X-31: FIRST INTERNATIONAL "X" PROGRAM

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ABSTRACT

The X-31 Enhanced Fighter Maneuverability (EFM) Program is the first international flight research ("X") program. The Program has the generic uniqueness of research; that is, research into new scientific endeavor. The X-31 Program will demonstrate the unique use of post stall flight for a tactical advantage in air combat. The X-31 Program adds to this the unique flavor of an international program. The German and United States governments are working in partnership; as are their contractor representatives Messerschmitt, Boelkow, Blohm (MBB) and Rockwell International (RI); to demonstrate the tactical utility of EFM using the X-31 research aircraft.

The Program is already well on the way to expanding the flight test envelope of the X-31 to an envelope that allows the planned in-flight demonstration of the tactical utility of EFM. Most of the planned conventional envelope has been cleared and post stall (PST) envelope expansion is underway. Once a sufficient envelope has been cleared, tactical maneuvering will begin. With completion of the planned envelope expansion, tactical utility will be demonstrated through one versus one, simulated air combat maneuvering (ACM).

INTRODUCTION

THE PROGRAM:

RI and MBB were both involved in advanced fighter technology in the early '80's. The governments of the two countries brought these companies together to combine their efforts towards concept feasibility of Enhanced Fighter Maneuverability (EFM); Phase I of the X-31 EFM Program. In the U. S., the Program is sponsored by the Defense Advanced Research Projects Agency (DARPA) and funded under the Nunn/Quayle international research and development initiative. The U. S. Navy has technical oversight for the Program. MBB is funded by the German Ministry of Defense (GMOD).

Phase II of the Program, spanning 1987 and '88, was concept validation and design. Validation was accomplished through analysis and simulation, and design of the X-31 EFM aircraft was accomplished.

Phase III included fabrication and assembly of the two X-31 aircraft, as well as initial airworthiness flights. First flight of aircraft one occurred on 11 October 1990, with Aircraft two following in January of 1991. Initial airworthiness flights were completed in January of 1991.

Phase IV of the Program is flight test, which is on-going today. Flight testing to open the conventional envelope (30 degrees angle of attack to