from: subLOGIC T80-FS1 FLIGHT SIMULATOR MANUAL

INTRODUCTION

Nearly everyone, at times, wants to go flying, and many of us would actually enjoy spinning toward the ground at 180 mph or being involved in an aerial battle. A few of us actually follow up on our interests and become private, commercial or military pilots, and only a small percentage actually ends up doing aerobatics and participating in dogfights.

The three things that stop many potential pilots and limit the active ones are time, danger and of course money. The aviation community has a solution to these problems, known as the "flight simulator". A flight simulator simulates the flight of a real aircraft and is initially quite expensive, but costs little per hour to operate.

Flight simulators costing less than a few hundred thousand dollars usually include no visual display and are of limited use in training visual flight rule (VFR) pilots. Without an out-the-window display, the thrill of watching the world from five thousand feet is gone (unless you have a vivid imagination). The most exciting simulators are undoubtedly the military ones with out-the-window displays, armament, and aerobatics capabilities. These simulators cost millions of dollars.

The subLOGIC T80-FS1 Flight Simulator is a program designed to run on a Radio Shack TRS-80 microcomputer with at least 16K of memory. It offers aircraft simulation that considers 23 important aircraft characteristics, an out-the-window 3D dynamic flight display, extensive flight controls, minimum VFR instrumentation plus additional instruments (18 in all), a radar display, and full armament (bombs and machine guns). The program is written in optimized assembly language and is capable of presenting 3 to 6 frames per second. In addition, "British Ace", an aerial battle game, is included.

Finally, anyone can beat the three limitations of flying for the price of a microcomputer and a T80-FS1 package. FS1 is subLOGIC's first flight simulator, and the TRS-80 is Radio Shack's first microcomputer. Both microcomputers and microcomputer flight simulation are in their early stages, and over the next few years improvements will be astounding.

Our choice of aircraft for the simulation was an early, first generation aircraft - the Sopwith F1 Camel of WW1. This aircraft offered room for refinement (witnessed by today's "Phantom Fighters") as does our the simulation. The aircraft's characteristics (weight, length, ceiling, horsepower, topspeed) incidentally, are nearly identical to those of a Piper Super Cub 150, making it an ideal light aircraft for training.

Improvement of FS1 is already underway. The T80-FS1 is the second version of the FS1 program. Feedback from users of our initial Apple II version of FS1 has been used extensively in the TRS-80 version. Selectable downward view, bomb sights, visible enemy gun blasts, and a "simulation reset" command were all added to the FS1 since the introduction of the Apple II FS1. TheT80-FS1 also has slightly higher frame projection rate than the Apple version.

The FS1 has not been tested for pilot training effectiveness, and we aren't sure if it will make you a better pilot. The subLOGIC staff members however, are pilots and agree that the FS1 "flies" surprisingly like a real airplane; so much so in fact, that no special routines to accommodate aerobatics were needed. They worked well with the straight simulation.

The simulator and the aerial battle game will now be described. A note of caution is in order first .You must be familiar with the control functions, instrumentation, gauges, aerial maps, taxi charts, and aircraft behavior before taking off. You must, in other words, "attend ground school" by carefully reading this manual. This is especially true if you are not already a pilot. Aircraft act in unexpected ways. If you fly along at a constant speed and altitude and decrease the throttle, the aircraft speeds up for example. If you would like to know more about the reasons for this behavior, a book such as "The Student Pilot's Flight Manual" by William K. Kelshner should be read.

Also, don't try and fight the enemy if you are not familiar with your aircraft and have not logged enough flight training hours. The German pilots you are up against are very formidable and will shoot a beginner out of the sky!

Bruce Artwick (1980)