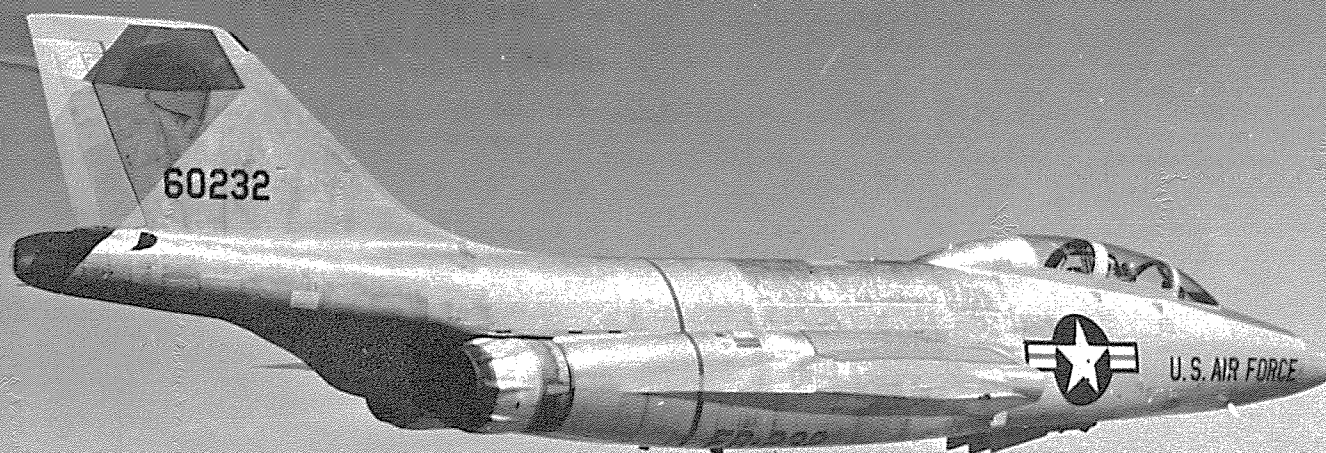




McDonnell F-101B Voodoo interceptor prototype (USAF #56-232) would have flown as the F-109, but Hq. USAF rejected the requested use of that designation. McDonnell photo.

Will the REAL F-109 Please Stand Up?

by Frederick W. Roos

Given enough dedication, the hardcore military aircraft enthusiast can wade through a number of designation lists and study a variety of publications to the point of being able to clear up just about all of the confusion surrounding fighter aircraft designations. Even the apparent gaps in the series can be filled in. For example, it is found that the P-73 and P-74 designations were never assigned; the F-98 and F-99 designations are discovered to have belonged respectively to the Hughes Falcon and Boeing Bomarc interceptor missiles; the XF-103 is found to have been a stillborn, stainless-steel, turbo-ramjet-powered Republic interceptor; and the F-108 designation turns out to have been assigned to the huge, high-altitude, long-range North American Rapier interceptor that was canceled in the mockup stage.^{1,2}

One puzzle has remained, however, because until now there has never been a satisfactory answer to the question: What was the F-109?

Considerable misinformation has been published with regard to the F-109 designation. A Ryan-built VTOL fighter project has been suggested³; a McDonnell two-seat interceptor has been mentioned⁴; and Swanborough & Bowers refer to a Bell VTOL fighter, even giving two USAF serial numbers.⁵ But the fact of the matter is that *there never was an F-109!* That is, not officially. Let me explain.

The earliest known mention of an F-109 occurred in Spring, 1955, in connection with the development of a two-seat interceptor derivative of the McDonnell F-101A Voodoo tactical fighter. As the interceptor program neared the hardware go-ahead, Hq. USAF was asked to assign the F-109 designation to the new fighter.⁶ This request was denied, with the result that the now well-known F-101B designation was used instead.

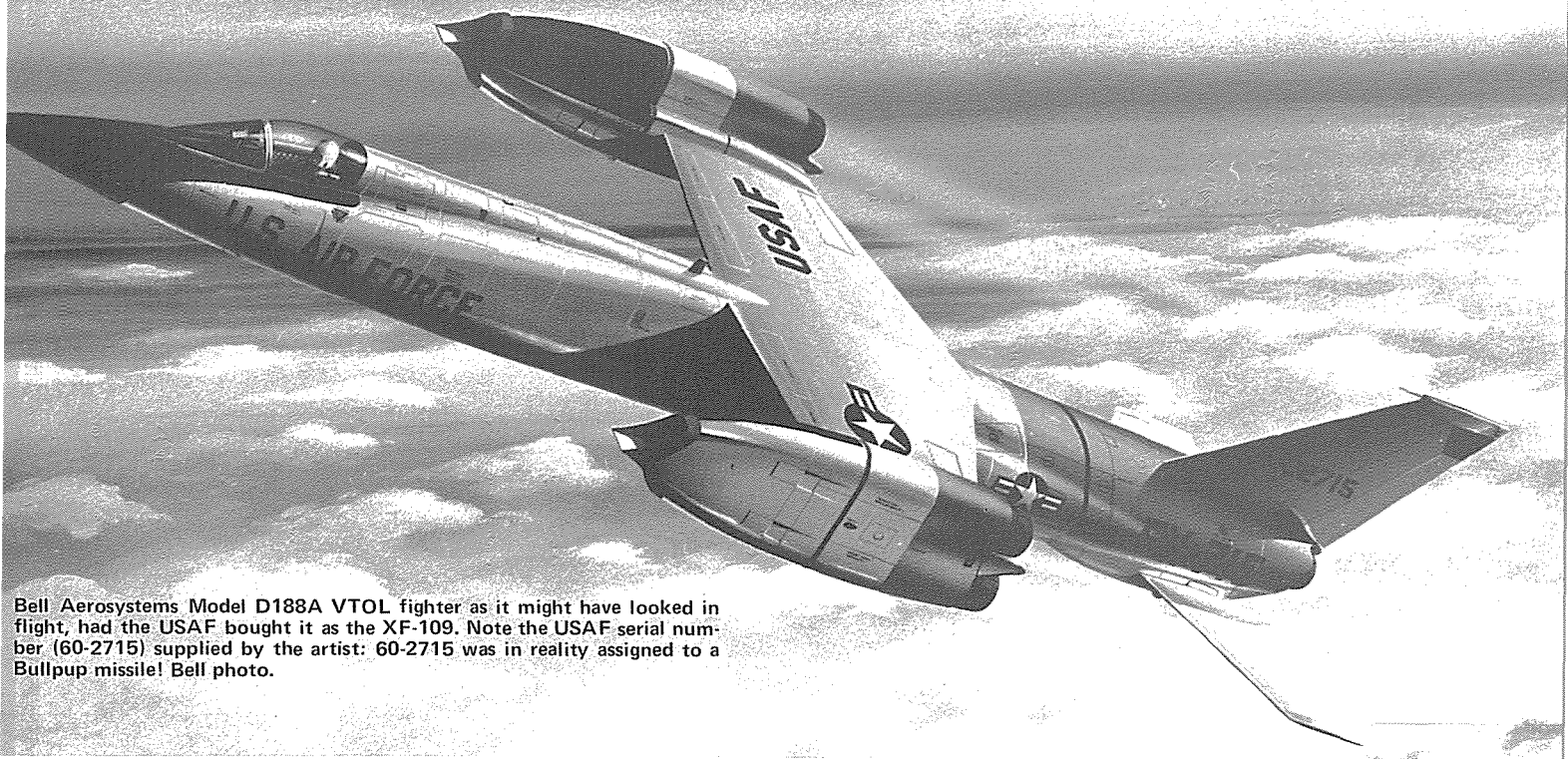
Having remained unused for several years, the F-109 designation was next requested in the late 1950s for application to an experimental VTOL fighter project underway at Bell Aerosystems. This project had started in 1956 as a response to a Navy competition, later continuing under joint USN/USAF support

after the Air Force had defined its interest in the VTOL fighter concept. When Navy enthusiasm waned, the project continued under USAF auspices. The program reached the full-scale mockup stage in 1958, and in January 1959 the USAF prepared a prototype contract for two examples of the aircraft as Weapon System WS-318A.⁷ Bell's in-house designation for the aircraft was Model D188A.⁸

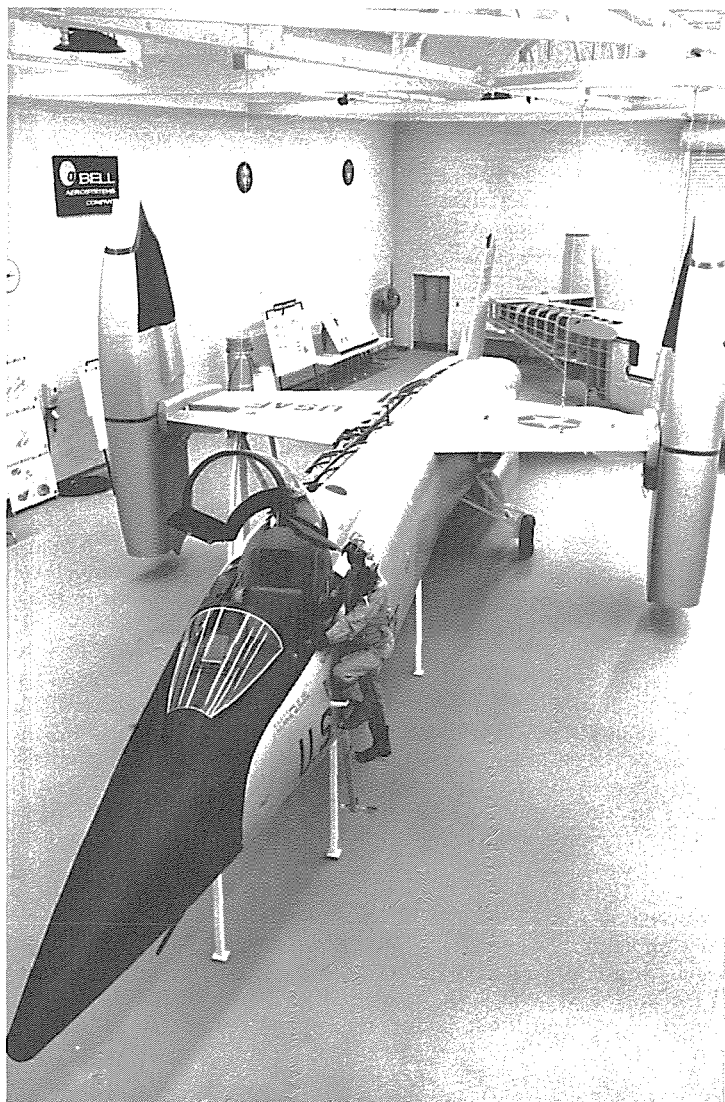
As the D188A evolved into a well-defined configuration, attempts were made to have a USAF fighter designation assigned to the aircraft. In February 1958, Hq. USAF rejected a request that the Bell fighter be designated XF-109A, on the grounds that the decision had not yet been made to proceed into the hardware stage with the aircraft.⁹ Again in early 1959, in connection with the anticipated Air Force prototype contract, assignment of the XF-109A designation was requested. Instead of a go-ahead, however, the Bell D188A program was given a termination notice. Of course, the XF-109A designation was once again denied.⁹

Bell attempted repeatedly to revive the D188A program, but the Air Force stood by its termination decision, believing the prototype program to be too costly for such a high-risk endeavor. As far as the U.S. Armed Forces were concerned, the Bell D188A had become a dead issue,¹⁰ and because of its association with this project, the F-109 designation "died" as well (what manufacturer would care to have his aircraft associated with the rejected Bell fighter?). And, now that the U.S. fighter aircraft numbering sequence has been started over again at F-1, it's a safe bet that there never will be an F-109.

The USAF serial numbers supposedly assigned to the "Bell XF-109"^{5,11} were apparently the result of a Bell artist's imagination. The numbers involved, 59-2109 and 60-2715, appeared in Bell artwork related to the D188A; the former number was also used on Bell's full-scale mockup, along with the "XF-109" designation. Actually, USAF records show that 59-2109 was an IM-99B Bomarc missile, while 60-2715 was a GAM-83A Bullpup missile.¹²



Bell Aerosystems Model D188A VTOL fighter as it might have looked in flight, had the USAF bought it as the XF-109. Note the USAF serial number (60-2715) supplied by the artist: 60-2715 was in reality assigned to a Bullpup missile! Bell photo.



Bell's full-scale mockup of the D188A. Note how the wingtip engine pods rotated for VTOL. Data stencil on fuselage side (above "U.S.") reads "U.S. AIR FORCE XF-109, A.F. SERIAL NO. 59-2109." Bell photo.

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4. Anonymous, "The Lost Century," "TAC Attack," vol. 12, no. 11 (Nov. 1972), pp. 16-19.
5. Swanborough, F.G., and Bowers, P.M., "United States Military Aircraft Since 1908" (Second Ed.), Putnam, 1971, p. 651.
6. Standard Aircraft Characteristics chart for "F-109 (PROPOSED)," dated April 5, 1955, in USAF Museum files.
7. Contract No. AF33(600)-38683, according to Malcolm Wall, Deputy Historian, USAF Systems Command, Washington, D.C., August 1975.
8. The Bell D188A was described in considerable detail in an Aviation Week article: Hoffman, David H., "Bell Reveals D-188A V/STOL Details," Aviation Week, December 5, 1960, pp. 54-69.
9. Letter on file with the Engineering Standards Division, Air Force Systems Command, Wright-Patterson Air Force Base. (This is the organization responsible for keeping records on all military aircraft and missile designations.)
10. It should be noted that an aircraft resembling the D188A did eventually fly, albeit not in the U.S. EWR, a German consortium formed in 1959 with Bolkow, Heinkel, and Messerschmitt participating, acquired design data on the D188A from Bell, and proceeded to use those data in the design and construction of two prototypes of the EWR VJ101C VTOL research aircraft. These test aircraft were flown in the mid-1960s.
11. Danby, Peter A. (Ed.), "United States Air Force Serials 1946 to 1974," Merseyside Aviation Society, Liverpool, 1974, pp. 52-53.
12. Information obtained from USAF Aircraft Record Cards, according to Steve Stieritz, Office of History, Air Force Logistics Command Hq., Wright-Patterson Air Force Base, April, 1976.

ABOUT THE AUTHOR

Fred Roos has been keenly interested in airplanes since his boyhood days, and has been an amateur aviation photographer and historian for the past ten years. His avocational activities are concentrated in two primary subject areas: U.S. military aircraft, their markings, and operational use (recall his "USAF Tail Codes" articles in the JOURNAL, Spring 1971, Summer 1972, and Winter 1973), and the history of aviation in the St. Louis area. In connection with the latter, Fred has been president of the Aeronautical History Society of Saint Louis since he helped found that group in 1970.

Professionally, Fred is a Scientist, currently doing experimental research in unsteady aerodynamics. He works for the McDonnell Douglas Research Laboratories, having joined them after receiving a Ph. D. in Aerospace Engineering from the University of Michigan in 1968. Fred and his wife Kathryn have a five-year-old son who is "already an airplane nut".