



Society of Flight Test Engineers
21th European Chapter Symposium
October 3 ÷ 6, 2010
AgustaWestland a Finmeccanica Company
Vergiate (VA) - Italy

Abstract

Title: "A new generation Training System".

In this paper we intend to propose a new generation training system based on a low cost variable stability jet trainer that we are developing that is known as the Phoenix FANJET (PFJ), and a new generation of simulators having the capabilities to simulate aircraft behavior in the full flight envelope including stall, spin and in general loss of control problems.

In reality, the present training methods are grossly outdated, time consuming and unnecessarily expensive. In the political/economical situation of the last 15 years, military markets and budgets were severely curtailed in most countries. There were very few new designs of military trainers introduced to the market. All of them are multi-role and very expensive to operate for most Air Forces.

Another important factor is that many governments are presently looking to farm out all Air Force training to privately operated business centres.

Presently there is no civilian certified acrobatic jet training aircraft on the world market. The new PFJ aircraft could be equipped with the existing technology, computer controlled electro-hydraulic system able to imitate the flying capabilities of various airliners.

Flight simulators that are extensively used for training pilots are in general very representative for normal flight but not able to simulate emergency conditions associated with loss of control, spin departure, and recovery from spin or loss of control. The National Transportation Safety Board says about 75% of the fatal airline accidents in the U.S. over the past 10 years could have been prevented with better flight simulators. Pilots do not receive sufficient training with in-flight



ERNESTO VALTORTA

Aeronautical Consulting and Manufacturing

emergencies such as an aerodynamic stall because most of the simulators currently in use cannot accurately reproduce such cockpit conditions. We agree with NTSB and we could improve the actual simulators with additional capabilities in order to have a good simulation in full flight envelope including loss of control, stall and spin recovery.

In our opinion, performing the evaluation, only in the low angle of attack region with such a big machine, is a relatively poor task. From our experience, it is not a big problem to simulate loss of control and in general all the manoeuvres associated with high alpha. The simulator responses are very representative and can offer a complete training to the student pilot, in addition having a jet trainer like Phoenix FANJET able to perform all the manoeuvres in flight. Together, they represent a complete training system.

ERNESTO VALTORTA

Dott. Ing. Ernesto Valtorta, Chief Technical Manager
Ernesto Valtorta Consulting
I - 21040 Venegono Superiore (Varese)
Italy