

Operation "Fire Wall"

by Paul D. Stevens

Major Adrian E. Drew of the 27th Fighter Bomber Wing closed out the US Air Force's first decade as an independent service by recapturing the world's absolute speed record from Great Britain on Dec. 12, 1957. Major Drew flew an F-101A over a precise 10.1 mile course high above Edwards AFB, California at speeds of 1212.8 and 1202.5 mph, averaging 1207.6 mph. This was more than 75 mph faster than the old record of 1132.136 mph established on March 10, 1956 by Fairey test pilot Peter Twiss while flying an experimental Delta II research vehicle.

Operation Fire Wall was the second of two F-101 record performance demonstrations during 1957 which was intended to publicize the airplane's long range and maximum speed capability as the type entered operational service with the Tactical Air Command.

Six Tactical Air Command reconnaissance pilots previously had teamed up on Nov. 27th to shatter all existing west-to-east, east-to-west, and round trip transcontinental speed records from Los Angeles to New York and return during Operation Sun Run. These performances climaxed a long and



Major Adrian E. Drew, Commanding Officer of the 481st Fighter Bomber Sqdn., was presented the Distinguished Flying Cross for recapturing the world's absolute speed record for the United States. (Photo: U.S. Air Force)



difficult struggle for McDonnell and the USAF to attain operational status and world class performance for their big twin-engined strategic fighter/bomber/reconnaissance aircraft.

The F-101 design dates back to the summer months of 1951 when Russian-designed MiG-15 interceptors were demonstrating their capability of devastating unescorted formations of B-29 bombers over North Korea during daylight missions. Using long range fighters to escort bombers was not a new idea but posed a very difficult problem for jet age engineers. The Air Force had issued experimental development contracts to McDonnell (F-88), Lockheed (F-90), and North American (F-93) for long range fighter escorts after World War II, but each of the airplanes was of marginal performance at best and postwar budgets did not permit production. Experiences in Korea dramatized the need to escort bombers and the Air Force subsequently approached McDonnell to initiate F-88 production.

McDonnell realized the F-88 would be obsolete before production could be initiated and Project Engineer Edward M. Flesh proposed a larger and faster aircraft with increased range and greater mission capability. The Air Force liked what they saw and issued a contract during January 1952 for 31 pre-production F-101A airplanes for accelerated development. McDonnell worked feverishly on the F-101 and approximately 32 months after their go-ahead, R.C. "Bob" Little initiated flight testing on Sept. 29, 1954 at Edwards AFB.¹ Initial plans called for the production of sufficient F-101 fighters to re-equip five Air Force wings and the future looked bright for McDonnell.

However, flight testing revealed a number of mechanical and aerodynamic problems serious enough for the Air Force

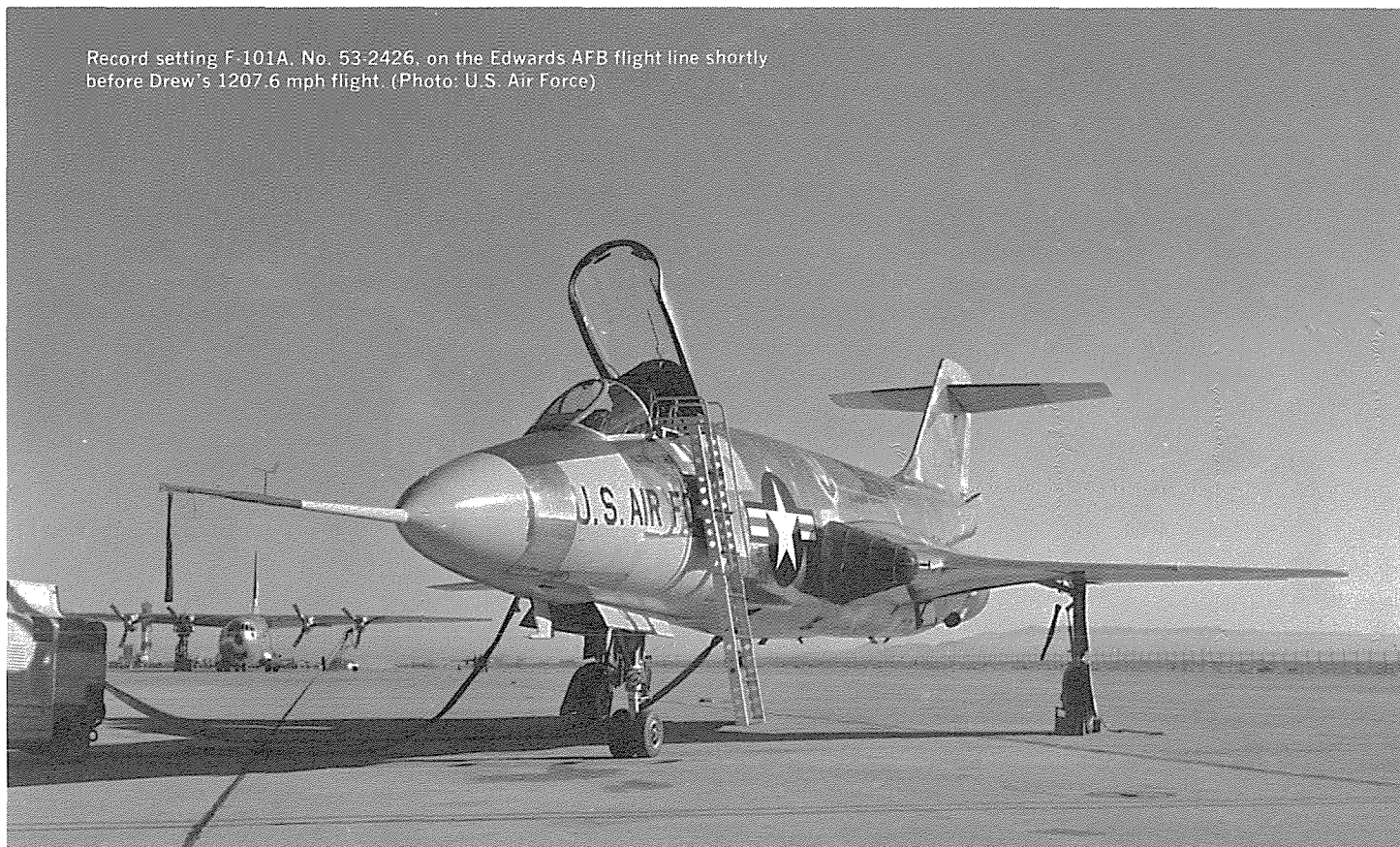
to order the suspension of any further F-101 production on May 23, 1956. The Air Force began to have second thoughts about the basic F-101 mission and its ability to perform it. McDonnell and the Air Force collectively resolved most of their F-101 problems during the fall and McDonnell was allowed to resume F-101 production on Nov. 26 after plans had been made to shift the bulk of scheduled production to reconnaissance and interceptor models. Successful flight tests of an electronic pitch inhibitor system designed to prevent pilots from losing control during high angle of attack flight were conducted late in 1956. The pitch inhibitor overcame the last serious obstacle to operational service and F-101s were released for duty after they had been so equipped. Although F-101A fighter and RF-101A reconnaissance airplanes had been delivered to operational squadrons during May 1957, it took them several months to put it all together and become fully operational.²

Only an outstanding effort by McDonnell and some high level management wizardry by the Air Force salvaged the F-101 program from a costly termination. As it was, the program had been delayed by a minimum of a year to 15 months.

It was against this technical backdrop and the political concern of Air Force fighter pilots that they were being pushed aside by proponents of strategic bomber forces that motivated them into responding with a vengeance. Operations Sun Run and Fire Wall were only two of numerous efforts made by F/RF-101 proponents and the fighter elements to demonstrate their prodigious capability during the late 1950s. Their success cannot be underestimated.

Headquarters USAF directed the Tactical Air Command to establish four F/RF-101 international speed records between

Record setting F-101A, No. 53-2426, on the Edwards AFB flight line shortly before Drew's 1207.6 mph flight. (Photo: U.S. Air Force)



2 November and 31 December, 1957. Headquarters USAF message AFOOP-OC-B-230047, dated 4 October, 1957 assigned and authorized Mission Category II for all support areas associated with this task.³ "A closed course "Thompson Trophy" event speed record attempt will be conducted using F-101A aircraft No. 53-2426, presently bailed to Pratt & Whitney."⁴

Aircraft No. 53-2426 was the ninth F-101 built and had been instrumented for powerplant development and evaluation. Its Pratt & Whitney J-57-P-13 engines of 15,000 lb. thrust had been replaced with J-57-P-55 engines of 16,900 lb. of thrust each with afterburning. The engines were equipped with elongated afterburners with auxiliary air scoops designed to smooth the flow of air into the engines. These scoops provided an even distribution of air over the compressor face that greatly reduced compressor stalls which had been an early F-101/J-57 problem.⁵ This engine intake/afterburner configuration was similar to, but not identical, to the basic configuration that was subsequently employed on most F-101B/F airplanes.

The aircraft did not carry any armament and was not equipped with a pitch inhibitor system. It did, however, carry extensive instrumentation to document all facets of engine and aircraft performance in addition to the photography equipment required to make a continuous record of instrument readings as the flight progressed.⁶

As far as is known, no efforts were made to reduce 426's basic weight, but it had been fully serviced, washed, waxed, and painted prior to the record flights to increase its speed.

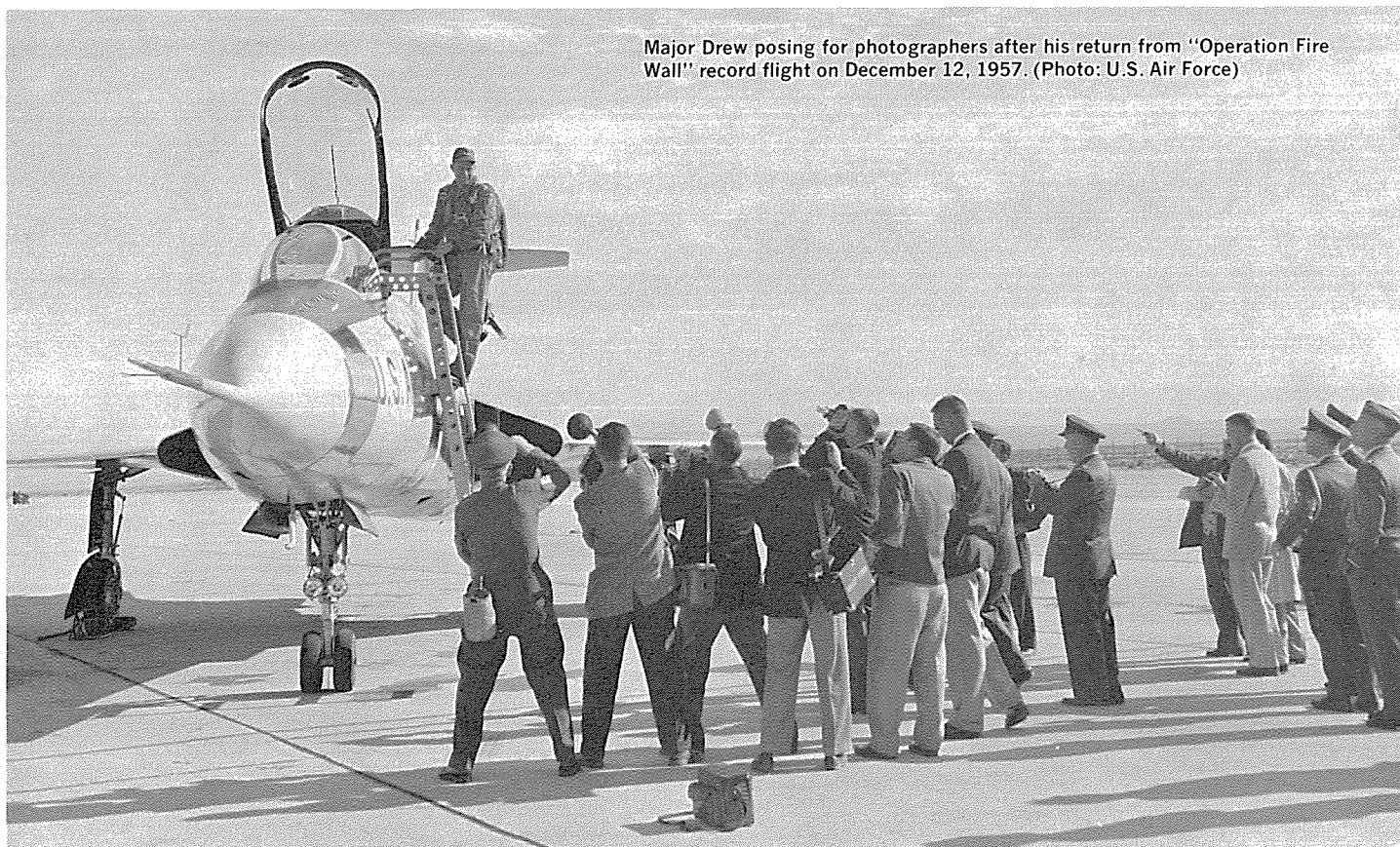
Major Adrian E. Drew, Commanding Officer of the 481st Fighter Bomber Sqdn., 27th Fighter Bomber Wing, was chosen to make the flight because his 200 F-101 hours

exceeded the experience level of all other operational Tactical Air Command pilots at the time. Adrian Drew was born in Carroll County Georgia in 1920. He completed two years of college prior to World War II and was commissioned as a 2nd Lieutenant in the Army Air Corps in April 1943. He had flown WWII era P-39s, P-40s, P-47s, P-51s, and post war F-80s, F-84Es, F-84Fs, F-100s and later the F-102, F-104, F-105, and F-4.

Captain Charles G. Cleveland of the 522nd FBS, 27th FBW was chosen as Drew's alternate. Both men were F-101 veterans and had participated in extensive Phase VI tests at Edwards AFB. Major Drew had been the 35th pilot to check out in the F-101 (10-13-55) and Capt. Cleveland the 57th (1-28-56).

Drew and Cleveland deployed from Bergstrom AFB, Texas to Edwards during the fall of 1957 with a maintenance officer and a crew of maintenance personnel to begin preparations for the record flight.

Achieving the record required a great deal of practice and hard work. Each practice run was closely monitored by ground stations and airborne chase pilots serving as the eyes and ears of the flight to maintain separation from other traffic. Drew and Cleveland had to memorize all of the headings, when and where to initiate and terminate afterburning, when and where to turn and roll out of the turns, etc. Experience revealed that approximately 80 miles on each end of the 10.1-mile course were required to decelerate from a speed run, and turn and reaccelerate to maximum speed for the next run. Turns were initiated decelerating through .9-Mach and rollouts were accomplished in the range of .85-Mach. Turning the airplane required a radius of approxi-



Major Drew posing for photographers after his return from "Operation Fire Wall" record flight on December 12, 1957. (Photo: U.S. Air Force)

mately 10 to 12 miles and reacceleration from rollout to maximum obtainable speeds required 3 to 4 minutes.

Federation Aeronautique Internationale regulations required that a barograph be installed in the airplane for the record run. This put an additional capacity requirement on the static source and consequently caused a delay in altimeter indications. Thusly, the airplane could gain 300 to 400 feet before the latimeter would start to move and it was very possible to get out of the flight envelope before corrections could be initiated. FAI regulations stipulated that a competitor must maintain level flight with a tolerance of 100 meters at the entry and throughout the course. Moreover, the altitude at which the approaches to the course are entered in the two directions must be subject to the same tolerance of 100 meters. The barograph was subsequently hooked into a different static source which eliminated the altimeter problem, but maintaining a precise altitude over the "speed trap" was still the most difficult pilotage function faced by Major Drew and Capt. Cleveland.

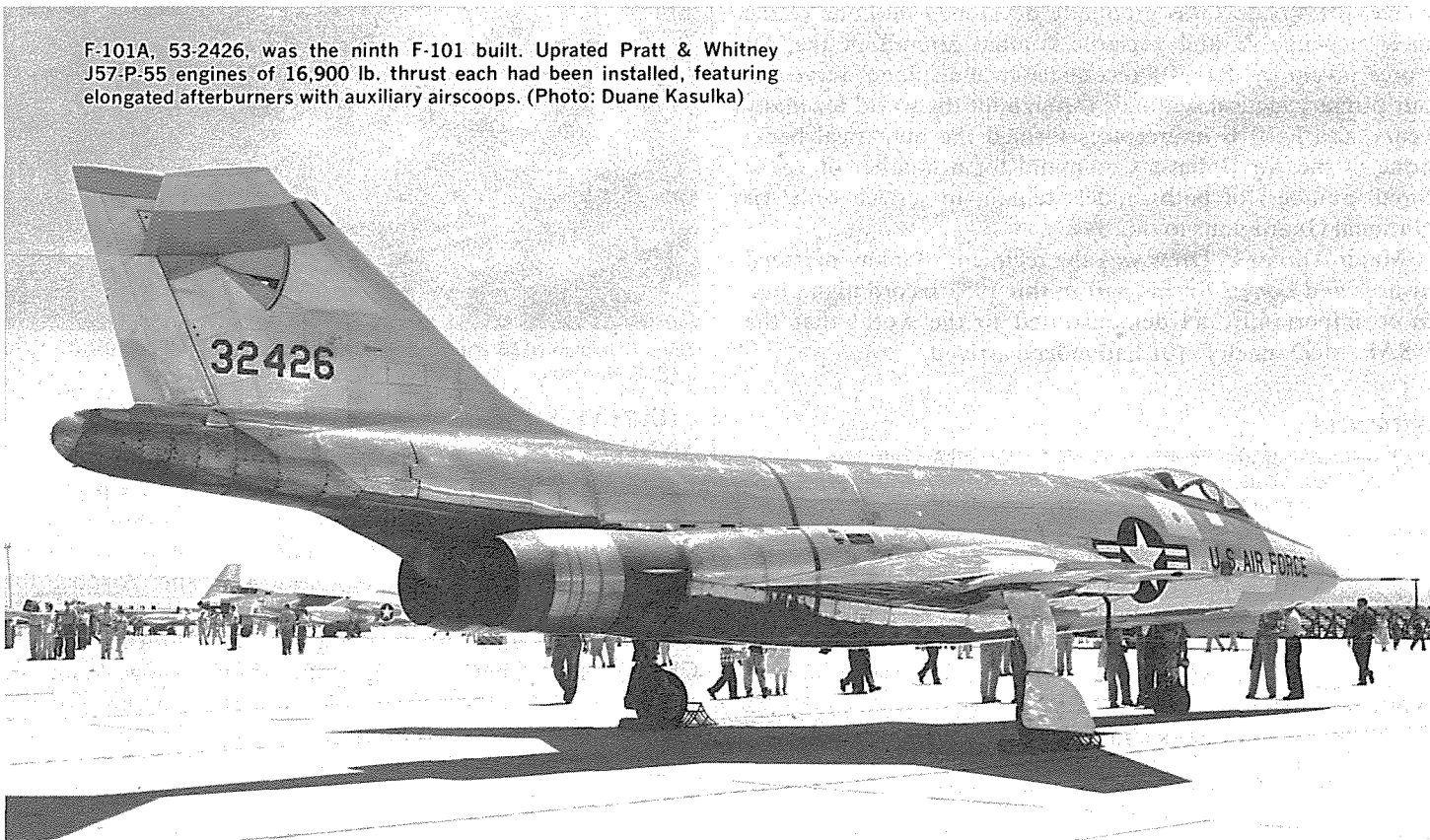
Fuel management and acceleration techniques were vital to the safety and success of the mission, but both pilots had all of these things down to a science after approximately 20 hours of practice. Adrian Drew relates, "I overtemped the engines a couple of times. This was another thing we had to learn in the practice. If you did not let the Mach build up before going into full afterburner, you could overtemp the engines during accelerations. So we had to devise a procedure whereby that after afterburning was initiated, we would use minimum afterburning until the airplane had accelerated to approximately 1.35 to 1.4 Mach number and gradually increase the afterburning to full."⁷

Two abortive efforts were made for the record before it was actually accomplished. A scheduled December 5th flight was postponed on the 4th because of unfavorable wind and weather conditions. Major Drew flew the course December 10th but a timing camera malfunction forced disqualification of the effort for lack of photographic proof. No official results of this effort were made public but non-military sources indicated that runs of approximately 1180 and 1190 mph for an average of 1185 mph had been made. These runs were made at 39,100 ft. at temperatures slightly higher than desired.⁸

Major Drew took off from Edwards at 0830 on the morning of Dec. 12 and made flawless runs of 1212.8 mph downwind (east) and 1202.5 mph upwind (west) to average 1207.6 mph. Both runs were made at 39,000 ft. where the temperature had been an ideal 78 degrees F. below zero. Major Drew landed at 0915 after a 45 minute flight that consumed approximately 1780 of the 2079 gallons of useable fuel he had taken off with. Aerodynamic heating generated during the flight raised some skin temperatures sufficiently enough to cause the blistering of painted decals (approximately 195 deg. F.).

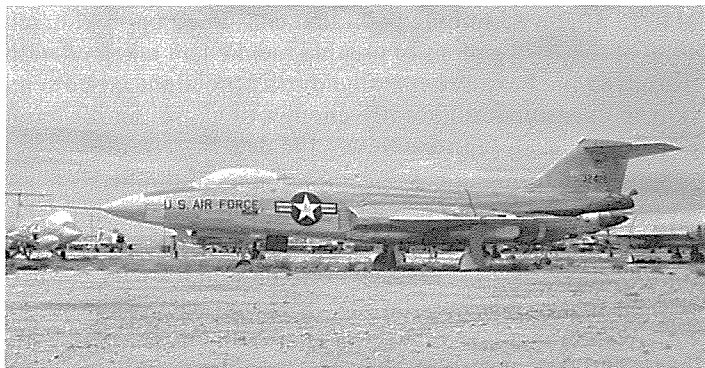
National Aeronautic Association timers and officials headed up by Fred Steifler, Clyde Barnett, Bert Rhine, and Chas Logsdon quickly affirmed the times. Major Drew then flew the Voodoo to Los Angeles International Airport where Major General Chester McCarty, Commander of the 18th Air Force, presented him with the Distinguished Flying Cross at a press conference. Major Drew was then flown to Washington D.C. where he presented Secretary of the Air Force James H. Douglas with a model of the F-101 on Dec. 14 and met the press again. His flight was also good for the "J-Division" Thompson Trophy which was awarded to him in Washington

F-101A, 53-2426, was the ninth F-101 built. Up-rated Pratt & Whitney J57-P-55 engines of 16,900 lb. thrust each had been installed, featuring elongated afterburners with auxiliary air scoops. (Photo: Duane Kasulka)





A late pre-production model F-101 shows the noticeable difference between the record setting aircraft and the standard J57-P-13 engine configuration. (Photo: Peter Bowers via Jim Sullivan)



JF-101A, 53-2426, at Davis-Monthan AFB in April 1960. The record setting Voodoo's reclamation was completed on September 8, 1961. (Photo: Douglas D. Olson)

D.C. at the annual Wright Day Memorial Dinner.

After a rocky start and a great deal of hard work, the F/RF-101 Voodoo was gradually developed into one of the most dependable and versatile combat aircraft in the Air Force inventory. RF-101 reconnaissance airplanes served as our primary tactical sentinels throughout the world for many years, and F-101B interceptors formed the numerical backbone of the Air Defense Command for a number of years. Small numbers of both models remain in service with Air National Guard units to this day.

Major Adrian E. Drew was the recipient of many personal awards and honors for his part in this 1957 record flight, but, more importantly, he demonstrated to the world that the USAF/McDonnell F-101 had indeed arrived.

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1. Correspondence with Edward M. Flesh, McDonnell Aircraft Corp.
2. "The F-101 Voodoo at Ogden Air Material Area. August 1952-June 1962." Historical Monograph.
3. Op. Cit. Correspondence with Edward M. Flesh.
4. "Operation 'Firewall' 1957," McDonnell Aircraft Corp.
5. Col. Adrien E. Drew, USAF Ret., interview July 30, 1977.
6. Ibid.
7. Ibid.
8. St. Louis "Post Dispatch," Dec. 11, 1957.

ABOUT THE AUTHOR

Paul D. Stevens was the AAHS F-101 Aircraft Type Specialist and continues researching the airplane after more than 20 years at his labor of love. He is a long time AAHS advocate and occasional contributor (RF-101s in Southeast Asia, Vol. 14, No. 4 and The AIR KINGS of LOMAX, Vol. 21, No. 4). Paul would enjoy hearing from anyone with yarns and tall tales about the "One-O-Wonder" at 88 Saugatuck Road, Aurora, Illinois 60538.

NEWS & COMMENT

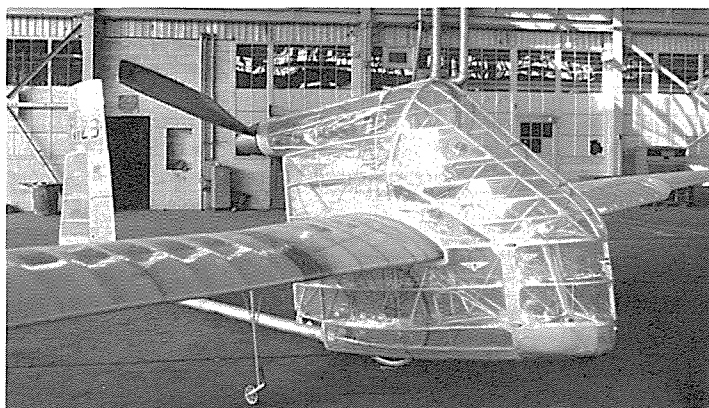
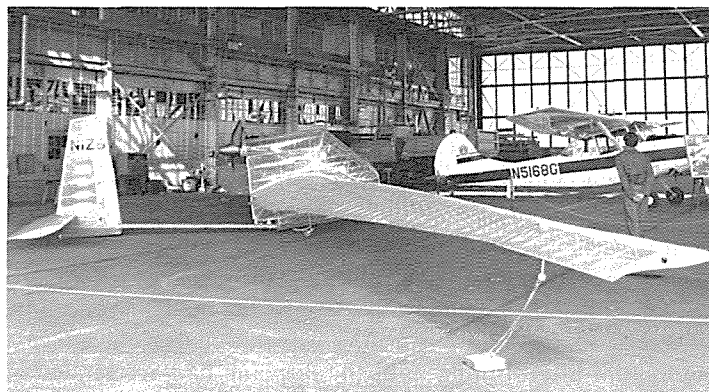
FROM OUR MEMBERS

ZINNO OLYMPIAN NIZB

R. W. Harrison, Chicopee, MA

On April 21, 1976 owner/designer Joseph A. Zinno flew the Olympian at Quonset Point, Rhode Island on America's first man-powered flight. An altitude of between 12 and 18 inches was achieved for approximately five seconds.

Details of the aircraft are: span, 78 ft.; wing area, 312 sq. ft.; aspect ratio 19.5; empty weight 148 lbs.; gross weight 290 lbs.; cruising speed 19 mph; construction balsa and aluminum.



Zinno Olympian NIZB photographed at Quonset Point, R.I. August 21, 1976 by R.W. Harrison.

CHARLES A. KINGSFORD-SMITH FLIGHT – 50th ANNIVERSARY

Fifty years ago, on May 31st, 1928, Captain Charles A. Kingsford-Smith and his crew consisting of Charles T.P. Ulm as co-pilot, James W. Warner as radio operator and Harry W. Lyons as navigator, took off from Oakland Airport for Australia, via Honolulu and Suva (see inside front cover).

On this 50th anniversary of that first flight to Australia, Sir Charles' son, Charles A. Kingsford-Smith, now living in Loveland, Colorado, will re-trace the route of his father's flight in commemoration of the event. Takeoff from Oakland Airport is scheduled for 8:45 a.m., the morning of May 31st. The route for the 7,938 mile flight will be the same as for the first flight, with stopovers at Honolulu and Suva, arriving in Brisbane, Australia on the 9th of June.