Green Castle Aero Club Foundation

Green Castle Advanced Aviation Training Device (AATD)

System Startup and Shutdown Manual

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1. Table of Contents

2. Log of Revisions

Description of Changes	Revision	Affected Pages	Edited By
Initial Version	1	All	MN
Added items to startup and shutdown checklist. Added a troubleshooting item about finding the "Quit All" button	2	10,11,12	MN

3. Introduction

The Green Castle AATD incorporates a largely automatic start up and shutdown procedure. The simulator software controls the projection system as well as the simulator hardware. This guide contains checklists that provide an abbreviated list of instructions to facilitate proper use of the simulator.

3.1. WARNING

Do not attempt to use this equipment without proper check-out and instruction.

This AATD is a high-value, advanced training device. As such, the Green Castle Aero Club requires you to receive training and a check-out before using it.

3.2. Simulator Components

The Green Castle AATD consists of several components that, functioning together, produce an immersive experience for students as well as a comprehensive set of tools for CFIs to provide instruction to those students. These components are:

- Instructor Operating Station (IOS): This is where the instructor can control the parameters of the training session. It consists of a monitor and a mouse + keyboard. See also the Instructor Operator Station Manual provided with the Green Castle AATD.
- Wall Power Box: Controls the power supplied to the simulator.
- PC: The "central nervous system" of the simulator, controls both the simulator hardware and software. It is also responsible for all graphics output.
- Flight Deck: The main cockpit of the simulator.
- Main Displays: Three projector screens showing an immersive projection of the outside world.

The three elements you as the user will be interacting with vary depending on your role. For students this will be the Flight Deck and for instructors this will be the IOS and Power Supply. Note that the simulator can be used by a single person that will then interact with all elements listed above.

Main Displays

Flight Deck

Instructor Station

4. System Startup

Once you are familiar with the AATD, we advise you to use the checklist provided later in this document to start and use the system. Here we will describe the process in more detail for reference.

The system should only be started without a person inside the flight deck, all flight controls should be unobstructed during the startup sequence. And all switches and controls should be in the default "off" configuration (see appropriate checklist in Section 3 for the default "off" configuration).

Starting the system must always happen from an unpowered state. It is possible that someone used the simulator has left the power to the simulator on. This can easily be verified by looking at the wall power box. As shown below, if one of the lights on the box is on (for the example below, the "4 Hour" button), it means power is being supplied to the simulator system. Since it is not known when the button was pressed, the remaining amount of time is unknown as well. To ensure that the startup sequence is followed correctly, press the "power off" ( ) button which is marked with black marker. Wait 10 seconds before pressing another button on the wall power box.

Power off button

If there are no lights visible on the wall power box, simply select an amount of time on the wall power box that is more than what you are going to use the system for. If power is being supplied to the AATD, a green light will illuminate on the wall box. If you select too small an amount of time, the system will

power off while the AATD session is ongoing. Two, four or more hours would be good choices depending on how long you expect the session to last.

Once power is applied to the system, the startup sequence will begin. After a few minutes, the windows login screen will appear on the screen of the IOS. Select the "Green Castle Simulator" account, enter the password that was provided during the check-out and press enter. The system now starts the login sequence and after 10-20 seconds the main Green Castle AATD screen (shown below) appears. Two options are available here, "Go Fly!" and "Exit and Shut Down". Both are indicated with a red box in the image below. To start the simulator session, press the "Go Fly!" button. To shut down the simulator software and hardware as well as the projection system and main PC press the "Exit and Shut Down" button. Using this button will ensure the system will shut down in an orderly manner. Do not cut power to the system suddenly as this can result in system failure.

After pressing the "Go Fly!" button, the system software will perform a self-check to ensure communication with all hardware components is functioning as expected. This self-check can take up to a minute. A successful self-check will be indicated on the self-check screen. If the self-check fails, visit the troubleshooting section later in this manual to determine the appropriate course of action.

Every time the AATD starts, it will check the FAA website to see if the latest version of the instrument procedures are available. If it determines that new procedures are available and current, it will download and install the procedures. This can take several minutes. During this time, the following screen is shown:

Please wait while we download
the latest FAA procedures.

After the update has been applied, the AATD will start the X-Plane 12 simulator software. This will take a few more moments to start up. The starting position of the aircraft is always on the ramp of Nelson Field, home of the Green Castle Aero Club (IA24). Once the simulator is started the Instructor Operator Station (IOS) can be used to set up scenarios, change the location of the plane, change the weather, etc. Refer to the AATD IOS manual for setup, launch, and modification of flight scenarios.

5. System Shutdown

At any time during the simulated flight the system can be shut down using the controls in the Instructor Operating Station (IOS). Use the "Quit All" button on the lower left side of the IOS to shut down the X-Plane 12 simulator software.

After pressing this button, the software will ask you to confirm:
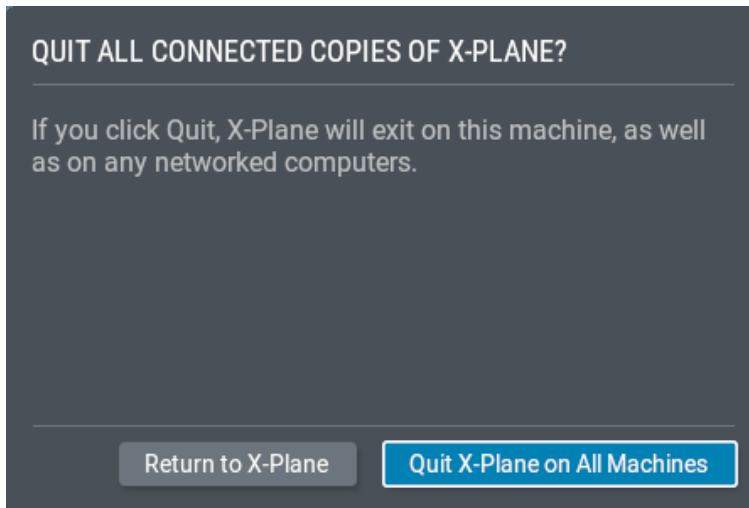
Press the "Quit X-Plane on All Machines" button to confirm.

Do **NOT** use the "Shut Down All" button located just below the "Quit All" button. This will force a shutdown of the computer system and will not allow the AATD hardware to return to its neutral state.
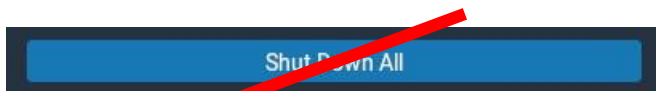
After the X-Plane 12 software is successfully shut-down, the main Green Castle AATD software screen is shown again. To end your session press the "Exit and Shut Down" button at the bottom of the screen.

6. Checklists

Use the following checklists to facilitate proper AATD startup and shutdown sequences.

6.1. Startup Checklist

STARTUP CHECKLIST
1. TARP .... REMOVED
2. FLIGHT DECK .... UNOCCUPIED
3. WALL POWER BOX (TIME SELECTION) .... SELECTED (GREEN LIGHT "ON")
4. IOS DISPLAY .... "WINDOWS LOGIN" SCREEN
5. WINDOWS OS .... LOGIN TO SIMULATOR ACCOUNT
6. IOS DISPLAY .... "GREEN CASTLE LOGO"

STARTING SIMULATION
1. **IOS STARTUP SELECTION** .... CLICK "GO FLY!"
2. **IOS AUTOMATIC SYSTEM SELF-CHECK** .... COMPLETE (ALL GREEN CHECK MARKS)
3. **IOS X-PLANE LOADING SCREEN** .... COMPLETE
4. **FLIGHT DECK** .... OCCUPY AS DESIRED
5. **NEW FLIGHT** .... SELECT
6. **SELECTED PLANE** .... CESSNA SKYHAWK
7. **CESSNA SKYHAWK** .... CUSTOMIZE
8. **WEIGHT, BALANCE, & FUEL** .... SET
9. **START WITH ENGINES RUNNING** .... CHECK BOX, AS DESIRED
10. **DEPARTURE LOCATION** .... SET
11. **DESIRED WEATHER** .... SET
12. **TIME OF DAY** .... SET
13. **PRE-LAUNCH FLIGHT DECK SETTINGS** .... AS REQUIRED (ENGINE RUNNING OR NOT)

CONTROL	HOT START	COLD START
MAGNETOS (KEY)	BOTH	OFF
MASTER (ALT/BAT)	ON	OFF
FUEL PUMP, LIGHTS, PITOT HEAT	ANY	ANY
AVIONICS MASTER (BUS 1/BUS 2)	ON	OFF
THROTTLE	AS REQUIRED	IDLE
MIXTURE	FULL RICH	FULL LEAN
FLAPS	UP (RETRACTED)	UP (RETRACTED)
TRIM WHEEL	TAKEOFF	TAKEOFF
FUEL TANK SELECTOR	BOTH	BOTH
PARKING BRAKE	AS REQUIRED	SET

14. **START FLIGHT** .... SELECT

END OF STARTUP CHECKLIST

6.2. Shutdown Checklist

BEFORE SHUTDOWN CHECKLIST

1. **PARKING BRAKE** .... **SET**
2. **AVIONICS MASTER** .... **OFF**
3. **MASTER (ALT/BAT)** .... **OFF**
4. **FLAPS** .... **UP (RETRACTED)**
5. **MAGNETOS (KEY)** .... **OFF**
6. **FUEL TANK SELECTOR** .... **BOTH**
7. **FLIGHT DECK** .... **UNOCCUPIED**

SYSTEM SHUTDOWN

1. **IOS SHUTDOWN SELECTION** .... **"QUIT ALL"**
2. **IOS DISPLAY** .... **"GREEN CASTLE LOGO"**
3. **IOS SHUTDOWN SELECTION** .... **"EXIT AND SHUTDOWN"**
4. **IOS DISPLAY** .... **BLANK SCREEN (BLACK)**
5. **POWER LIGHT ON COMPUTER** .... **CONFIRM OFF**
6. **WALL POWER BOX** .... **OFF**
7. **TARP** .... **REPLACED**

END OF SHUTDOWN CHECKLIST

7. Troubleshooting

Use the following troubleshooting tips to help you deal with unexpected issues that may arise during the use of the Green Castle AATD.

Problem #	Problem Observed	Solution
1	Simulator does not seem to power up	Ensure power is being supplied to the wall socket used for the simulator. Check breakers.
2	No display on the Instructor Station but simulator is powered up	Cycle the monitor inputs using the "display" button on the right bottom of the monitor.
3	A control is not responding during a simulator session.	Shut down the simulator using the information in this guide and start a new simulator session.
4	There is nothing visible on the Instructor Station monitor.	Ensure that the monitor is turned on and set to "HDMI" input using the input button on the monitor.
5	Nothing is visible on one or more of the projectors but the instructor station is showing an image.	Check that the projectors are turned on. If they are not turned on, shut down the computer and turn off the power, wait 10 seconds and turn power back on.
6	An orange light is on a projector and there is no image.	Ensure the temperature in the room is not above 80 degree Fahrenheit. The lamp in the projector has possibly failed and must be replaced. For additional details, examine the user guide for the Epson 585W projector.
7	I do not see the "Quit All" button on the Instructor Operator Station.	Make sure you are not in a weather, failure or other selection menu. Look in the top left of the screen for the word "Cancel" (without the ") and click on it. You may need to do this multiple times to get back to the main screen with the "Quit All" button.

If your problems are not resolved using this troubleshooting section, post a squawk in the reservation system.