tricycle landing was a real issue was also clear. At the same time, however, there did appear to be either a bias against Fairchild or a bias for the Beech. From the very beginning of the document file, there was a rejection of the Fairchild with no apparent reason, and some of the criticisms later used against the Fairchild were overlooked when the Beech and TEMCO appear.

The microfilm file does continue beyond the point used in this article. The majority of that material deals with unit costs and total costs for each type aircraft. There also are two documents that imply many things, but would require more research into other areas. There is a letter from William P. Rogers, Chief Counsel for the Senate Investigation Subcommittee.[137] The item of question is the procurement of the Fairchild.

"It would be appreciated if you would furnish the Subcommittee with specific details concerning those factors on each of the three aircraft, namely, initial cost, maintenance, etc., which were considered by the Air Force prior to the awarding of the contract to Fairchild."

Immediately following is a memo placing the procurement of a primary trainer in abeyance.[138] These documents were dated June 17th and 21st, 1948, and by August 5, 1949, there is a decision not to procure the Fairchild and to overhaul the necessary T-6s to meet the requirement of Training Command. Funds were also made available for acquiring three examples of each aircraft for actual use by Training Command and subsequent evaluation by use. This funding was then changed to exclude the Fairchild because two examples were available and the cost was too great to acquire one more new Fairchild. Improved examples of the Beech and TEMCO were purchased in 1950.

The rest is history—the eruption of the Korean War and the ordering of the T-34s in 1952. Presently, there are numerous examples and versions of the Beech T-34, a handful of the TEMCO T-35, but only one Fairchild XNQ-1/T-31. □

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3. Letter, 15 July 1946. From Rear Adm. L.C. Stevens, Navy Dept., BuAer, Wash. To Recorder, Aero. Bd.
7. Letter, 27 Mar. 1947. From: Lt. Gen. G.E. Stratemeyer, Cdr., ADC, Mitchel Field, N.Y. To CG, AAF, Wash.
8. Letter, 31 Mar. 1947. From Rear Adm C.A. Nicholson, BuAer, Navy Dept., Wash. To BuAer Gen. Rep., WF.
13. Wire, 32 May 1947. From Hq. AAF, Wash. To CG, AMC.
15. Letter, 4 June 1947. From Col. G.F. Smith, Chief, Airc. Proj. Sect. Eng. Div. To AC/AS-4, Wash.
16. 1st Ind., 21 July 1947. From Brig. Gen. J.S. Stowell, Chief of Adm., AMC. To AC/AS-4, Wash.
17. Letter, 9 Sept. 1948. From Fairchild Aircraft Div., Fairchild Engine & Airplane Corp., Hagerstown, Md. To C/S, USAF, Wash.
20. Memo, 2 Oct. 1948. From Brig. Gen. A.A. Kessler, Jr., Dir., Proc. & Indust. Plan., Dep. C/S, Mat., Wash. To Gen. Powers, Asst. Dept. C/S, Mat., Wash.
23. Memo, 13 Oct. 1948. From Col. G.P. Disosway, Actg. Chief, Tng. Div. Directorate of Tng. & Req., Wash. To Gen. Powers, Asst. Dep. C/S, Mat., Wash.
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30. Ots., 9 Nov. 1948. From Col. G.E. Schaetzel, Chief, Airc. & Missiles Sect., Proc. Div. To C/S, Mat., Wash.
32. R&R-1, 10 Nov. 1948. From Col. G.E. Schaetzel, Chief, Airc. & Missiles Sect., Proc. Div. To Tng. & Trans. Pr., Airc. & Missiles Sect., Proc. Div.
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51. Letter, 23 Dec. 1948. From Texas Eng. & Mfg. Co., Inc., Dallas, Tex. To N. Silverston, Proc. Div.
53. Memo, 28 Dec. 1948. From A.S. Barrows, Under Secy. of AF. To Gen. Craig, Dept. C/D, Mat., Wash.
63. (Fairchild Board) Bd. of Officer Rpt., 6 Jan. 1949.
64. Letter, 6 Jan. 1949. From President Harry Truman, White House, Wash. To Secy. of Defense, Natl. Mil. Establ., Wash.
66. Wire, 7 Jan. 1949. From Proc. & Indust. Plan., Dep. C/S, Mat., Wash. To Proc. Div.
69. Letter, 10 Jan. 1949. From Fairchild Airc. Div. To Tng., Trans., & Special Airc. Br., Proc. Div.
72. Memo. Rpt. MCRE A-24-4154-22-1. Airc. Lab. Eng. Div., 13 Jan. 1949. Design Prop., Model M92D Trainer Aircraft.
74. Letter, 18 Jan. 1949. From Maj. Gen. E.M. Powers, Actg. Dep. C/S, Mat., Wash. To CG, AMC.
75. Letter, 19 Jan. 1949. From Brig. Gen. H.A. Shepard, Chief, Proc. Div. To Dep. C/S, Mat., Wash.
76. Mil. Characteristics (Basic Trainers), 1 Feb. 1949. From Maj. Gen. Carl A. Brandt, Chief, Req. Div., Directorate of Tng. & Req., USAF, Wash.
81. Wire, 7 Feb. 1949. From Col. B.I. Funk, Chief, Airc. & Missiles Sect., Proc. Div. To Dep. C/S, Mat., Wash.
90. Memo. Rpt. MCREXB-72C-2-1 (Propeller Lab., Eng. Div.), "Tech. Evaluation of Single Engine Basic Trainer Airplane Propeller Installations," 15 Feb. 1949.
91. Memo. Rpt. MCREXD-720-131 (Aero. Med. Lab., Eng. Div.), "Trainer Airplane Evaluation Inspection," 16 Feb. 1949.
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96. Memo. Rpt. MCREXA-24-4154-23-1 (Aircraft Lab., Eng. Div.), 18 Feb. 1949. "Eng. Evaluation Comments Basic Trainer Airplane Competition—Fairchild Aircraft Division, Fairchild Model No. M-129."
97. R&R-1, 21 Feb. 1949. From Lt. Col. R.E. Horner, Chief, Test Eng. Sub-Div., Flight Test Div. To Airc. & Missiles Sect., Proc. Div.
98. Memo. Rpt. 22 Feb. 1949 (Trainer Unit, Proc. Div.), "Technical Evaluation—Single-Engine Basic Trainer." 14 Feb. 1949.
99. Summary Minutes of Meeting of Basic Trainer Evaluation Bd., 23 Feb. 1949.
102. Memo, 17 Mar. 1949. From Maj. Gen. K.P. McNaughton, Dir. of Tng. & Req., Wash. To C/S, USAF, Wash.
137. Letter, 17 June 1949. From William P. Rogers, Senate Investigations Subcommittee, U.S. Senate, Wash. To Maj. Gen. T.D. White, Dir., Legislation & Liaison Dept. of the AF, Wash.
138. Office Memo, 21 June 1949. From Lt. Col. S.W. Bishop, Chief, Tng., Trans. & Special Airc. Br., Proc. Div. To N. Silverston, Tng., Trans., & Special Airc. Br., Proc. Div.

ABOUT THE AUTHOR

Don Pellegreno is a Professor at Iowa State University and teaches counseling. Flying and working on aircraft have been addictive hobbies for more than 30 years. Such activities occur in the backyard hangar and on the landing strip. Nine and a half years were spent rebuilding the Fairchild XNQ-1, and, to date, two years flying it. One of his first sources for information on the aircraft was AAHS member Kent Mitchell's article, "The Fairchild XNQ-1/T-31 Trainer," in the Spring 1977 issue of the *Journal*.