AVSIM Commercial Aircraft Review

Leonardo SH
Maddog 2008 Professional

Product Information		
Publishers: Leonardo SH - Fly The Maddog		
Description: Add-on of the McDonnell Douglas MD82.		
Download Size: 217 MB	**Format:** Download	**Simulation Type:** FSX & FS9

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(with assistance from Proflig8tor)

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Due to the length and complexity of the review, we've – Angelique and Proflig8tor – decided to add a table of contents:

Introduction

We both look forward reviewing this product from Leonardo SH with their McDonnell Douglas MD82 Series or should I say the Maddog 2008 Professional. I have been a licensed ground engineer on the Super **DC-9-82** and in general, an MD80 Series ground engineer. Proflig8tor flew these as a newly hired pilot at his first major airline job. You could think "another add-on vendor who thinks he's the best" but this time it is like that. Surfing to their website and looking to all the screenshots gives me the impression and feeling that this cockpit is really awesome and not only the cockpit, but also the flight characteristics. The cockpits are based on digitalized images and this really offers a tremendous real look.

Let's first look on the Maddog website and see what they want to tell us about this Mad Dog. Available for FS9 and FSX, Fly The Maddog is one of the most sophisticated and complete add-on's developed for Microsoft Flight Simulator. The accuracy of the cockpit and systems simulated is very high and there are many features which add realism to the simulation and are not present in standard FS aircraft. It includes the following key features:

- Highly detailed VC and 2D panels, up to 1600x1200, with vector graphics displays (GDI+).
- Realistic flight dynamics, tested by active MD80 pilots.
- Complete CM-1 and CM-2 instrument panels with functionally separated instruments.
- Dual/multiple systems simulation (DFGS, FD, CADC, EFIS, AHRS) with switching.
- Full electrical system simulation including working overhead breakers.

- FMS – Flight Management System.
- DFDR – Digital Flight Data Recorder.
- TCAS – Traffic Collision Avoidance System.
- WAGS – Windshear Alert and Guidance System.
- EGPWS – Enhanced Ground proximity Warning System.
- Weather Radar.
- Full dimming cockpit lightning and backlighting.
- Brake degradation with wet or frozen runway and with brake overheating.
- Realistic icing on flight.
- Auto/Manual pressurization system.
- More accurate flight model and engine parameters.
- Integrated Load Manager and Route Planner application.
- Control Panel application for ground services, failures and instructor control.
- Multi crew operation between two PCs connected via TCP/IP.
- Possibility to save and reload the panel state (even in flight).
- Customizable panel (main color, FD style, FMA arm modes, etc.).
- Digital sounds set recorded from the real plane: engine, APU, batteries, air conditioning, passenger signs, clicks, cockpit noise, boarding simulation ...a true immersive sound experience!

That's an impressive list and there's much more and no need to add all of that here. It's our job to find out what the Leonardo SH Maddog 2008 Professional offers.

The Maddog Legend

McDonnell Douglas MD-80 Series

The McDonnell Douglas MD80 Series – unfortunately later on part of the Boeing Commercial Airplanes group – is a quiet, fuel-efficient twinjet, which was certified by the Federal Aviation Administration in August 1980 and entered airline service in October 1980. Its Pratt & Whitney JT8D-200 Series engines, combined with its efficient aerodynamic design, allow the MD-80 to meet all current noise regulations while producing operating costs among the lowest in commercial aviation.

Four MD-80 models -- the MD-81, MD-82, MD-83, and MD-88 -- are 147 feet, 10 inches (45.08 meters) long and accommodate a maximum of 172 passengers. The MD-87 is 130.4 feet (39.76 m) in length, with a maximum passenger capacity of 139. Wingspan for all models is 107 feet, 10 inches (32.88 m). The MD-80 was produced at the Long Beach Division of Boeing Commercial Airplanes until December 1999. The MD-80's nonstop range is from 1,500 to 2,700 statute miles (2,410 to 4,345 kilometers), depending on the model. The MD-81's maximum takeoff weight is 140,000 pounds (63,503 kg); the MD-82's and the MD-88's are 149,500 pounds (67,812 kg). The longer range MD-83 has a takeoff weight of	

160,000 pounds (72,575 kg). The MD-87's maximum takeoff gross weight is 140,000 pounds (63,503 kg), with an option to 149,500 pounds (67,812 kg).

Operators range from the largest foreign and domestic trunk carriers to new startup airlines and charter operators. Swissair and Austrian Airlines began the first service, while American Airlines operates the largest number of MD-80s, a fleet of 275.

In addition, 35 MD-80 airplanes were assembled and are operating in the People's Republic of China. Much more information can be found on the Internet but I think this link will give you a very good impression of this Mad Dog.

Getting to know the McDonnell Douglas MD-80 Series

Consider this remarkable fact. This spring Delta Airlines is transferring flying from its 757's and Airbus Fleet to the MD88 and former Northwest DC9's. Despite the availability of much newer and more efficient aircraft, these tough and durable workhorses remain the backbone of the world's largest airline's domestic and close-in international system. How can it be that a design first put to paper in the 1950's has not only survived a dozen competing aircraft, but even the companies that built them?

The secret is the DC9-55, renamed "Super 80," and finally called the MD80, is a very simple and robust airframe. Consider the published limitations & guidelines*:

- Gear extension – 300 Knots Indicated
- Flaps 11 – 270 Knots Indicated*
- Flaps 15 – 230 Knots Indicated*
- Max Takeoff Weight: 147,000, or 149,500
- Max Takeoff Weight limited by structure after serial number 1194 is 160,000lbs!

Conclusion: The airplane is built like a tank!

Over the years a simple, small, DC9 was stretched, stretched again, stretched again and stretched three more times. Like a 1950's hot rod, the engines got bigger, the wing was extended from the tips and the center section, and fancy new radios were bolted in the dash. Like a 1950's car, it has simple cables going to most of the controls, the brakes are not that good, the steering is a little loose, you have to watch the engines to keep them from overheating and sometimes it just is not as reliable as a newer design. However, it will drive up the road safely if operated within its limits and it does not come with big payments.

		
Jeep	Jeep, stretched	Jeepney
		
DC9	DC9-50	MD80 Series

Parallel Development of the MD80 Series & the Philippine Transportation System
Courtesy of Airliners.Net

Douglas's design philosophy was to refine existing products instead of designing new ones. Consider the elevators, independent floating surfaces controlled by cables to a simple trim tab. As the airplane grew, geared tabs were added to help drive the elevator and anti float tabs and finally as the long tube's CG range made deep stalls a problem, a hydraulic servo augmenter was rigged off the left system to drive the elevator down and vortilons were added to help get the nose down, making stall recovery possible. The Mach trim compensator mechanically moves the First Officer's control column aft at Mach .80. If that sounds like a lot of stuff to avoid simply installing hydraulic power to the elevators, you're right!

MD80 pilots are a special breed. While Boeing and Airbus pilots comfortably drive their aircraft with minimum effort through nicely coordinated hydraulic controls, the MD88 pilots pull on cables, quite literally. Bleed valves are attached to handles on the floor, the flight controls are actually small cable operated trim tabs. These servo tabs act as tiny flight controls that move the trailing edge of the elevators and ailerons.

nstead of nicely integrated electronic flight decks with EICAS, position sensors and system schematics on glass, the MD80's are a collection on different systems by different manufacturers that do not necessarily interact with each other well. The auto throttles roll back, then surge (called a "throttle burst"), sometimes the FMC is painfully slow and this results in problems with the autopilot, VNAV and auto throttles, the hydraulics can be quirky, the ground spoilers sometimes fail to deploy on landing and the brakes are grabby.

In the Boeing and Airbus community pilots expect their airplanes to work normally. In the Mad Dog world, you are taught to assume your airplane's automation might not work and some sort of manual intervention is expected. Every quirk has a procedure the pilot must memorize and deal with.

So why then is the MD80 popular with pilots and operators alike? First, it is cheap to operate as cables are lighter than the hydraulics, with remote switches and relays to command monitor those systems. Compared to a 737 of similar capacity, the MD80 weighs about 10,000 pounds less and pushes a smaller tube through the air. A new 737 is a $65,000,000.00 purchase, while perfectly serviceable MD80's can be had from $3.5 to $9 million.

From a maintenance standpoint, the MD80's are simple and this translates to real dollars as a heavy maintenance check on a 757 is rumored to be much, much, more expensive. On short flights, the greater efficiency of newer designs simply does not have the flight time to pay back the high acquisition cost. From a pilot's perspective, the direct mechanical control provides a tactile feedback the newer airplanes lack and mastering the Mad Dog is a source of pride.

Installation and documentation

Installation

The installer – running under Windows XP - is straightforward and works without any problems for both the FS9 and FSX version. By the way; the FSX is only a ported FS9 one, thus it's not built from scratch for FSX or native FSX. Once the installer is finished you can't miss the registration window. Even this process worked for me and my associate without any problems. Once the registration is verified, the database is automatically loaded. It doesn't mean that the database is up-to-date. You still need to update the AIRAC database but that's for later.

The Maddog 2008 Professional comes standard with only one livery, one of the original factory liveries. Not very impressive but on the other hand, no unnecessary clutter on your hard disk with lots of liveries you'll probably never use. You can download two livery packs, which were originally intended for the Maddog 2006 model, but those can be used directly for the Maddog 2008 models.

Not enough? There are lots of AVSIM liveries available, so don't worry if your favorite airline is not packed in the default Maddog package. Let's have a look to those Leonardo livery packs. It comes in two flavors; general airliners with the round tail cone and a livery pack for Meridian Airlines with the screw tail cone.

After you've done all these steps, the installer created a "Fly the MADDOG 2008" for FSX (FS9) shortcut. Here you find lots of manuals and believe me, there's a lot to read unless you're an active mechanical/avionics ground engineer or active MD80 Series pilot. Ok, what else is available other than these manuals; an uninstaller which explains itself and three programs:
- the **Cleanup**
This utility will scan all the procedures files in the Maddog2006\Routes folder and correct any incompatibility.
- the **Control Panel**
This includes an automatic failure generator which simulates aircraft system failures. Furthermore, you're able to retrieve

actual and detailed aircraft data like aircraft position, flight controls deflections, autopilot outputs and many other useful data.

- the **Manager & Setup**

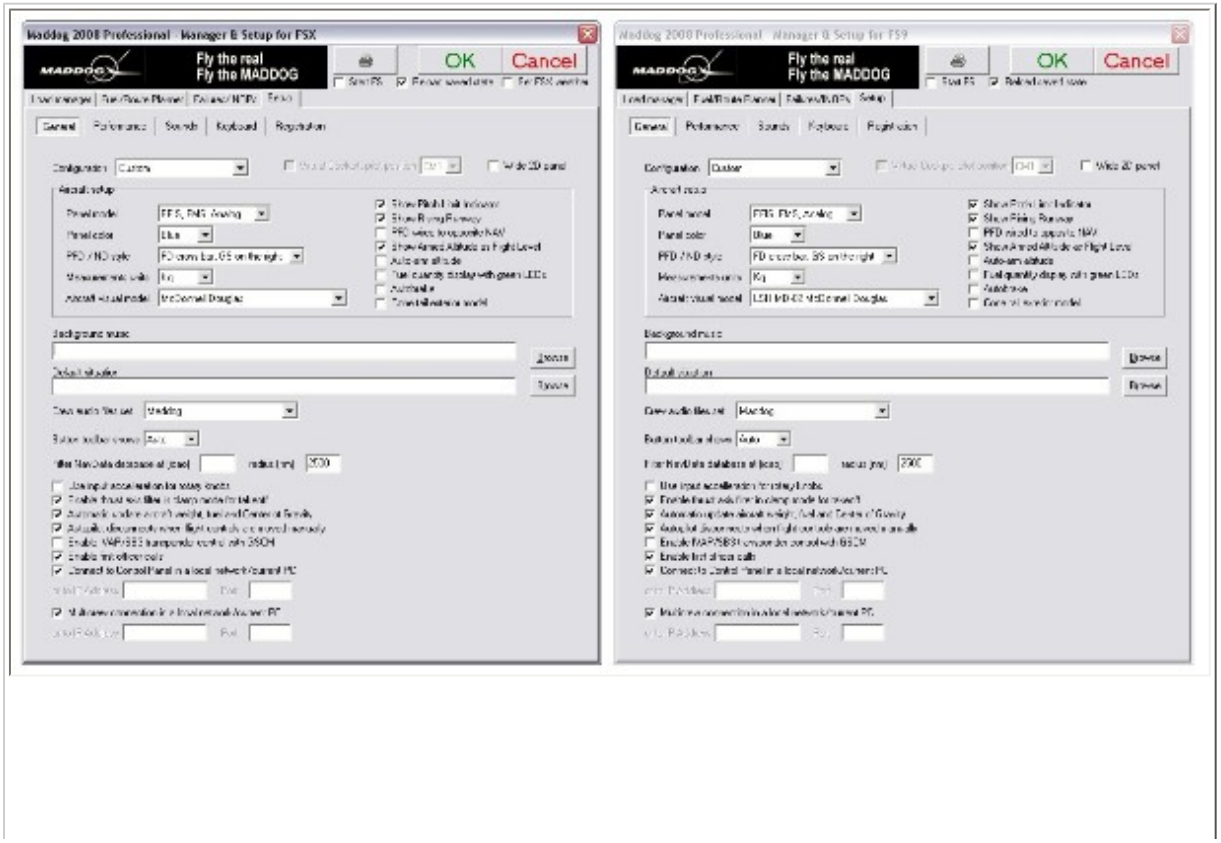
This sub program offers you several tabs like how to control your Weight & Balance (Load Manager), Fuel/Route Planner and Setup facilities. You can choose to manually enter a complete flight plan with airways here or do it later on the FMS or PMS CDU. The fact that you're able to compile a complete flightplan outside the MSFS environment makes it a useful tool. There's no need to go into every detail, but I can tell you that together with the description it's really great and above all, it's user friendly. The print option brings it all to life and all together it looks like the real ICAO papers.

We're finished this part since the setup tab offers much more. It's divided into General, Performance, Sounds, Keyboard and Registration tabs. Most of it is well explained in the manuals but some words about the "General" tab and then in particular the available cockpits with or without a VC.

The Maddog 2008 Professional comes with three different cockpits (panel model):

- EFIS with FMS (including a VC for position CM1, CM2 or CM3)
- EFIS with CMA900 PMS (work in progress for customized VC)
- EFIS with FMS and analog engine instruments and old style Overhead Annunciator Panel (no VC available)

Furthermore, there's an option available for wide 2D panel corrections. Since I don't own this, I can't judge it this really works out. Other settings are more or less the same as with the previous Maddog 2006 or Maddog 2008 Standard aircrafts. So it turns out that this small program offers lots of adjustments and checks.



Just to give you an idea that both MSFS versions are more or less similar except for some very tiny details. On this Setup page, FSX offers the “Set FSX Weather” but apart from this, that’s it.
BTW, right of the Configuration settings, the Virtual Cockpit is grey and only available in combination with the panel model **EFIS, FMS**

The Maddog 2008 Professional FSX is a ported FS9 model. This means it’s not a native FSX model. However, it is compatible with FSX SP1, SP2 and the Acceleration Pack. The model runs under Windows XP and Vista for both 32 and 64 bit OS versions but it’s not DirectX 10 compatible.

Also, you will find that a complete navigational database for the FMC is not included in the package you purchased. To use the full capabilities of your Flight Management Computer, including Instrument Departures and VNAV Arrivals, you will need to obtain a database from a third party vendor. We like the database from Navigraph for approximately $10 and there are out of date freeware data packages available for download. Unfortunately, there’s no installer included for the AIRAC updates. We’re dealing with two things; the **AIRAC cycles** and **terminal procedures** (SID/STARS).

Together with the help of Davide Marras – one of the Leonardo SH developers – and a frequent forum and several Maddog lovers, I received and tried out the following procedures successfully.

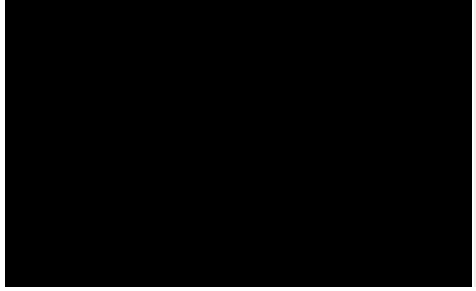
Regarding the **AIRAC cycles**; you should download and install the latest PMDG AIRAC and as a result the Maddog 2008 Professional FMC CDU will look for the file in the default directory (fsroot\FMCWP). On the MD82 CDU it can be confirmed that your AIRAC cycle is updated.

To use the **terminal procedures** is a little bit difficult but let’s give it a try:
1. Simple install the PMDG terminal procedures to the default folder (%fsroot%\PMDG\SIDSTARS)
2. Run the converter tool. It can be found via this hyperlink.
Source Folder = %fsroot%\PMDG\SIDSTARS
Target Folder = %fsroot%\Maddog2008\Routes

Before we finish this sub chapter, there’s some additional information we’ve got for you; The offered converter isn’t perfect and a lot of terminal procedures are not available. The problem is that the Maddog 2008 and PMDG don’t use exactly the same syntax, which results in some commands (for example intercepting radials, take a look to the User Manual Page 44) won’t be executed. Ok, we'll leave it with this!

Installation and Operation (FSX / Vista)

Test System



There are easy procedures to have your MadDog 2008 working reliably in FSX under Vista. If you have this configuration you might want to select and print this list to avoid hours of web board searches and experimentation:

Problem 1 Will not load in Vista, or will not load from your Flight Sim . Solution, load from the “Manager and Setup” application in the “Fly The Mad Dog for 2008 for FSX” in your programs list. You will then launch FSX from the “Manager and Setup” by checking start FS and clicking OK.

Problem 2 Crash to Desktop. Leonardo / MadDog’s panel and aircraft seem ripe for hitting your 32 bit operating system’s limit for tagging memory. Here’s a

thread discussing the most promising work around.

Problem 3 Aircraft textures do not load, just a bright white object. Solution, disable Direct X 10 preview.

Problem 4 A complete FMC navigation database is not there. You will need to either obtain an older out of date version from the AvSim file library, or for around $10 US get a subscription to Navigraph's data, which has other benefits as well.

1) In Navigraph's site find the PMDG (all products) data and notice that it has a YES in the TP column meaning Terminal Procedures are included. Download it, run it, and it will install to a PMDG folder in your Flight Simulator root directory

2) Copy the six files which you will find in the PMDG/NavData folder into the FMCWP/NavData folder and into the Maddog2008/Routes folder.
The file fmc_ident.txt contains the airac version information displayed by the FMS.

3) Then copy the PMDG/SIDSTARS/* into the Maddog2008/SIDSTARS folder.

It was not necessary to use any sort of converter to use the Navigraph data in MadDog 2008 pro. We understand Navigraph is working on building a MadDog 2008 installer program to avoid the effort of manually copying the files, like we did.

Angelique's PC specs:
Dell Precision Workstation 650
Dual Intel P4-Xeon 3.06Ghz
4Gb RAM DDR 533Mhz
nVidia 7800GS+ 512Mb AGP
RAID-0 HDD's - SCSI 340Gb
Windows XP Professional SP2
Flight Simulator FSX SP2
Saitek Pro Flight Rudder Pedals
Saitek ProFlight Yoke System
TrackerIR Pro 4
TrackerClip Pro

Proflig8tor's PC specs:
Intel E6600 Clocked at 3.0Ghz
2Gb linked at 667Mhz, 1333 FSB
NForce 680i
GeForce 8800 GTS
RAID 0 Configuration, SATA
Microsoft Vista SP1
Flight Simulator FSX, SP1+ Accel

Flight Test Time:
80+ hours

Documentation

Writing manuals is not easy. You may think it's easy …but believe me, it isn't! Most of the time, manuals are written by the gauge or panel programmers/designers themselves with a result that those manuals are not that clearly written or full of failures or are not readable at all. These Maddog manuals are, in that respect, different.

First of all you've got a 48 page **User Manual** with information related to post-installation items, then you've got the quick panel reference overview, and the Maddog control panels etc. Altogether, a pleasure to read and well didactical written document.

Ok, next manual; the Operations file. It's divided into Volume 1 and 2 as in real life where volume 1 deals with all aircraft systems. Both volumes are sub-divided in chapters. All the volume 1 chapters are well documented with the needed necessary pictures. Volume 2 deals with procedures and performance information although there's one chapter that needs your attention. This chapter – Conditional Procedures – explains more or less everything about all the different management systems. The 2008 Professional comes standard with three FMS/PMS systems; FMS CDU, PMS (Performance Management System) CDU and the CMA900 FMS system. This 71 page manual should be enough to get a good idea of how to handle all the different configurations.

Additionally, there are other real life manuals like a MEL (Minimum Equipment List), performance tables, checklists, procedures and more.
Although I did my best to offer you the necessary information, find here the direct link to all the Maddog 2008 documents. Yes, that's right … before even buying it you can download the manuals and start studying them.

The last English manual, or tutorial, is a flight from LIRF (Rome Fiumicino) to LIEE (Cagliari Elmas). The moment you

open this manual it seems it's originally for the Maddog 2006, which doesn't make any difference except that this Maddog model offers three different panels and only one is explained in the tutorial. Just to give you an idea; the PMS is a totally different management CDU and can't be compared to the original Maddog 2006 FMS. Anyway, there's another item and that's the availability of the tutorial files. These two files - MadDog Tutorial (NO ISD).FLT and MadDog Tutorial (NO ISD). WX is only available for FS9 and FSX.

Incoming note from Davide Marras (Leonardo SH);" *There are plans making a special PMS flight tutorial but there's not yet any release date available*"

The MD82 aircraft

Where and what shall we start with? There's so much to tell and to write about this Mad Dog model. We could start with the external model, different 2D cockpits, the VC followed by …. I don't know. Ok, let's start with the cockpit and then in particular, the 2D ones.

Proflig8tor is taking the FMS configuration, while I'll take the PMS version with analog engine instrument and the old style annunciator panel. For me it's as close as possible to the one I worked on. The Martinair Holland DC-9-82 (Super 82) had old style HSI and ADI instruments, but with analog engine instruments and the annunciator panel. Anyway, I'll take this **2D cockpit** and the moment I opened it, WOW!

2D Cockpit

With the help of the Manager & Setup program, you're able to add or remove your wishes like the panel color. Regarding the panel color I can add this; it comes in two flavors, a pink or sea blue panel color. Does it look nice? No, but in the real airplane it doesn't look nice either, but from what I can remember, it's very well reproduced. It's because my PC doesn't offer depth, and because I can't thouch with my bare fingers any switch, selector, button or whatever else, I would say this is as real as it gets.

We all know that using digitalized images or hand painted panels is a programmers or painters philosophy. You either like the photo realistic ones or you like the "as real as it gets" hand painted panels. No reason here to discuss this item since we're all different people with different thoughts, but looking to the Maddog 2004, 2006 and 2008 models, it was always the same high quality and it seems without any compromise. Ok, not completely true since the FPS was always a problem. That's for later.

These Maddog 2008 Professional models have, like the previous ones, their own way in showing you and getting access to, additional panels. Until now, I still like the way they do it but at the same time it's a personal opinion. Whatever you like, there's enough choice of add-on panels and all are of the same high quality.

Let's first have a look before kicking those panels. I've made a choice of some pink and blue ones. I like the blue ones more than the pink but that has to do with my old Super 82 license. All the screenshots are based on the FS9 cockpit since there's no difference with the FSX. Remember what I wrote in the beginning – I hope I did – that the FSX is just a ported FS9 model. All what's available in FS9 is just compiled for FSX. That's it and nothing more. This also means – it has nothing to do with the cockpit – that you don't get a native FSX model.

		
Screenshot I Captain's kitchen with analog engine instruments	Screenshot II Co-pilots workspace and APU running	Screenshot III Highly realistic overhead panel with old style annunciator
		
Screenshot IV AFT overhead panel	Screenshot V Collection of sub-panels like ENGINE START and pedestal	Screenshot VI Collection of too many sub-panels, ok than FMS CDU and side controls and TO/landing data card
		
Screenshot VII Main instrument panel integral lighting in pink condition	Screenshot VIII Pink panel with again too many sub-panels like PMS, PFR/ND and much more for later	Screenshot IX Foggy morning condition with pink co-pilots seat without any clutter of sub-panels

Not bad, not bad at all! I know, not everybody prefers digitalized material to built a 2D cockpit but these pictures are of a very high quality resulting in a very realistic 2D cockpit. With this quality there's absolutely no need to recreate or paint handcraft own bitmaps.

Shall I add something to this? Yes, I need to but I don't know what. I've got something; I miss the smell - ? – of the

instruments, the paint, the heat produced by some of these older energy consuming instruments and so many light units with traditional old fashioned bulbs. I lost the typical name of the bulb, but I know they produce a lot of heat. Apart from that, what I see are real MD82 main panels and many sub-panels. I can't stop, but while typing and virtually looking around in this 2D cockpit, I would like to grasp a switch or turn the EHSI or EADI potentiometer (or is it the PFD and ND?), that's how real it looks. I'm not joking and Proflig8tor, who was a real MD88 pilot and hopefully he will be again, knows exactly what I'm feeling.

What else? All the "normal" screen bitmaps are based on a resolution of 1600x1200. For the wide screens, there are a couple of 1920x1600 bitmaps available. Altogether it offers high quality images on your screen and thus making the "2D Maddog sensation" even better. Finally you've got – not unusual – via the NumPad access to the different side angle views, based on photographical images but remember, this is only true for FS9. FSX doesn't allow the use of bitmaps for side views like in the 2D mode, and thus these are replaced by VC images.

Did I cover every tiny part of the 2D cockpit? I've probably I've forgotten a few things, but this offers you a good idea of what, how and when you should chose this cockpit. While hanging around here it's a good moment to jump into the **Virtual Cockpit** of the Maddog 2008 Professional. BTW, Proflig8tor comes with his own 2D cockpit experience, so watch out …….!

Virtual Cockpit (only EFIS/FMS version)

Oops, the header starts with "**only EFIS/FMS version**" and unfortunately this is true. On the other hand, that's also the consequence of creating different 2D cockpit lay-outs and thus the need for different VC's. Ok, as said before; the only current available VC is the one with the EFIS and FMS equipment. It's time to contact Davide Marras from Leonardo SH, to ask what's coming next.

His answer was very clear; they are busy creating a VC for the CMA900 PMS cockpit, but there will be no VC with the analog engine instruments and old style annunciator panel. That's a shame to be honest but on the other hand, we can't change this and for me it's more important that the "current" offered VC works fine with good FPS and looks good. Remember, offering already three different cockpit lay-outs with different VC's are much more than with other add-on vendors.

Enough about this, it's time to check and see the Maddog 2008 Leonardo SH Virtual Cockpit. Is it just as impressive as the 2D version? That depends what you want to hear or what to expect. For me, it's not fully the WOW factor as with the 2D cockpit. The VC is a little more … how shall I write it down? Let's first have a look to some screenshots, which writes a little easier when making the necessary comments:

Panel overview
FMS+EFIS configuration

Close-up of captains EFIS,
altimeter and IVSI

Detailed look to the
left .. oops … right side

FGCP (Flight Guidance Control Panel) and overhead panel

Cockpit overview

Captain not in place but cockpit seat is!

A nice impression of the available Virtual Cockpit; only available means here a VC equipped with EFIS (Electronic flight Instrument System) and FMS (Flight Management System). It's available in the colors blue and pink, which can be controlled via the external Manager & Setup program.

Ok, what's your first impression? Right on, let's first start what I think. Not bad at all and compared to others it's even better but there are also a few VC programmers/developers who create even more realistic ones. Hold on since this is partly a colored statement. The others I'm thinking about are those VC developers who create the complete VC based on digitalized images and it's so difficult to tell you and to convince myself, which is better.

Let's give you an idea. Our recent reviewed PMDG MD-11 VC was mainly created and based on high quality handmade panels with some digitalized material here and there. On the other hand, in my recent Just Flight / CLS 747 Classic review, the VC was more or less 95% based on digitalized material. Which one is better? You may say it!

Looking closely at the Maddog 2008 VC, I must conclude that the impressive highly photorealistic quality of the 2D cockpit is lost, or is it that I'm too critical and always looking and finding something? No, that's not the case. I have to admit that even a real new MD82 cockpit in blue looks a little strange, unreal is probably a better word. Believe it or not, but in real life the panels in the MD82 are simple made of Aluminum and just painted. There's no backlight like in the MD-11 or Airbus airplanes. With that in mind I must say, not bad, not bad at all!

Is there then really nothing I don't like? Oops, there's something and that's the pilot seats. I'm happy I don't have to sit for hours on these virtual cockpit seats. Those Leonardo SH seats are a little spartan, but apart from these seats, missing scratches on panels or in general "a secondhand cockpit", quite satisfied.

As far as my knowledge goes, I tried with the help of a Continental Airlines FCOM (Flight Crew Operating Manual) and AMM (Aircraft Maintenance Manual) several cockpit checks on the overhead, and main instrument panel, an APU start, a normal engine start etc. Regarding the engine start, the following item; I've seen this on related forum postings many times on the Fly the Maddog forum that people start asking and complaining about the complicated engine start procedure.

I can tell you what I know, it's an easy and great Pratt & Whitney engine, but the start sequence with belonging temperatures, N2 RPM before FUEL ON must be strictly obeyed. When you don't follow this, you're lost. The same engine temperature problem happens when you think you can set high thrust settings while the engine is cold. Cold means, by the way, when the engine was shutdown for more than 2 hours ago. When you don't obey this, the EGT temperatures will raise too much and gives you problems. It seems that for at least 90-95% of the systems are very well simulated.

Other things which are simulated are, for example, the AUTO SLAT extend and testing as well as the AUTOLAND TEST. All works as it should and Proflig8tor could even confirm that the AUTO SLAT test works according to the books, which means times and responses are as they are in the real MD82.

You may notice that the lower EFIS display is blocked by the yoke and that some of the controls are blocked by other controls. Frankly, Douglas built this airplane to be easy to build, not easy for the pilots. This is the way the real MD80 is and you will probably have to pull up the overhead panel repeatedly to run pre-flight checks and engine starts.

Depending on your PC specifications, when changing from any view/mode to the Virtual Cockpit, it takes a long time before all the panels are loaded, thus the whole cockpit is available. After this longer loading process, moving around in the VC is pretty good. I measured during ground sessions with all sliders to the right (FS9), an average FPS of 15-18; while in flight it went up to 20-25.

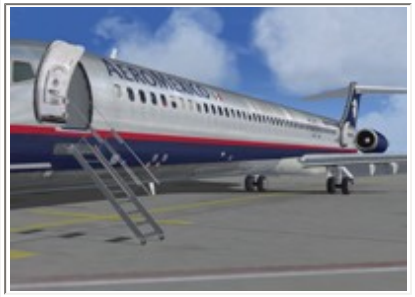
For FSX these figures are, of course, much lower, at least on my PC. Proflig8tor noticed some disturbingly low frame rates as low as 9 FPS in FSX / Vista and had to adjust sliders to get a more acceptable 15 to 20 or more. With his RAID set up, the load times were instant. Conclusion, our compliments!

External model including the virtual cabin

How real is real? Now it's time for me to dig into my memory and try to get something back of those good old days. I think the best that we can do is complete a walk-around check as I did in those days. Not a walk-around check as a pilot but as a ground engineer. I've noticed that there's no pilot yet out there, so let's move the slats and flaps FULL down, landing gear DOWN – oops, that's already DOWN and LOCKED – and gear doors open.

No way! That's not possible as well as it's not possible to remove the engine inlet covers, since it's not simulated. That's ok for me. All those funny things are nice but to be honest; I would first like to see a good looking model and cockpit. The rest, external equipment or catering trucks and the rest can be simulated including a virtual cabin, that's not on my priority list.

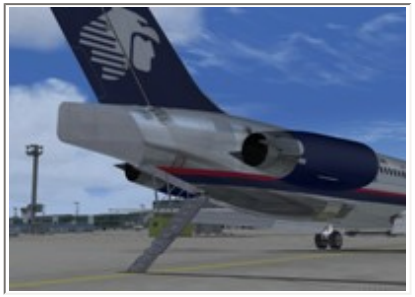
Ok, walk-around check. I'll start at the nose and via the RH side, RH wing, RH engine via the tail, passing all the LH items, I'll return back to the nose gear. Come on, sit on my back but don't move, here we go.



Screen I
Overall view of fuselage, FWD PAX door with stair

Screen II
Average detailed nose landing gear

Screen III
FWD CARGO hold and extended SLATS

		
Screen IV Average quality of the main landing gear	Screen V Nice view of the RH wing with fuselage and extended FLAPS	Screen VI Tail impression with screw tail cone and opened stair
		
Screen VII No, the AFT CABIN DOOR is unfortunately closed	Screen VIII Just a quick check of the flight controls from the ground	Screen IX LH wing tip with extended landing light, slat and flaps full DOWN

It's 30 minutes later and we've checked more or less every item what can be expected of a virtual aircraft. Although I did my FS9 walk-around check, doing it with FSX would result in the same output. Ok, the environment is better but the aircraft is the same since FSX features are not fully applicable. Looking at these screenshots made during my check, I must conclude that the average look is good although certain parts or paintings are not as sharp as possible.

You can see this for example at the close-up shots from the nose and main landing gear. Not too many details here at the landing gear. The same can be noticed with the tail and bare Aluminum skin. Ok, the overall look is satidfactory and when Leonardo SH agrees with McPhat Studios, these Mad Dogs will become available with those high definition liveries. For now, I'm satisfied. I've seen better liveries but currently there's nothing else on the market.

While looking around, we'll see that the cargo holds are simulated but don't expect too much. The same with the virtual cabin. Here it's not a matter of something, no, here's no cabin at all simulated, so no way to sit and relax during your business flight or do you sit in the coach (monkey) class?

Disappointed? I'm not, since for me it's the least interesting part of a simulated model. When you're interested in a virtual cabin, then this is something to keep in mind since the Maddog 2008 model doesn't offer this. My opinion is and stays that I prefer to have a well developed VC and 2D cockpit – that still differs between flight simmers as to what everybody wants – with realistic flight dynamics as far as possible rather than a good or excellent looking cabin or cargo hold with average looking cockpits or default flight characteristics.

By the way, a long time ago the Maddog 2004 could be merged with the JCA MD80 Series models. Why, because the JCA models where outstanding in extreme external model details and additional ground equipment could be selected. Unfortunately, this is history. As far as I know JCA doesn't exist anymore and the Maddog was further improved via the Maddog 2006 till the current 2008 versions.

As far as I can see and judge, it seems to me that the external model is dramatically improved from previous models and there's even an eye for very small details like **flight control surface tabs**.

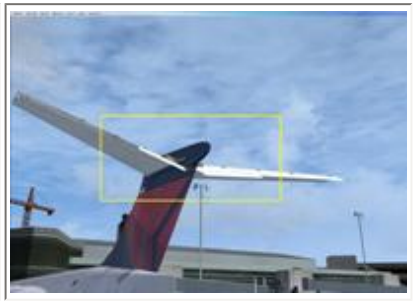
Ok, what are those "**trim tabs**", "**balance tabs**", "**control tabs**" or a combination? You won't find this often these days on Airbus' planes, nor you will find them on a Boeing 777 or 747-400 and many others but on this old Douglas DC-9, they are there and you don't believe it, it's working and perfectly simulated. Let's have a close look at the following shots. The upper row of screenshots represent balance tab deflection - this is simple done by an aileron, rudder or elevator input - without hydraulic power switched ON, while with the lower three shots, the hydraulic supply is available.

Rudder Control Tab

Aileron Control Tab

Elevator Control Tab

Control wheel (aileron), control column (elevator) and rudder/brake pedal (rudder) input **without hydraulic power** available.



Control wheel (aileron), control column (elevator) and rudder/brake pedal (rudder) input **with hydraulic power** available. Notice the deflection of the flight spoilers and for example the rudder tab doesn't work, since it's locked.

To get a better look at these details, just click the thumbnail. That said, we're not going into too many details about the aerodynamic operation of the elevators, rudder or ailerons with flight spoiler control, but the fact that separate tabs are simulated, tells us that those Italian guys created a hell of a good damped aircraft!

Find here an extraction of a **MD-80 Flight Manual** regarding the **lateral control system** (roll channel): "*Aerodynamic forces on the control tabs move the ailerons. The ailerons are cable connected in a manner that each aileron must respond to movement of the opposite aileron (very logic … pure basic knowledge). Each aileron contains a trim tab that*

is cable connected – in a real MD80 - to the pedestal trim knob. Aileron lateral control is augmented by flight spoilers operating in proportion to control wheel displacement and others."

For the **longitudinal control system** (pitch) we can add the following information FCOM information: "*The elevator control is, for all normal flying, an aerodynamic boost system that operates a single control tab on each elevator. Each control tab is driven by an independent two-way cable system from the corresponding control column in the cockpit. The only interconnection between the two control systems is a bus torque tube that connects the control columns. Movement of the control column moves the control tab, and aerodynamic force generated by the tab moves the elevator. As each elevator moves, an additional tab, geared to the elevator movement, moves to assist the control tab.*"

With the above information, it makes sense that with the lower three screenshots the ailerons and elevators don't move while standing on the ground, no aerodynamic forces on the aircraft and an input from the cockpit is given. This is not applicable for the rudder. The rudder works, in that respect, differently and if hydraulic power is available, it will indeed – as seen on the screenshot – deflect. OK, enough of this, let's move on to the next interesting chapter.

Flight Dynamics

Your reward for working through the procedures and learning the systems well enough to get the jet started and to an active runway is getting to fly one of the nicest flight models ever built for a PC desktop. It is just uncanny the way this product "feels" like an MD80 across the aircraft's range of performance. The need for trim is correct, the amount of control displacement for a commanded roll rate is correct. The engine's spool up and thrust are correct.

Since the MD80 lacks many of the sophisticated systems that adjust the jet's control responses due to changing speeds, the airplane characteristically requires more aggressive control inputs as it gets slower and it "tightens up" at higher speeds as the greater air flow across the controls provide more effective responses. The Leonardo Mad Dog models this effect realistically.

Another MD80 characteristic is the critical importance of the horizontal stabilizer trim. Leonardo models this with the takeoff condition computer (it is a manual slide rule type calculator, a "computer" in 1950's speak) which sets the green band for the stabilizer trim. If you forget to calculate your stabilizer trim and set it for your flap and CG condition, you will probably be unable to rotate and run off the end of the runway. In flight, you'll find yourself making small corrections with the elevator controls and re-trimming constantly to keep the non powered elevator right in the sweet spot of control effectiveness.

Another MD80 factor that the model reflects is the importance of your slats to low speed lift. Part of the reason the airplane's stall protection system uses auto-slats as it makes a quick 40 knot difference in the aircraft's stalling airspeed.

Fortunately, the MD80's publishers included speed cards as a pull up cockpit item. It is great to have this vital information close at hand and you will want to set your adjustable speed bugs so you know when you will need additional lift and when it is safe to clean up your slats and flaps for additional speed. You will also notice that the airplane simply runs out of wing at higher altitude. Above 30,000 feet the airplane struggles a little as it approaches its certified limit of 37,000 feet. The aircraft has plenty of power, but there is only so much a wing designed in the early 1960's can accomplish. It also is a relatively low speed wing and in real life begins to experience airflow separation at about .755 Mach. (A MD80 at .79 feels a little like a car being driven down a gravel road)

After accidentally setting my Thrust Rating Panel incorrectly, the sim punished my negligence with an engine failure giving me an opportunity to experience the handling of the airplane with a single engine. The V1 cut was impressive, as was the result of setting up for a partial flap single engine approach about 15 knots slow. This dog will bite!

It is worth repeating, the flight model is astonishingly good. Even the “sight picture” is accurate on landing. When you consider the number of variables that have to be adjusted just right to achieve this cockpit height and angle at a proper approach speed, it is very impressive result. How they managed to capture the airplane, even its quirks, is a mystery. Like a syncopated back beat played by an expert drummer, it is so right yet it defies explanation.

The only factor that detracts from “perfection” is that Leonardo’s MD80 manages to slow my system down to frame rates that hide just how good the flight model is. You’ll probably end up moving some sliders to the left to enjoy flying the MD80.

Aircraft Systems and Flight Management Computer

The MD80 for FSX includes the EFIS glass panel version of the MD80/83 which is nearly identical to the MD88 with a Flight Management Computer, auto throttles and VNAV. This package includes the windshear warning system (which was an option on the jets) and all the standard configuration, fire and system self test modes. That sentence would take about 300 pages to describe in detail, but in short, I was not able to find a system which was not modeled in the MD80 Pro. I do suspect the VNAV descent path indicator does not work properly on the EHSI Map display, but that’s really having to look for something.

One system which has challenged other designers is the CLMP (clutch lockout, manual power) mode of the auto throttles. Leonardo somehow got this right, and it allows you to adjust your flight path using power without disconnecting the auto throttles entirely. You can also override the auto throttles and in real life, pilots often hold the throttles while making adjustments to command speed to provide a smoother flight experience for the passengers.

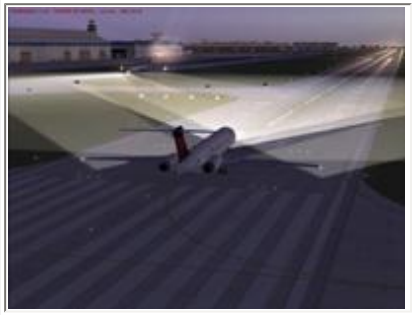
The autopilot works in its various modes with complete and correct displays on the Flight Mode Annunciator. What amazes me about the programming is the way the engines “hunt” for their commanded EPR and respond very much like the analog systems on the MD80.

There is also a comprehensive library of programmed and random failures that you can experiment with. As mentioned, my exceedance of engine limitations resulted in a failure on takeoff. As Angelique pointed out, the flight control failures mimic the actual systems lost without hydraulic power. The spoilers and auto brakes work, and stow with reverser and throttle movement. This is an excellent tool for systems review and study. Also, the autopilot modes are fully modeled; even the ability to do autopilot coupled landings and missed approaches!

Night Lighting overview

Another Night Lighting

Intercepting NAV Leg Inbound

		
VNAV Descent	Align, Flare, Retard on AUTOLAND	Go Around / Go Around
		
MD80's have great External Lights	Who's that .. my sister?	He sister of me, what you're doing here?

Flight tutorial and the Maddog feeling

I would like to spend some words on the FS2004/FSX flight tutorial. It's not really a new tutorial since this one comes directly from the Maddog 2006. Not really a problem except that the Maddog 2006 only had one cockpit with EFIS and FMS, while this Professional version offers three different cockpit configurations. According to Davide Marras from Leonardo SH an additional tutorial is on its way. A tutorial based on the PMS with CMA-900 equipment.

The flight tutorial includes the associated FS2004 and FSX situation files, which are installed during the initial installation. I must add something to this. During our installation, there was no FSX configuration file for the tutorial. Davide told me that a new installer should be prepared to solve this problem. The tutorial and situation files simulate a flight from Rome Fiumicino Airport (LIRF) to Cagliari Elmas (LIEE). For a more realistic sensation, you can download the **ISDproject Rome Fiumicino (LIRF)** freeware airport scenery from the AVSIM library but be aware; this is only applicable for FS2004.

Remember, when you decide to install this FS2004 airport scenery, you'll need a different tutorial FLT and WX file, but that's all covered in the tutorial. Although not a part of the Leonardo SH group, but still worth looking into it if you want the extreme Maddog sensation, is checking out the "Flight Deck Productions" website from **Larry Fortran**. More details about these visual learning tools can be found in a recently published **AVSIM** review.

OK, back to the tutorial. The tutorial starts with the Manager & Setup tool. Unfortunately, the real tool offers fewer settings than shown in the tutorial. While reading, following and performing a test flight for myself, I found out that the manual has certain mistakes or items that are completely missing. But I need to make it clear that I'm very happy with

the overall tutorial and especially the first part. The first part covers all the necessary operations up to and including the Take Off. The last part of the tutorial seems a little too short for a virtual MD82 rookie. I think this tutorial offers at least a first help for the new MD82 pilots, although the tutorial misses a few things or certain items are not fully correct.

And now, a comprehensive flight or is it flight tutorial or test flight. Anyway, read here our practical experience in relation to the offered flight tutorial.

Flying these big jets is not easy and believe me, not only for me as a PPL holder. Even experienced IR, CPL or even active ATPL holders experience a different feeling when flying a MSFS based aircraft compared to flying the real thing. Anyway, flying this well developed MD82 Leonardo SH (LSH) - by following the flight tutorial - was fun and with fun I mean, WOW.

I followed the step-by-step procedure as written in their Maddog 2006 tutorial, representing a flight from LIRF to LIEE. By the way; when you want to use the ISD Project Scenery of LIRF in FSX, you can. Just follow these links – ISD Project Rome Fiumicino LIRF 2005 and ISD LIRF Update and ISD LIRF FSX Update - and the airport of LIRF gets a total different FS9 or FSX view.

After loading the tutorial flight file with the installed ISD Project LIRF airport scenery, it all works out great and before you know it, you're Meridiana MD82 is positioned on the apron. It seems we didn't chose a very good day to practice since it's raining. Ok, we're not melting away but a little sunshine would be nice. Hopefully the weather will turn to better conditions.

After doing my walk-around check - this is already the second time for me during this review - we enter the cockpit via the AFT stair and cabin. It seems I've reached a cold & dark configuration, which is important as we have to follow all the pre-flight checks. You would if you had the official books to perform all the necessary checks, since it turns out that everything in this Maddog is simulated, but if you don't have the original FCOM, than feel free to use the LSH tutorial.

Not really a big deal but the header of the tutorial tells me that this is a Maddog 2006 tutorial. That's strange; I thought I had the Maddog 2008 Professional? Indeed I have, but this EFIS FMS configuration offers the same functionality as the Maddog 2006 and thus the older tutorial can be used. First, we need to make the necessary preparations in the Manager & Setup program before we can even start with the cockpit.

Although the pages are clear and include the steps to follow, I miss a table of contents, some missing page numbers and a more didactical approach. For the first pages it's not really a problem, but afterwards when going through all the steps on the overhead panel, pedestal, main instrument panels etc. it's sometimes a little unclear which text belongs to which picture.

At the same time I must add that within the text, there's mostly a reference figure belonging to a picture detail or item or selection that has to be done. It's amazing how much work has to be done before we can start the engines. In total you've got 23 pages of all kinds of preparation to do and this includes real tests and they all work. Well done here!

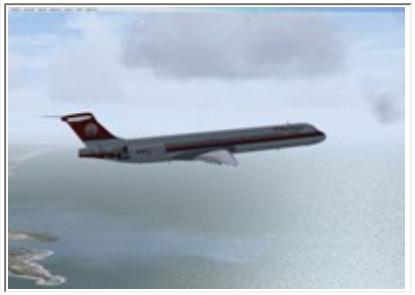
OK, which tests do you need to do while working your way through all the procedures? It's not much, but still you need to check and re-check if the outcome is what it should be, but let's have a look what to do;

- FIRE Loop,
- Interphone Communication System (PA) and EMER(gency) Lights,
- AUTOPILOTR Switch,

- EFIS, WEATHER RADAR and TCAS/VSI,
- AUTOLAND AVAILABILITY,
- PRIMARY & ALTERNATE Stabilizer Trim,
- FLIGHT RECORDER / AIDS (Aircraft Integrated Data System),
- CARGO SMOKE DETECTION and FIRE SUPPRESSION,
- WAGS (Windshear Alert and Guidance System),
- EMER(gency) Electrical Power,
- FUEL System,
- STALL, MAX SPD WARN and ICE FOD,
- TRC (Thrust Rating Control/Computer),
- BRAKE Temperature.

Oops, that's a long list of official and highly realistic checks that must be performed during our normal cockpit preparations. Altogether a lot of work, but that's not unusual for the real world, and thus virtual pilots, and that's the consequence when you simulate - almost - everything. I write "almost" on purpose since we are not able to look into the brains of the developer as to which systems are simulated in-depth and which ones are not.

		
Quiet and lonely on the apron of LIRF, waiting for ….?	WEATHER RADAR test in progress	TCAS/VSI test in progress
		
Finally, airborne with the nice and available airport of LIRF	GEAR retracted … almost!	Approaching the coastline while the AP being connected to the FMS (Flight management)

		
Heading for the sea and hoping everything goes well	STALL ... STALL ... STALL It's working as well as aural sounds reproduced	Another great tail shot

This doesn't mean we're disappointed, not at all but this is also the downside of FS9 and/or FSX, in that it is and stays a simulation which can never compete with a real Level-D certified MD82 FFS (Full Flight Simulator).

We need to hurry or else we miss our slot. Since I'm flying offline - no IVAO or VATSIM - and no MSFS ATC connected, I've got all the time and ... oops .... mistake; there's no slot to keep in mind. Never mind, it's time to start our engines and as we wrote before, follow the steps according to the real or offered LSH papers. Not doing so could result in a hot engine start and I can tell you already, then you're in big trouble because you're the responsible guy or lady who has to solve this since there's no ground engineer around who can help you.

When the engines are running, all the doors are closed and it's time to taxi to the holding point of runway 25. During this short taxi, the SLATS/FLAPS are extended and the AUTO SLAT function has to be checked. Proflig8tor experienced earlier this simulated AUTO SLAT extension and we're very happy with it.

Taxiing this long extended fuselage needs some practice when making the necessary turns towards the runway, but I'll experience it as in the real world. We're ready for TO, last checks are done, we're clear to go, so let's do it. Memorize the things we need to do when we rotate the aircraft at VR and remember the steps on the FGCP (Flight Guidance control Panel - Boeing fanatics MCP or Airbus enthusiastic FCU/AFS CP).

Believe it or not, it is and stays a complicated and at the same time exiting moment when the aircraft lifts off from the ground and with a steady VS (Vertical Speed) it's on its way to our initial altitude of 5000 feet. Once I've connected the AP, it's giving me a little more relaxation, since the aircraft is now controlled by the AT and AP and the moment the NAV and VNAV buttons on the FGCP are pushed, it's relax time. I think Prof lig8tor doesn't agree with me since he knows as a real pilot, there's never a relaxation period and especially not for the PNF (Pilot Not Flying) since he or she is responsible for the ATC communications.

It's a short flight tutorial but on the other hand that doesn't make any difference. We both get a good idea of the highly realistic flight characteristics and the moment we've passed T/C (Top of Climb) it's time to disconnect the AP and see what happens when we fly it manually. Oops, that's not easy but at the same very realistic feeling.

For example; while flying at 300 knots plus, the rudder deflection should be very limited and it works. Not that a real MD82 pilot will do this during flight, but the moment I depress the rudder pedals, the rudder itself hardly deflects and this is indeed as in the real aircraft. Because of the rudder input and thus the yaw change, the aircraft does get a small roll effect and if I wait long enough, the altitude will drop as well.

		
Leveling off at FL100 and passing along the southern island	Making our first turn towards the approach fixes	Nice 2D view while making our first turn

Ok, let's try a STALL. The same here, an airline pilot will never try this out for fun, only in the FFS during one of his/her yearly proficiency checks. I've reached a STALL and apart from the aircraft behavior, the cockpit indications and aural warning "STALL - STALL - STALL" work great. Just as if you're sitting in a real MD cockpit!

Blast, I need to hurry with my descent preparation. We've almost reached the T/D (Top of Descent). Before I forget it, due to the short flight, there's not much in the tutorial about all the FMS CDU procedures. This and other things can be found separately in the respective chapter. On the other hand, it would be nice if they included more CDU procedures in the tutorial. In relation to this short flight, it's not possible but probably a longer flight could help understanding the FMS CDU possibilities.

Furthermore and written before, LSH is busy creating an additional tutorial for the use with the PMS and the other FMS system. Hopefully that will cover a longer flight with more hands-on training with the FMS CDU. All the necessary steps to perform are written in the tutorial and if you're lost, don't worry, just use the P key on your keyboard. I know, it's not real and in a real MD82 they don't have that either, but you're here for training purposes and even in a Level-D FFS there's a P button, so it's not that strange if you need to do it!

		
All set for a nice AUTOLAND	One last top view	Just before touchdown

I can see the island already through the clouds and it seems the weather is much better here than in Rome. While we're approaching 5000 feet, heading to CAR VOR, we make a nice gentle turn to a HDG of 317, which equals the runway heading. Slats, flaps and gear are moving down, while the speed is manually adjusted to it. A few hundred feet to go, following the flight tutorial steps including memory items and there we are, safe on the LIEE ground.

Finally, this also concludes our flight impression of this LSH Maddog including testing it in relation to the offered flight

tutorial. As I said before:
- there's no table of contents,
- no page numbers so keep those pages in the correct order,
- a more didactical flow was welcome but that's also a personal opinion.

But a great but short flight from LIRF to LIEE, where the enthusiasm of me and Proflig8tor has reached high levels!

Sound

Although it's many years ago for me, I still remember that typical Douglas DC-9-82 sound or in this case from the MD82 Series. It will be a short chapter since both of us must conclude that all these things are live recorded and not manipulated at all, except implementing it for use within FS9/FSX. All the sounds, like APU starting and stopping, gear retraction/extension, air-conditioning packs ON/OFF, clicking sound of switches or selectors etc. are as real as it gets. Aural warnings such as "FLAP" (which warns the Leading Edge Slat and Flap are not configured properly for takeoff), as well as the six other important takeoff configuration warnings, engine sounds and many more are real. Altogether it makes the MD82 sensation great!

One thing we noticed was the "grrrrr" of the brushes in the servos for the auto throttle. In flight, a pilot quickly begins to unconsciously rely on subtle noises to gain situational awareness, as it indicates the movements of the throttle servos even before the engines respond. This careful attention to detail indicates to us the publishers of this product had a lot of experience with the MD80 and included the sounds which you will not read about in any book, but sounds that are important sources of information to provide the "feel" of what the airplane is doing.

Ok, here is one typical example and that's related to the APU and switching of the APU electrical power. It's so real and you will obviously say "it's a real recording" but still it's different and difficult. Thinking of the good old days when I was sitting in the cockpit, with the cockpit door open and the AFT passenger with AFT stair down, you could hear the APU RPM increasing while starting it. Also switching ON both APU L/R BUS switches, a person can hear the clunk of relays slamming into position and as power wakes electrical systems attached to aural warning systems they emit sounds as they power up.

This is just a small example of the real sensation. I know, I'm a Mad Dog lover but that's not strange (yes it is – try a Boeing). It was my first ground engineer license, the DC-9 Series and later on added to it, the DC-9-80 Series, followed by the MD80 Series. Guys, you did a great job recording and implementing these – how many sounds are there anyway?

FPS or how does the Maddog perform?

Measuring and presenting FPS is always a problem, but it seems there's a light at the end of the tunnel. Via the following link you reach a different kind of approaching FPS between FSX aircrafts in respect to a default FSX airplane. Via our own FS Wiki or just the AVSIM Wikipedia, Petraeus created the Patraeus Index. It's not our intention to write everything down what this index means and what it can do for you, but a short extraction would help; "*The Petraeus Index is a standardized measurement of the performance of individual airplanes in FSX, in terms of FPS (Frames per Second). It is a standardized measurement that is related to the stock Microsoft CRJ700 which is assigned a score of 100. Planes that perform worse than the CRJ700 score less than 100, and vice-versa. By standardizing the measurement in this way, figures are produced that are independent of the absolute FPS seen on any particular system*".

Ok, that's it. Curious? Than it's time to visit his FS Wiki site but what has this to do with our Maddog 2008 FSX FPS performance? Everything of course, however not everybody will link him/herself from one site to another so therefore

we've added some screenshots. These are based on default FSX settings suggested by Patraeus. This means, you need to have a look on the FS Wiki site. Furthermore we've added for your convenience, some comparison screenshots between the default FSX CRJ700 and the Maddog 2008.

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Virtual Cockpit Maddog
Average FPS 15.1</td><td>2D cockpit Maddog
Average FPS 21.7</td><td>External view (can't miss)
Average FPS 18.8</td></tr>
<tr><td colspan="3">These three screenshots are based on default FSX settings as suggested by Patraeus and of course, on Angelique's PC specifications.</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Virtual Cockpit default CRJ700
Average FPS 38.5</td><td>2D cockpit default CRJ700
Average FPS 30.8</td><td>External view default CRJ700
Average FPS 27.7</td></tr>
<tr><td colspan="3">Here we're dealing with the FSX default CRJ700 model. More detailed information is found on the Patraeus Index at the AVSIM FS Wiki website.</td></tr>
</table>

There's a need to add something more to these screenshots. As you can see for yourself, it shows the difference between a default FSX aircraft and the Maddog 2008 Professional FPS. However, all are based on my own PC specifications and settings. Proflig8tor wrote that his FSX FPS values where not impressive either. In other words, these values are not representing a general FPS value, or a general PC. Therefore you need to look at his website, since he recalculates it in a manner that the output is a relative figure, used for everybody.

Exclusive interview with Davide Marras from Leonardo SH

Is every interview exclusive? That depends which person it is, the importance and impact of the interview, and more of those items. The nice thing of an interview in general, is the person or team behind the software, the ideology why it was created, the roadmap ahead and so on.

This interview with Davide Marras was not done face to face. Although Europe is not that big, traveling from the Netherlands to Italy is a little too far and too expensive. Therefore we used e-mail and I must say, I've got even more

respect for the developers than I had already. Ok, let's start.

Question: What was the reason to create the Maddog MD82 Series and not another European or American aircraft?
Answer: Started as a serious Maddog 98 Lago virtual pilot, I was in love with this add-on aircraft; so much in love that I was even more excited when Lago announced the development of the FS2004 Maddog. After a while the Lago Maddog project was suspended, which resulted in sadness but it also gave me the guts and strength to contact a friend who worked for Lago and volunteer with the LSH team, with the goal to finish the Maddog. I thought "If nobody wants to make a new Maddog, than I will do it by myself!

Question: Is there a specific reason that you're not offering a dedicated Maddog AIRAC FMS database?
Now it must be done via the PMDG AIRAC and you need a separate/special converter to convert SIDs/STARs for working with the Maddog airplane FMS database?
Answer: While developing the Maddog 2004, I contacted navdata and asked them to add a specific download file for our FMS. Together with this request, I also sent him a copy of the Maddog, but for some reason nothing was done, so we kept the PMDG format as it is.

Question: Are you guys – from the Leonardo SH team – friends in real life and living close to each other?
Answer: Yes, we are! We formerly lived all in the same town however one member of the team moved to Milan for work.

Question: Lago versus Leonardo SH group. Where does it stand for or what does it mean?
Answer: As written before; the Maddog 2004 was a joint project, Lago provided the external model and bitmaps, and we wrote all the coding from scratch. Later while busy with the Maddog 2006 development, we hired a guy who designed the new model, bitmaps and the VC.
In other words, the Maddog 2006 was a 100% LSH project.

Question: Any plans for a new aircraft since it seems that the Maddog 2008 Standard/Professional is finished?
Answer: We are thinking about 2 new projects, but nothing has been decided yet and as usual, it's top secret!

Question: Is their a team member who's a real MD82 pilot?
Answer: No, but several of our beta testers are real MD82 pilots and worth mentioning; one member of the team is a real MD82 maintenance technician.

Question: Have you been during the development of the Maddog in a Level-D FFS (Full Flight Simulator) to confirm that simulated behavior compared to your LSH MD82?
Answer: Yes, we have been in a MD82 FFS, as well as many times in the cockpit of a real MD82 and lucky for us, during ground operations but also while in flight to experience the real aircraft characteristics.

Question: Why is there not chosen to create additionally a MD87 or MD88 model?
Answer: Since we had only access to MD82 documentation, a FFS and a real MD82 and not to the MD87 or MD88. With this in mind my opinion was and still is that it's than not possible to develop such an accurate add-on without having access to the real bird.

Question: Will there be a Maddog 2008 or 2010 with the old style ADI and HSI?
Answer: Strategic answer ….It could be... That depends on many things and one of them deals with the availability of that kind of MD82 or even a Super 82.

Question: During the Maddog 2004 with also available the JCA MD80 models, there seems a kind of relation. A kind of merge between the JCA aircraft and Maddog 2004 cockpit!. These days there's noting left of JCA or it there a plan to

boost the external model?
Answer: The Maddog 2004 exterior model made by Lago, was very poor in many aspects included the bitmaps and liveries. But at that time we all knew there was nobody in our team capable of redesign it. This resulted in a deal with JCA, which gave us the possibility to include their model and liveries in the Maddog 2004. For the Maddog 2006 we have hired a guy who redesigned everything from scratch, and we added many moving parts and functionality to the model. That means there was no reason left to keep the Maddog 2006 compatible with the JCA models.

Interesting links

Flight Deck Productions “Learn the Maddog”
Wikipedia (of course)
Boeing Commercial – Technical and Operational background
Boeing commercial – DC-9 and MD80 history
Airliners.Net MD81/82/83/88 information
MD-80 International Forum ->
Zeno Guarienti's MD-80 System Pages (Italian language)
Interesting German MD-80 site
SmartCockpit

ISD Project LIRF FS9 2005 Airport Scenery
ISD Project LIRF FS9 update
ISD Project LIRF FSX update
LIEE 2008 Cagliari Elmas FS9 Airport Scenery by Davide Marras

Summary / Closing Remarks

You could ask yourself if this was really a completely new product. The answer is easy; no! The Maddog 2008 Professional is based on the Maddog 2006 and that one on the Maddog 2004 but still there’s a lot what can’t be found with others.

This Maddog version offers three different cockpits. Ok, they all offer the same EFIS instruments, but then you’ve got many possibilities. You like the ordinary FMS, you got it. No, you prefer the old style engine instruments with old fashioned annunciator panel, you the man. Oh no, you prefer the CMA900 with the PMS; no problem, it’s also available.

Until now and during all my reviews, I’ve not seen this kind of available cockpit variety. The current VC will get a sister or brother if you like. They have chosen for the Virtual Cockpit CMA900 version, since this is the easiest way to create a second VC, free of charge. OK, it’s a shame they will not offer the VC with the old style instruments and annunciator but you can’t have everything! This is the same for not offering a 2D cockpit and/or VC with the old style ADI and HSI, but there’s a limit and not’s not a complaint. I think what this aircraft offers, in depth system simulation, highly realistic 2D panels with a good looking VC, is already more than enough.

The external model and liveries are not really my favorite. Ok, the liveries are free of charge but they haven’t changed since the Maddog 2006, which is basically the same model. I’m personally very happy that Leonardo SH and McPhat Studios signed a contract to deliver UHDT (Ultra High Density Textures) liveries for this aircraft. You hardly believe it, but once you’ve seen other UHDT liveries compared to default vendor liveries, you'll say WOW. This WOW effect makes the Leonardo SH models with the others already on the market for free or as payware, an absolute masterpiece.

There are problems. There's also the never ending struggle related to AIRACs and procedures. That the FMS database uses PMDG AIRAC's is not really a problem but the SID/STAR converter is not always that easy and following the Leonardo SH forum, it seems that even well know persons still fight with this. It seems that many other persons have problems with simple things like engine starts, overheat etc. In that respect I must say – although the model is never 100% … ok, 99.5% - in-depth programming is made to simulate the engine start process as well as the asociated EGTs (Exhaust Gas Temperatures) and EPR (Engine Pressure Ratio) but also engine problems like a hot start, hung start and so on.

We mentioned this earlier; the fact that the programmers included the AUTOLAND TEST, which was and probably is these days, performed by the ground engineer and pilots. It's so easy for me to write this down, but you don't want to know the programming behind all of this in order to simulate it.

Then there's always the other question: Did we cover every tiny detail of this product? We spend hours and hours looking at it and digging into it, and each time there was something new or which surprised us. We know for sure we've covered the majority of all the ins and outs but it could be that certain things slipped from our pencil onto the floor.

We're also aware that we didn't check the multi-crew possibility, nevertheless we don't think many flight simmers will use this multi-cockpit option. Ok, that's not an excuse, but more or less a fact. Ok, I could continue like this for hours, days and even months since the Douglas DC-9-82 and this Maddog MD82 was my baby and still is.

Tom, now it's your turn!

And finally there's always the interesting question "is it worth buying the Leonardo SH MD82?" Based on our tests, the different cockpits, external model, flight characteristics and many other things, it's absolutely a super product although we're also aware that it's not a native FSX model.

Is it then the perfect FSX/FS2004 model? None of the add-on models, in general, are perfect, but it seems this Maddog 2008 Professional is going very far and as with other high end add-on airplanes, like for example the PMDG MD-11; when it's not perfect then there's always something to look for or to work out to get it even better than it was already!

It's more or less obvious that we enjoyed this review very much and gives me the time to thank Davide Marras from Leonardo SH and his team, to thank "Proflig8tor" for his real MD-88 pilot's input and others we've forgotten. In Proflig8tor's view, this is the only FS9 model that I'm carrying forward to FSX. The fantastic flight model and perfect systems integration makes this an airplane that is worth it.

What I Like About The Leonardo SH Maddog 2008 Professional

- Fantastic Flight Model, maybe the best in the business
- Perfect systems modeling
- Realistically generated automatic failure modes, that you can turn off
- Working auto throttles, with CLMP
- Very realistic sight lines in Virtual Cockpit
- Sound files that immerse the pilot and provide a unique level of situational awareness
- Easy to go Leonardo SH installers with online registration process,
- Offers FS9/FSX models but FSX is just a ported FS9 version, so not a native FSX aircraft,
- Comes with three different cockpits including a weather radar and multi crew operation possibility via a local network or via the Internet,
- Well written didactical manuals.
- Via the Manager & Setup program lots of modifications can be made,
- Not only an awesome 2D cockpit with many sub panels but also in depth simulated systems,
- Currently a FMS+EFIS VC available, which will be soon followed by a second VC, equipped with the EFIS +CMA900 navigation system,
- External model shows many details however those images or textures are not always sharp enough!
- Very good FPS while flying with the FS9 VC,
- Extraordinary sound recording which gave me a highly realistic feeling,
- Liveries interchangeable between the Maddog 2006 and Maddog 2008 versions,

What I Don't Like About The Leonardo SH Maddog 2008 Professional

- Not a true FSX model (they don't claim that it is either)
- Frame rates not as high as we are used to seeing on our systems
- Not really what I don't like but more a reminder! It's not an easy plane to go! You need to study the books and follow the exact procedures else you're lost!
- Available liveries and thus the quality (details) need – to my personal opinion - a boost. Hopefully this will happen when McPhat introduces their UHDT technology.

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Leonardo SH Maddog 2008 Professional

(adobe acrobat required)

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