IT'S YOURS. NO, IT'S YOURS

PROLOGUE
During 1970 to 1972, 4.7%-scale propulsion and aerodynamic F-15 models fabricated by McDonnell Douglas were tested in the 16-Foot Transonic Tunnel (1146) during configuration development. These models (especially the propulsion model) were smaller than most tested in the facility but were sized so that they could also be tested in the McDonnell Douglas Polysonic facility. During this time, Pratt & Whitney (winner of the F-15 engine/nozzle contract) fabricated a larger 1/12-scale F-15 propulsion model and scheduled it for testing in the 16’T’T. However, before the model was tested, the Air Force decided that the F-15 performance was satisfactory and no more developmental testing was required. Thus the scheduled test on the larger model was cancelled and the model went into storage at Pratt & Whitney in West Palm Beach, Florida.

Around 1974-1975, development of the nonaxisymmetric (2-D), thrust vectoring (TV) nozzle concept started in earnest. In a joint NASA/USAF/USN program, integration of the 2-D nozzle concept with several existing aircraft was initiated. The USAF studied the F-111, the USN studied the A-6, and NASA studied the F-15 (and eventually the F-18). During this effort, I immediately remembered the large untested 1/12-scale F-15 model sitting in a crate at P&W. A letter (this was before email) was prepared and sent to P&W requesting use of the model in the joint program and permission to modify it with 2-D, TV nozzles. A response was received from P&W stating that it was OK with them if we borrowed the model but we needed to get approval from the Air Force since the model did not belong to P&W but belonged to the Air Force since they paid for it. Thus, a new letter was drafted and sent to the Air Force requesting NASA use and modification of the model. A response was received from the Air Force stating that it was OK with them if we borrowed the model but we needed to get approval from P&W because they owned it! The Air Force claimed that they never approved fabrication of the model and P&W funds must have been used for fabrication. Based on “OK with me” approval from two non-owners of the model, the model was shipped to the 16’T’T.

AFTERMATH
- The 1/12-scale model was modified with 2-D, thrust vectoring/reversing wedge nozzles and tested in the 16’T’T during 1976 (see Figure 1).
- Since the 1/12-scale model had no owner to return it to, it remained in storage at the 16’T’T for many years.
- In 1981, the model was modified again for a joint Langley/Dryden wind tunnel/flight correlation study (see Figure 2).
- NASA, McDonnell Douglas, and P&W continued to develop the F-15 configuration by adding 2-D C-D TV nozzles and a canard for trimming pitching moments generated by the thrust-vectoring nozzles. In 1982, the model was modified to the F-15 S/MTD configuration and tested in the 16’T’T (see Figure 3).
The F-15 configuration was eventually flight tested in 1988 by the USAF as the F-15 STOL/Maneuvering Technology Demonstrator.

- At the request of the Dryden Flight Research Center, the 1/12-scale model was eventually transferred from 16'TT to Dryden.

(This story is from my personal knowledge – Bobby Berrier)

Note: Other NASA Langley facilities testing the F-15 include 643, 1212B, 1212C, and 1236.

Figure 1.- 1/12-scale F-15 model with thrust vectoring 2-D wedge nozzle.
Figure 2.- 1/12-scale F-15 model tested during wind tunnel/flight correlation program.

Figure 3.- 1/12-scale F-15 model modified into the F-15 S/MTD configuration with thrust vectoring, 2-D Convergent-Divergent nozzles and a canard.