

# **CFS2 Flight Tuning** **For Improved AI Performance**

By Tango\_Romeo

*Software required to carryout this activity: AIRed or Aircraft Airfile Manager and NotePad.*

So you have this fantastic airplane that flies beautifully as a player aircraft, but as a wingman or AI exhibits extremely poor performance? Of course, all of us do and the problem can be corrected.

Since I have recently 'repaired' some of these problem aircraft, a number of folks have asked me how to do it. Therefore, I have elected to produce this short tutorial on the process.

What follows is not an in-depth technical treatise on AIR and CFG files. I'm simply going to tell you how to give your favorite player aircraft dazzling wingman/AI performance using a simple method that will work 99% of the time.

To begin, the simplest way to determine whether or not your prize airplane is also going to perform in AI mode is not to put it in QC or a dogfight mission. What you want to do is hang some bombs and rockets on her, and put her in a simple mission as a wingman or AI flight with a ground attack assignment. If your aircraft, will deliver weapons on an assigned target (bombs, rockets and strafing), chances are she will perform well in a dogfight too. A caution here: the test target must be located on level terrain.

Test performance that indicates a problem consists of the AI flying around a target without attacking, making an attack pass without releasing weapons or making a pass and releasing weapons then crashing. If your plane exhibits any of these tendencies as an AI, you have some work to do.

The most common items that require some modification to enable the AI to work properly are called MOI settings (and 99% of the time they are the culprits). That's Moment of Inertia. There are MOI settings for Pitch, Roll and Yaw, with Pitch being the most critical. These settings are normally found in the AIR file (Section 1001), but may be found only in the CFG (aircraft.cfg) file, or they can be present in both of these files. The explanation of this variation will come shortly.

What is MOI? The simplest explanation is that it is the amount of force required to move the aircraft in that particular axis.

And the problem is that the MOI settings that are realistic and work quite well for the player aircraft are usually twice (or more) as high as the maximum the AI can

effectively handle. This difficulty in overcoming the MOI numbers causes the sim to refuse to dive an aircraft because the sim knows it will not be able to pullout of the dive. If the numbers are close to what the sim can handle, it may dive the aircraft and find it has to pullout before reaching the release point for the weapons. And if the numbers are very close to what the sim can handle, the AI will dive the aircraft, release weapons and then not quite be able to recover. This very same difficulty in overcoming MOIs that are too high, prevents the AI from flying effectively in a dogfight. The result is AIs that refuse to engage.

To solve this problem, we are going to need two sets of MOI numbers, one for the player and one for the AI in the same aircraft folder.

And here is the reason we can have two sets of MOI numbers in the same folder:

- When the sim loads a player aircraft, entries in the CFG file take precedence over those in the AIR file.
- When the sim loads an AI or wingman, settings in the AIR file take precedence over those in the CFG file.

Now that I have probably confused you totally, I'll show you an example of this in the F9F2 that Fox Four started with for the Bunker Hill campaign. The aircraft flew wonderfully as a player but would do absolutely nothing in the AI role.

The CFG file contained no MOI settings. Those were found only in Section 1001 of the AIR file, which is quite normal, and this is how they appeared, and how they were modified:

Roll 42541.....Changed to 8146  
Pitch 28357.....Changed to 13244  
Yaw 45678.....Changed to 18059

Now when the AIs are loaded by the sim with the AIR file taking precedence, the MOI numbers are low enough for the sim to handle.

Next, the original MOI settings, the ones that work well for the player aircraft were inserted into the CFG file like this:

```
[WEIGHT_AND_BALANCE]
empty_weight = 10069
empty_weight_pitch_MOI = 42541
empty_weight_roll_MOI = 28357
empty_weight_yaw_MOI = 45678
```

Now when the player aircraft is loaded with the CFG file taking precedence, the original MOI settings are available.

With these modifications in place, the F9F2 became an effective ground attack aircraft in wingman and AI modes, delivering bombs and rockets, as well as strafing runs. It also became a very effective dogfighter. And this same formula was applied to all Fox Four aircraft with the same excellent results.

How much do you need to reduce the MOI numbers for the AI to handle them? I suggest reducing them by 50% at a time until you get results.

DISCLAIMER: This has been an attempt to make a complex subject relatively simple, but there are times (rarely) when problems exist in other areas of the AIR file that will render this method ineffective. AIR files are complex documents and there are numerous entries that might require attention.

And ever so often, you will actually stumble on an aircraft whose MOI numbers for the player and AI are so close together that no adjustment is required at all. This is also a rare occurrence.

Most of the research and development done in gaining the information above was the work of Mike Eustace (IndioBlack) at Fox Four. Any errors contained here are solely mine, as is the blame for any lack of clarity.

I hope this helps some of you along the way to a smoother CFS2 experience.

Tom Sanford  
Tango\_Romeo  
[sanfordze@bellsouth.net](mailto:sanfordze@bellsouth.net)

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@Tom Sanford, Sanford Associates, 2008