

# Aircraft Controls and Systems

one of the coolest features in *A-10 Cuba!* is the real-time visual response of the control surfaces. Press **3** to go into chase view, then play around with the controls. Notice the movements of the various control surfaces as you pull the stick up, down, right and left.

The dynamics of the A-10 and how its controls work become even more apparent when watching the aircraft respond while in the air. Get airborne and fly straight and level, then take a look at the plane's behavior from chase view, using the **Arrow Keys** to change the viewing angle. Here are the controls you will have to mind to keep yourself on the straight and narrow.

## Ailerons

Ailerons are on the outer sections of both wings. They move up or down and cause the aircraft to roll left or right.

## Elevator

The elevator is the movable surface along the trailing edge of the rear horizontal stabilizer. Moving the joystick or mouse forward causes the elevator to deflect down, in turn causing the nose of the A-10 to dive. Pulling the joystick or mouse back causes the elevator to deflect up and the nose of the A-10 to climb.

## Rudders

Rudders are the control surfaces along the trailing edge of the two vertical stabilizers on the tail of the A-10. The rudders move left and right to cause the nose of the A-10 to yaw (slide side to side). Deflecting the rudders left causes the nose of the A-10 to yaw to the left, and vice-versa.

To yaw left use the **Comma** (,), and to yaw right use the **Period** (.). To fully move the rudders to either side requires five keystrokes in the same direction from a neutral position and 10 from one extreme to the other. If you get yourself into rudder trouble you can always press the **Slash** (/) to reset the rudder to a neutral position.

It takes some time to get used to using the rudders in *A-10 Cuba!*, but it's a skill you'll eventually have to master to line up and attack ground targets successfully. Once you get the hang of it, though, you'll wonder how you ever did without it.

## Flaps

The flaps run along the trailing edge of the inner wing sections. Flaps increase the amount of lift generated by the wing and are, therefore, lowered for faster take-offs or for take-offs with heavy loads. Flaps are also critical when landing because they significantly reduce the aircraft's landing speed and can provide a subtle lift right before touchdown. They are especially useful when you're faced with an emergency carrier landing.

Flaps deploy in 10-degree increments to a maximum of 30 degrees by pressing **F**. Likewise, the flaps retract in 10-degree increments by pressing **D**.

A word to the wise: The A-10 is unstable with flaps deployed at airspeeds exceeding 200 knots. Fortunately, however, the A-10 is fitted with a mechanism to retract the flaps automatically at speeds greater than 200 knots. So it stands to reason if you've had the A-10 over 200 knots that your flaps aren't going to be deployed anymore.

## Trim

Trim is the state of your aircraft being in level flight at a constant speed. When this equilibrium is attained, you are said to be in "trim." Why are we even bothering to mention it? Because when flying with a joystick in *A-10 Cuba!* it is difficult to maintain the aircraft in trim without using the trim tabs. Press **[** (Open Bracket) to trim the nose of your A-10 up, and **]** (Close Bracket) to trim your nose down.

Of course, nothing is ever that easy. What fun would the game be if you just flew around in perfect

working order with no bad guys shooting at you? If, for example, your wing and rudder are damaged in combat, you can use the rudder trim to straighten out the nose. This can be achieved by pressing **Shift+[** to pull the nose left, and **Shift+]** to trim the nose right. If you find yourself in a trim "shame spiral" and unable to level off, pressing the **Slash (/)** will neutralize the trim.

## Speed Brakes

For those times when the need for speed has been quenched but you find yourself coming into final approach at 400 knots, the upper and lower surfaces of both ailerons scissor open to act as speed brakes. Press the **Spacebar** to activate the brakes unless you want to end up as an oil spot on the tarmac. When on the ground, the **Spacebar** activates the wheel brakes as well.

## Throttle

The throttle control for both engines is linked and controlled by the **Plus Sign (+)**. To start the engines, just press **+**. Of course, if you prefer the hands-on approach, the engine can be started up by selecting the cockpit view (press **2**), holding down **Alt** and clicking on the red **ENGN START** button. To max out the throttle right away, just press **Shift+Plus Sign (+)**. The same principles apply to reducing the throttle, so you would merely substitute the **Hyphen (-)**.

## Undercarriage

As you may or may not know, the term "undercarriage" refers to the landing gear. While you may take it for granted, like breathing, you should know that you will miss your undercarriage when it's gone; each wheel is modeled as its own separate entity and, therefore, can be damaged independently of the other gear.

Although the nose gear is steerable, it is only passively steerable by use of the ailerons and rudders. For speeds below 60 knots, the ailerons are responsible for guiding the aircraft. For speeds over 60 knots, the rudders become responsible for steering. This happens because, at higher taxiing speeds, the ailerons have a tendency to tilt the aircraft.

After becoming airborne it's a good idea to retract the landing gear by pressing **G**. At speeds over 200 knots, exposed landing gear can become damaged, so be careful not to lower them accidentally while in a dogfight. Ripped-off wheels aside, the sudden change in flight dynamics can make for a rather unpleasant surprise.

## Extinguishers

When your A-10 takes a hit to the engine, it's a reasonable assumption that a nasty fire is probably brewing. We thought it would be great to be able to act on an engine fire rather than just sending you down in a burning molten sarcophagus, as happens in other flight simulators. So we've incorporated dual pressurized fire extinguishing canisters that can be activated independently to snuff out most of the fire situations you encounter.

Either bottle of extinguishing agent can be discharged to either engine. Press **Z** to extinguish the left engine and **X** to extinguish the right. However, once in a while a fire may be too pesky and even a double dose of extinguisher on one engine will not put out the fire. If you can't put out a fire, it might be time to imagine what it would feel like to eject from an A-10, because chances are you'll be doing it.

## Eject

Your engines are blazing, your extinguishers are empty, your hydraulics are shot. You're spiraling downward in a ball of flame. Who you gonna call? Well, actually no one, but you can eject from the A-10 by pressing **Alt+E**. This will rocket you (and your seat) clear of the A-10 and deploy a parachute to facilitate your safe return to *terra firma*.

Although there is no minimum safe altitude from which you can eject (you can actually eject safely from any height, including the tarmac), if your aircraft is heading for the ground at 300 knots and you eject at 1,000 feet, you'll probably become far too acquainted with the ground before your 'chute can deploy. In other words, it's best to eject while flying reasonably level.



## AOA Indexer



The angle of attack (AOA) indexer is activated when the undercarriage is lowered; it is used as a landing aid. The green circle in the center illuminates when airspeed and rate of descent are correct. The upper red triangle illuminates when airspeed is too low and the pilot needs to either lower the nose or increase thrust. The lower red triangle illuminates when airspeed is too high and the pilot needs to either raise the nose or reduce thrust. The ideal landing speed depends on the weight of the aircraft and is automatically calculated by the flight computer.

## Accelerometer



The accelerometer is a direct reading instrument used to measure the acceleration of the aircraft along the vertical axis. This is a measure of the forces that act on the airframe and the pilot when the aircraft is maneuvering. When the GAU-8/A cannon is fired, the vibration of the airframe causes the accelerometer needle to oscillate wildly, giving a false indication of the forces acting on the pilot.

## Airspeed Indicator



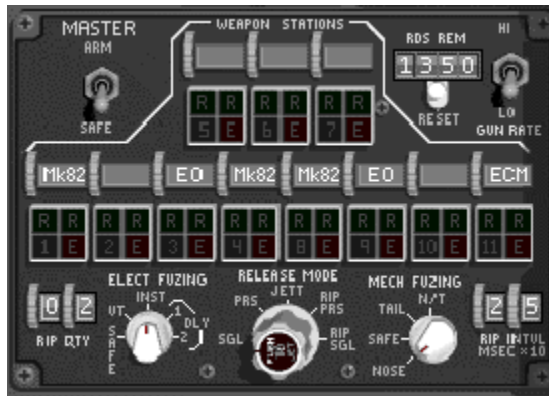
The airspeed indicator measures the velocity of your aircraft. Airspeed is displayed in knots (nautical miles per hour). The airspeed indicator has a fixed circular scale, moving pointer display that is graduated from a 50-knot minimum, in increments of 10 knots to a maximum of 550 knots. It is usually easier to see your airspeed by looking at the HUD.

## Altimeter



The altimeter displays the altitude of the aircraft above sea level in feet. The smaller hand on the altimeter reads in thousands of feet while the larger hand reads in hundreds of feet. Clockwise movement means you're gaining altitude, and counter-clockwise means you're losing altitude. Of course the easiest way to read the altimeter is just to look at the digital readout contained within the gauge.

## Armament Control Panel



The armament control panel allows the selection of weapons stations, gun firing rate, external Release and Jettison modes, and ripple quantity and interval controls. This panel also displays the rounds remaining in the GAU-8/A cannon. Rippling your weapons simply means that your weapons will ripple off your A-10 without your having to press the **RELEASE** button a hundred times. For example, if you want to launch a large number of hyper-velocity rockets, you can have them ripple out very quickly with the touch of one button. This not only increases the damage the rockets do, but also decreases strain on your firing finger.



## Attitude Director Indicator



The attitude direction indicator (ADI) is what's commonly referred to as an artificial horizon. It provides a pictorial display of the aircraft pitch and bank attitude relative to the horizon. The ADI consists of an attitude sphere with pitch references graduated in 10-degree increments, and an inclinometer.

## Chaff and Flare Control Panel



one of the hazards of air combat is the presence of nasty anti-aircraft missiles. The only reason for their existence is to see you and your aircraft go down in a rather unpleasant fireball. Fortunately, you have chaff and flares to confuse the guidance systems of enemy missiles. Chaff is used against radar-guided missiles, while flares are used to confuse heat-seeking missiles.

The chaff and flare control panel displays the remaining number of chaff and flares, and also allows the pilot to control the release quantity. Press the **Semicolon (;)** for chaff and **Apostrophe (')** for flares.

## Clock



The real-time mission clock has a standard 12-hour configuration. To advance the time of day by 30 minutes, press **N**. To go back in time by 30 minutes, press **Shift+N**. Changing the time of day affects only the ambient lighting conditions and visibility.



## Display Control Panel



The display control panel is used to control both the RWR azimuth indicator and TV monitor, and contains the following switches:

- **PWR** — This is the power switch for the RWR azimuth indicator and TV monitor.
- **TEST** — This will cause the RWR azimuth indicator and TV monitor to enter a self-test mode.
- **DMG** — This displays current engine, airframe, gun, fuel, HUD, gear and control system status on the TV monitor.
- **TV** — The TV monitor displays either the view from the targeting camera on the electro-optical and infrared Mavericks or the damage status of the aircraft.
- **HOFF** — This hands off target information from the RWR to the HARM. The target is indicated in the azimuth indicator by a diamond. To cycle targets, press **H**. To clear the target, press **Backspace**.
- **PRI** — The five strongest radar signals only are displayed on the azimuth indicator in Priority mode.
- **GND** — Ground targets only are displayed on the azimuth indicator in the Ground mode.

## Emergency Jettison



The emergency jettison is used to jettison all external stores from the aircraft in case of an emergency. Since the A-10 cannot jettison the actual pylon or rack from the hardpoint, all bombs and missiles are dropped or fired from the racks unarmed. Rocket pods will remain attached to the wing after the rockets have fired. Emergency jettison is different from the selective Jettison mode since everything is jettisoned in a predetermined sequence. To jettison all stores, press **Alt+J**.

## Engine Panel



The engine panel contains a cluster of gauges that display somewhat necessary information on engine and APU condition. These gauges on the panel also display the fuel load and fuel consumption, but it is not necessary to learn the intricacies of any of these gauges to play *A-10 Cuba!* successfully. These gauges are purely for the benefit of those who want the inside scoop on engine performance or for those who like to look at large numbers of indicators. Think of them as a nice added feature that you may or may not ever use. The following gauges are found in the engine panel:

- **Engine RPM Gauges** — The turbine speed of both engines is shown on the engine RPM gauge as a percentage of the maximum RPM. The gauge reads 0% when the engine is shutdown and 100% at the maximum engine speed.
- **Engine Fuel Flow Gauges** — The rate of fuel consumption of both engines is shown on the engine fuel flow gauge in hundreds of pounds per hour.
- **Engine Temperature** — The inter-stage turbine temperature of both engines is shown on the engine temperature gauge in hundreds of degrees Celsius.
- **APU RPM** — The turbine speed of the APU is shown on the APU RPM gauge as a percentage of the maximum engine speed.
- **APU Temperature** — The exhaust gas temperature of the APU is shown on the temperature gauge in hundreds of degrees Celsius.
- **Fuel Gauge** — The fuel gauge shows the amount of fuel remaining in the tanks. If the aircraft takes damage to the fuel system, fuel may drain from the system and the aircraft may run out of fuel before getting back to base.

## Engine Start

The engine start is located on the chaff and flare control panel. To start the engines and increase throttle press, the **Plus Sign (+)**. To reach maximum throttle instantly, press **Shift+Plus Sign (+)**. To reduce throttle down to the idle position, hold down the **Hyphen (-)**. To reduce the throttle setting to idle instantly, press **Shift+Hyphen (-)**. To shut down the engines, press **Shift+Hyphen (-)** when the engines are at the idle setting.



## Fire Handles



A fire in the engines or auxiliary power unit is indicated in the cockpit by the flashing fire handles. There are a couple ways you can deal with this: pull the fire handles, or press **Z** for the left engine and **X** for the right engine. The performance of a burning engine quickly degrades, and no power means a very short flight.

## Flap/Gear Indicator



The gear indicators are green when the undercarriage is down and locked, and red when the gear is retracting or damaged. When the undercarriage is stowed and locked, the indicator is not lit. To raise and lower the gear, press **G**. The flap indicator shows the deflection of the flaps to a maximum of 30 degrees. To lower your flaps in increments of 10 degrees, press **F**. To retract flaps in increments of 10 degrees, press **D**. Remember, at speeds over 200 knots, the flaps automatically retract.

# Game Interface

## Splash Screen



In the Splash Screen, you are presented with four buttons. Here's a quick breakdown on what each will do for you:

- **GAME PREVIEWS** — Clicking this button allows you to try out some upcoming Activision games.
- **PLAY/INSTALL** — Labeled **PLAY** if you have already installed the game or labeled **INSTALL** if you have not yet installed the game. Clicking **PLAY** will take you to the Main Screen. Clicking **INSTALL** will take you to the installer.
- **MORE** — Clicking this button gives you several options:
  - ABOUT ACTIVISION** — Gives you information on how to contact Activision
  - HELP** — Allows you to access the latest technical and gameplay information.
  - ELECTRONIC REGISTRATION** — Allows you to register your copy of *A-10 Cuba!*.
  - UNINSTALL** — Allows you to remove from your computer all installed A-10 Cuba! files.
  - PLAY/INSTALL** — Labeled **PLAY** if you have already installed the game or labeled **INSTALL** if you have not yet installed the game. Clicking **PLAY** will take you to the Main Screen. Clicking **INSTALL** will take you to the installer.
  - EXIT** — Exits you out of this screen.
- **EXIT** — Clicking this button takes you to Windows 95.

## Main Screen



The Main Screen presents you with the following six choices:

- **DEMO** — Clicking this button takes you to a self-running demo that is perfect for blowing the socks off of any A-10 newbies that might be left out there. Although the demo plays the same scenario every time, the scenario will never play the same way twice. To exit the demo, press the ESC key.

- **MISSIONS** — Clicking this button takes you to a screen where you can choose to engage in one of 12 preset missions. When you choose a mission, a briefing appears in the right side of the window giving you a general synopsis of what to expect. See the "[Missions Screen](#)" section for more information.
- **NETWORK** — one of the best features in *A-10 Cuba!* is the network play. This button takes you to the network portion of the game. See the "[Network Screen](#)" section for more information.
- **PREFS** — Clicking this button allows you to customize your preferences for combat conditions, controls, graphics and sounds. See the "[Preferences Screen](#)" section for more information.
- **CREDITS** — Clicking this button will give you information about the team that brought you this great game.
- **QUIT** — Clicking this button quits you out of the game and takes you to Windows 95.

## Missions Screen

### Selecting a Mission



Once in the Missions Screen, you can select one of 12 preset action-packed missions in glorious Cuba. As you click on the various missions, mission briefings appear in the window on the right with a brief explanation of the mission.

You may either start the mission immediately with a mixed bag of bombs and rockets loaded on the wings, or you can customize your weapons loadout by clicking on **WEAPONS LOADOUT**. Once you have started the mission, it is not possible to change the weapons in the loadout without exiting the mission. So choose your weapons wisely!

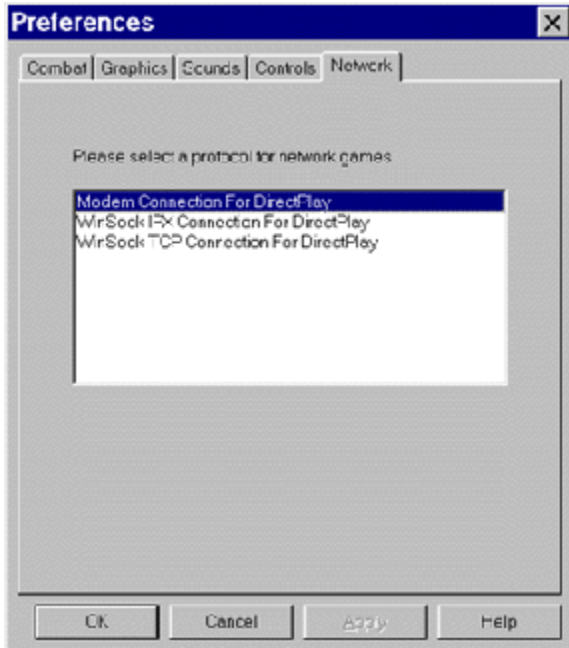
Although the general mission area is indicated in the map in the lower left of the Missions Screen, you can click on **MISSION MAP** for a closer look.

Here's a brief description of the 12 missions:

- **Mission 01 — Airstrike**  
Objective: Render the main runway at Guantanamo Airport inoperable and destroy all three ammo dumps.
- **Mission 02 — Blockade**  
Objective: Ensure safe passage of at least one cargo vessel to the docks at McCalla.
- **Mission 03 — The Breach**  
Objective: Prevent all enemy T-62 tanks from reaching NAS Guantanamo.
- **Mission 04 — No Brainer**  
Objective: Destroy the Intelligence unit buildings without damaging nearby civilian buildings.
- **Mission 05 — Drop Zone**  
Objective: Before troops are dropped, destroy An-124s and at least 50% of tracked vehicles.
- **Mission 06 — Smoke 'em**







2. Select the type of network on which you'd like to play:
  - **Modem Connection for DirectPlay** — For playing head-to-head against another player over a modem. Both players must have a 14.4-bps or higher modem.
  - **Winsock IPX Connection for for DirectPlay** — For connecting over an IPX local area network. Most Novell® networks use the IPX protocol.
  - **Winsock TCP Connection for DirectPlay** — For connecting over a TCP/IP local area network. NOTE: Internet play is not supported.
3. Return to the Main Screen and click **NETWORK**. The Network Missions screen will appear.



4. Enter a unique callsign in the dialog box in the upper right-hand corner, and select a unique color for your aircraft.
- 5a. **To host a game on a Local Area Network:** Select an arena from the list in the upper left-hand corner of the screen. Click **NEW GAME**. When prompted, give your game a name. You will then begin hosting the game in the network arena that you have selected. Players can then add themselves to your arena or leave the play arena as desired.
- 5b. **To join a game on a Local Area Network:** From the list of active games on the left-hand side of the screen, select a network game to play. All players connected in the same arena and network speed will be displayed in the pilots area. Click **JOIN**. You will then start in the network arena that you have selected.

That's it. Have fun! You can enter or exit a network game at any time. If you get tired of any particular

arena, simply exit the arena and see if any other games are going on over the network.

6a. **To host a game via Modem:** Select an arena from the list in the upper left-hand corner of the screen. Click **NEW GAME**. When prompted, give your game a name. You will then begin hosting the game in the arena that you have selected.

6b. **To join a game via Modem:** Select the same arena as the other modem player then click **JOIN**. You will be prompted to enter the other player's phone number. Enter the phone number in the pop-up dialog box and press **DIAL**.

NOTE: Both modem players must choose the same arena in order to play together. If a different arena is selected, both players will have to return to the Network dialog box and then follow steps 6A and/or 6B listed above.

### **Playing the Network Game**

The network arenas in *A-10 Cuba!* are designed for fast and furious action — no time to even take-off! Players are airborne when they enter the combat arena and are armed with guns and missiles. Up to eight players can enter each arena, and all four arenas can be active.

### **Leaving the Combat Arena**

All network games take place over a 16-by-16-mile area. If a player goes beyond the combat zone, the world is tinted red. One mile outside the perimeter of the combat area, both engines will instantaneously cut out. With sufficient altitude, you can still turn back and the engines will come back to life again.

### **Exiting the Network Game**

Press **Esc** at any time to exit the network game and see the scoreboard.

### **Scoring**

The pilot receives one point for shooting down another aircraft and loses one point for getting killed. If your plane is badly damaged, it may be better to bail out than try to land at an airport and get a new plane.

### **Getting a New Plane**

If your plane is destroyed, press **Enter** for a brand new A-10. If you have already ejected, you must first hit the ground. If the A-10 is damaged, land at an airstrip and come to a complete stop. Press **Esc** and then **NEW PLANE**, if highlighted, for a new and armed A-10.

### **Enhancing Performance**

To increase the performance of slower machines in the network missions, edit the Prefs to turn OFF aircraft debris and use low-detail models.

### **Network Difference and Techniques**

Some changes have been implemented in the *A-10 Cuba!* network missions to improve playability. These changes make the network missions slightly different from the Cuba missions and are listed below:

- **HUD Indicators** — When Pave Penny mode is selected, all aircraft in the game arena are laser-designated, and are represented on the HUD (Heads Up Display) by diamond target indicators. When the HUD is cluttered with multiple aircraft and it is hard to track a single aircraft, cycle using **Tab** until the desired aircraft is selected. If a target indicator disappears from the HUD, then the aircraft has either been destroyed, or it is no longer in your line of sight.
- **Missile Lock Tone** — When another aircraft has launched a missile at you, a high-pitched tone sounds in the cockpit. Although technically unrealistic, it's much more fun for others when *they* know that *you* know that you're going down. When you hear this tone, it's probably a good time to start dropping flares.



- **Pause/Triple Time** — To maintain consistency across all computers on the network, pause and triple time are disabled in the network missions.
- **Combat Options** — Combat options (easy aiming, etc.) are disabled in network play.

### Mission Descriptions

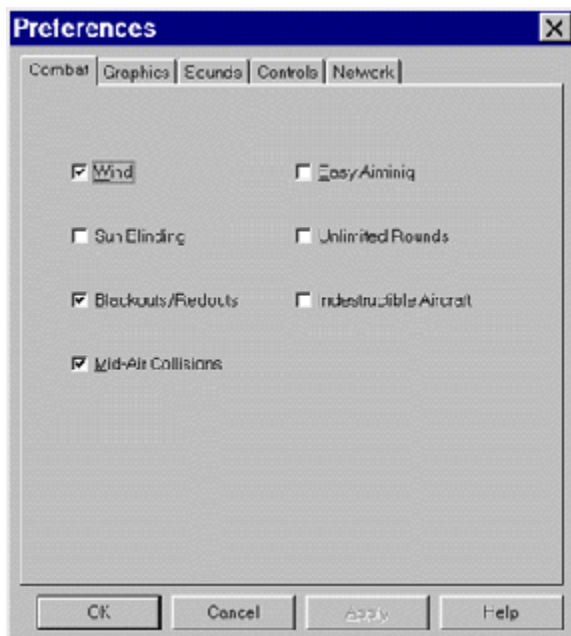
The network arenas in *A-10 Cuba!* all have a unique character and offer network gamers a chance to fly around in some really crazy and unlikely worlds.

NOTE: Remember to land at an airstrip to fix and reload your damaged plane. If you can't find an airstrip, you may be lucky and stumble onto one of the secret landing areas scattered around the arena.

- **Mesa Madness** — This mission is set in the arid desert areas around Arizona and Nevada. The hot air is smooth, but the action is intense!
- **Blown Away** — In this bleak and windy world you'll spend as much time battling against the elements as you will against the enemy. Aircraft carriers are positioned in each corner of this watery world, and provide a safe place to reload and prepare for battle. The winds are cruel though, so don't be surprised if you get blown off the carrier.
- **Pillar Fight** — In this fantasy world, pillars and monoliths stretch thousands of feet into the sky. Weave your way between the enormous pillars and escape the guns and missiles of pursuing pilots. Watch out for the pillars unless you want to watch the broken parts of your plane fall thousands of feet into oblivion.
- **Space Hogs** — Be the first hogs to leave planet Earth and do battle among the asteroids. Try out some interesting new aerobatics in the low gravity of your new home.

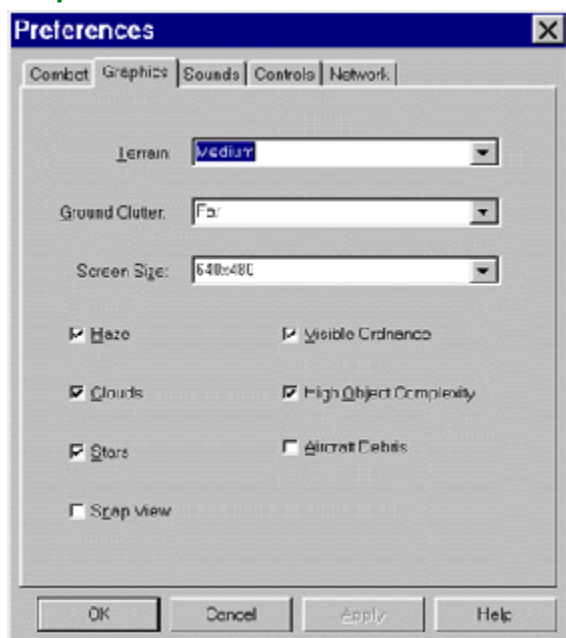
### Preferences Screen

#### Combat



This tab allows you to adjust the level of difficulty in *A-10 Cuba!*. By turning ON **Easy Aiming**, **Unlimited Rounds** (which gives your cannons a never-ending supply of ammo), and **Indestructible Aircraft**, it's going to be hard to lose! **Wind**, **Sun-Blinding**, **Blackouts/Redouts**, and **Mid-Air Collisions** are all features that add realism. That means that a real pilot would have to deal with these elements, and by turning them OFF you're making it a little easier for yourself.

## Graphics



This tab is the most important when trying to improve the performance of *A-10 Cuba!*. If you have a slower machine, you may want to set **Terrain** and **Ground Clutter** to the **Near** setting. Likewise if you have a very fast machine, you can set these to **Far** to get the full effect of *A-10 Cuba!*. The **Screen Size** setting is there for those with larger monitors, though increasing the screen size will decrease performance and require more RAM.

NOTE: 1024x768 resolution is recommended for players with Pentium 90 processors or higher, at least 16 MB of RAM, and PCI video cards with 2 MB video RAM.

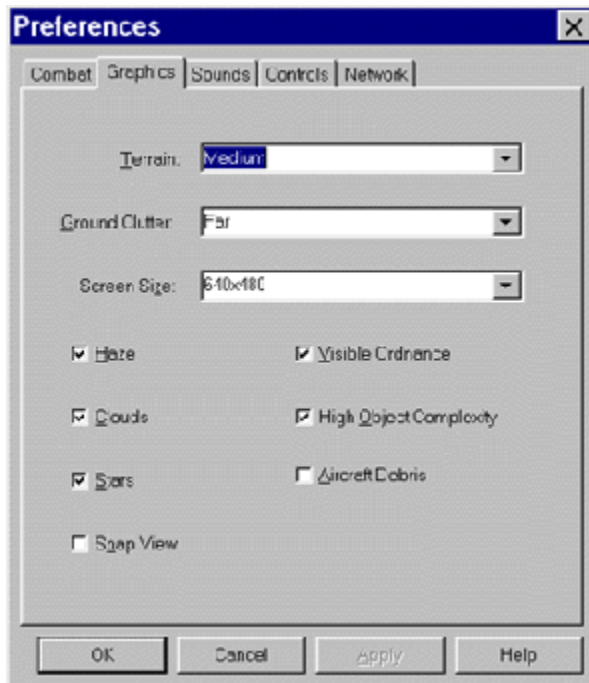
**Haze**, **Clouds** and **Stars** are all factors that add realism to the world. The performance of the game will increase if these are OFF.

**Visible Ordnance**, **High Object Complexity** and **Aircraft Debris** are all very, very cool features that make *A-10 Cuba!* look better than any other flight simulator. If you are running on a slower machine, you may again want to turn these OFF.

When the **Snap Views** option is ON, views automatically snap into place rather than sliding into place. This is purely a matter of personal preference.

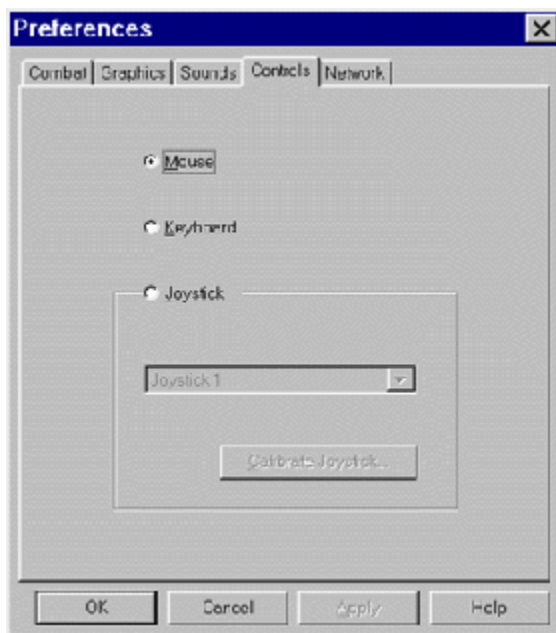
NOTE: If you're playing on a 486 DX2/66, you will probably need to set **Terrain** to **Far**, **Ground Clutter** to **None**, **Screen Size** to **640x480**, and turn all options OFF. Otherwise the game will play excruciatingly slowly.

## Sounds



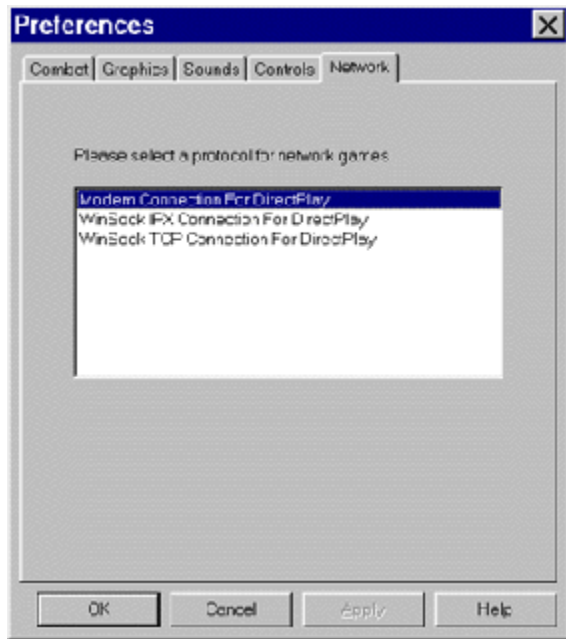
This tab allows you to adjust which sounds you hear, or turn the sound OFF completely. The **Turbofan** sounds are your engine sounds; **Other Sounds** are all the other sounds in the game, from missiles firing to your pilot taking a bullet in the chest.

### Controls



This tab allows you to select your input device. You can choose either **Mouse**, **Keyboard** or **Joystick**, plus you can calibrate your joystick.

### Network



This tab allows you to select the type of network on which you wish to play (see "[Network Screen](#)" for more information).

# Getting Started

## Training Missions

The easiest way to learn how to fly the A-10 Warthog is to fly the training missions. The training missions have been designed to familiarize the new user with the features and functions of the virtual cockpit and the weapons systems available on the A-10.

Missions one and two walk the player through take-off and landing. Mission three provides ground target practice. Mission four immerses the player in a simple air-to-air dogfight. Once the training missions are complete, the player can move through the mission in any order. Here's a brief description of the training missions:

- **Training Mission 1 — Takeoff**  
Objective: To take off and climb successfully to an altitude of 200 feet.
- **Training Mission 2 — Landing**  
Objective: To land and park your aircraft successfully on the tarmac without damage.
- **Training Mission 3 — Air to Air**  
Objective: To destroy at least five targets successfully in the training area.
- **Training Mission 4 — Air to Ground**  
Objective: To destroy enemy aircraft and return safely to base.

## Quick Start

While we recommend that you start with the training missions to get you acquainted with A-10, follow the steps below to begin playing the full missions immediately. These few simple steps will help you get into the A-10 and start flying with minimal fuss.

1. Click on **Missions**, select the **AIRSTRIKE** mission, and then click on **FLY MISSION**.
2. Now that you're in the cockpit, take the time to have a look over your surroundings. Press **2** to see the lower portion of the control panel. Press **1** (the number one) to return to normal view. Notice that using the **Arrow Keys** enables the Virtual Cockpit. While you're doing this, you'll notice that there are other aircraft taxiing on the runways and taking off; just ignore them for now.
3. After the A-10 to your left has taxied out for take-off, press the **Plus Sign (+)** to start your engines and **0** (the zero key) to turn on the HUD.
4. Using the **Plus Sign (+)** and **Hyphen (-)** to raise and lower your speed and your mouse to steer, move your A-10 onto the tarmac. Follow the other planes to the runway. Remember, you can use the **Spacebar** to brake.
5. Once on the runway, press **Shift+Plus Sign (+)** to increase thrust to 100% as indicated by the HUD in the upper left corner.
6. When you reach 150 knots, pull back on the mouse to get airborne. Press **G** to raise the landing gear.
7. Experiment with the controls to get a feel for flying the aircraft. If you start to lose control, press **A** to turn on the autopilot. This will automatically level the aircraft and keep you in the air. Press **A** again to resume control.
8. Press **3** to get an external view of your A-10, and press the **Arrow Keys** to circle the aircraft. By pressing **Shift+Up Arrow** or **Shift+Down Arrow**, you can zoom in or out while in external view mode. To return to the cockpit, press **1** (the number one)
9. Press **M** to arm the cannon and the weapons system. Press **C** to switch the cannon to High rate. If you have any weapons on the underwing pylons, press either an appropriate station number on the keypad (numbers **1-9**, the **Equal Sign** or **Slash**) or a function key (**F1-F11**) to arm the station. Click the mouse button to fire the cannon, or press **Enter** to release or fire the weapon. (For more detailed information on releasing weapons see "[Release Mode](#)" under "[Weapons Systems](#).")



**Gun Rate** — For those times when you really want to lay some waste to a particular aircraft or structure, you can double the firing rate of your cannons. To toggle the firing rate of the GAU-8/A cannon between **low** (2,100 rounds/minute) and **high** (4,200 rounds/minute), use the gun rate switch. This can also easily be accomplished by pressing **C**.

# Heads Up Display

The heads up display (HUD) provides you with a real-time, simplified instrumentation panel right in your front view, thus allowing you to monitor your A-10's performance without having to look at the control panel. If you want to get technical, the HUD is displayed on something called the optical combiner, a transparent surface that reflects HUD symbols, projected from a remote cathode ray tube into your line of vision.

The HUD is probably the most vital piece of instrumentation on the aircraft and, if you lose it, life is going to get even harder. Fortunately, the HUD is pretty tough, and even when it gets damaged, try flicking the mode selector knob a few times. It may just come back to life! This is a good thing, since you need the HUD to navigate to the target, to get back home, to select a target, to fire missiles and drop bombs, and to land on the deck of a carrier in a 60-knot gusting wind.

## HUD Symbolology

### *Airspeed*

Airspeed is presented from 0-500 knots. The optional airspeed tape (on the left-hand side of the HUD) provides a moving scale and fixed index of calibrated airspeed (CAS). The moving portion of the display represents a total of 100 knots full-scale, with small increment marks at 10-knot intervals; elongated marks represent 50-knot intervals. You'll get used to it in no time at all.

### *Altitude*

Altitude is indicated from 0 feet to radar altitude above ground level. The optional altitude tape provides a moving scale and fixed index of altitude. When the aircraft is above 1,000 feet, the moving portion of the display represents 1,000 feet full-scale, with increment marks at 100-foot intervals and elongated increments at 500-foot increments. When the aircraft is below 1,000 feet, the moving portion of the display represents 100 feet full-scale, with increment marks at 10-foot intervals and elongated marks at 50-foot increments. This provides a fine altitude scale for low-level maneuvers. The rapid motion of the scale at low altitudes also alerts the pilot to ground proximity.

### *Destination Index*

The destination index symbol is a circle with a strobe extending from the perimeter. The strobe position represents the relative bearing to the selected waypoint.

### *Distance to Go*

The distance-to-go readout displays the distance remaining to the next waypoint at the current speed, in miles and tenths of a mile.

### *Flight Path Ladder and Roll Bars*

The flight path ladder consists of ladder lines separated by five degrees and labeled in degrees of elevation at each end. Pitch is indicated over a range from +90 degrees to -90 degrees, and tabs on the ladder lines point towards the horizon line. Positive elevation lines are solid on each side of the center gap, while negative elevation lines are dashed. Roll is indicated over a range from 0-360 degrees.

### *Gun Cross and Inhibit Symbol*

The gun cross is fixed in the center of the HUD. When the aircraft is on the ground and/or the weapons panel is unarmed, the gun cross is crossed with the inhibit marker.

### *Magnetic Heading Tape*

The magnetic heading tape provides a moving scale and fixed pointer indication of magnetic heading from 0-360 degrees. Marks representing multiples of 10 degrees have two-digit numbers above them, where 01 represents 10 degrees and 32 represents 320 degrees.



## Total Velocity Vector

The total velocity vector (TVV) symbol is a circle with three lines extending from the perimeter. The TVV shows the true direction of the aircraft at the current velocity, and is better than the nose direction at indicating where the aircraft will end up. Use the TVV as an aid to landing the aircraft by aligning the symbol with the numbers at the end of the runway.

## Vertical Velocity Indicator

The vertical velocity indicator displays the vertical velocity in feet/minute. The indicator consists of an unlabeled vertical scale containing three major and eight minor increment marks. Each increment represents 100 feet/minute vertical velocity.

## Time to Go

The time-to-go readout indicates the time remaining to reach the next waypoint at the current speed, in minutes and tenths of minutes. When the time-to-go is less than one minute, it is displayed in seconds.

## Throttle Setting

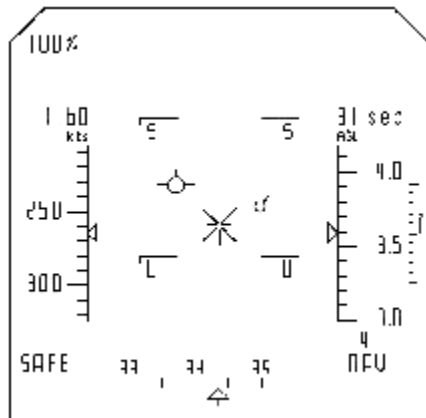
The throttle setting readout displays the throttle position and is not an indication of the total thrust produced by the engines. If the engines are damaged, 100% throttle will not necessarily indicate that the engines are generating maximum thrust.

## Waypoint Alphanumeric

The waypoint alphanumeric readout displays the waypoint to which the aircraft is currently heading when the TACAN is enabled.

## HUD Modes

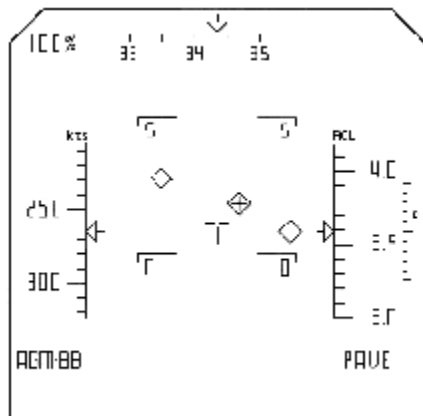
### Navigation Mode



The Navigation mode is used during normal point-to-point operations and is primarily used for the display of navigational data. The TVV is displayed in the Navigation mode only and shows the pilot where the aircraft is going. This is a useful feature that allows the pilot to land the aircraft simply by keeping the TVV symbol aimed at the end of the runway until the aircraft touches down. The TVV is also useful in canyons or mountainous terrain since it shows whether the aircraft will fly into the ground. A darn useful piece of information when you stop and think about it.

TACAN is used in the Navigation mode with the destination index, the distance-to-go readout, the time-to-go readout, and the waypoint readout all displayed on the HUD. If the autopilot is also engaged, the aircraft will automatically fly itself to the waypoint indicated in the waypoint readout. The aircraft will not attack targets when the TACAN and autopilot are engaged, and therefore simply flies from one waypoint to the next. Press **W** to cycle through to the next waypoint. The TACAN disengages when the last waypoint is reached.

## Pave Penny Mode

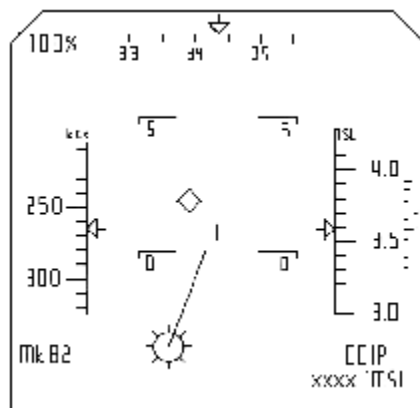


The Pave Penny mode is used to pass target information to the laser-guided weapons carried by the A-10. Laser-guided bombs, Mavericks and Hellfire missiles use information provided by the Target Identification Set Laser (TISL) system. The TISL is a forward-looking laser seeker and tracker system that searches for coded laser energy reflected from targets illuminated by a coded laser designator (someone pointing a laser at something), locks and tracks the target, and provides target information to the aircraft avionics system.

In Pave Penny mode, target location information is displayed on the HUD to aid the pilot during ordnance delivery. Targets are identified by the TISL target diamond.

To select a target, press **Tab** and a cross will appear within the diamond to indicate a lock. When multiple targets are visible in the HUD, **Tab** is used to cycle between targets. When the target is in range of the selected munitions, the diamond border gets thicker. To release the ordnance, press **Enter**. To clear all selected targets, press **Backspace**.

## CCIP Mode



The Continuously Calculated Impact Point (CCIP) mode is used with free-fall iron bombs and allows near-precision bombing. To select a target, align the gunsight with the target and press **Enter**. The selected target is identified on the HUD with a diamond and a release reticle is displayed on the HUD indicating the impact point of the selected stores. To calculate the impact point of bombs released on targets above sea level, the flight computer requires the altitude of the target. When the HUD is in Barometric (BARO) mode, the altitude of the selected target is automatically passed to the flight computer, and is displayed in the bottom right corner of the HUD. It is very important to have the **BARO** button depressed if you want CCIP to work properly.

Once a target is selected, there are two methods of releasing ordnance. To release stores automatically, fly the release reticle onto the aiming reference. If the release reticle is off the HUD and only the release line is visible, simply fly the release line over the aiming reference. To release selected stores manually,

press **Enter** again. To clear the selected targets, press **Backspace**.

# Hints and Tips

## Surviving and Attacking Within the Game

### *Avoiding SAM and Sidewinder Missiles*

The best way to avoid an incoming SAM or Sidewinder missile is to turn 90 degrees away from its path of travel while dropping chaff and flares. This is done by turning towards it, if you have time, and maxing your power. When you feel it's close enough, turn, climb or dive to place a 90-degree angle between you and the missile's path while dropping chaff and flares.

This is a practiced art and the more you do it, the better you get at it. It is also suggested that you try to keep your speed as fast as possible so you have the energy to avoid any other missiles that may be on their way. After all, it doesn't help to avoid one missile only to have the second one get you because you lost your energy (slowed down) while avoiding the first.

### *Avoiding Ground-Based Anti-Aircraft (Zsu-Zsus)*

The best way to avoid anti-aircraft (AA) cannon fire is to weave over and under each bullet stream as it is fired until you get in close enough to hit the cannons. This is done by flying head-on towards the AA site. When it fires, you will see tracer bullets coming towards you. Climb just enough to let them pass below you, but don't lose site of the target. Wait there until you see a second burst coming at you. Dive just enough to allow them to pass over you. Continue this climb/dive zipper pattern until you get within range, and then fire.

### *Firing the Cannon*

To fire the cannon, the aircraft must be airborne and armed. Press **M** to master-arm the aircraft, and press **0** (zero) to turn your Heads Up Display (HUD) to NAV mode. Line up the T-cross and fire with the mouse button or **0** (zero) on the numeric keypad. You may need to lead the target to get a hit. A hit is confirmed when white sparks fly from the damaged target. Try to fire in short, controlled bursts to conserve rounds.

### *Multiple Release of Weapons*

To launch weapons grouped or in a sequence, you must adjust three parameters, as described below:

- The first parameter is adjusted using the Ripple Mode rotary switch, which offers five methods of delivery:
  1. Ripple Mode Single (keyboard string **RMS**), which releases one weapon per press of the trigger.
  2. Ripple Mode Pairs (keyboard string **RMP**), which releases a pair of weapons per press of the trigger.
  3. Ripple Mode Jettison (keyboard string **RMJ**), which releases all selected weapons, in an unarmed state, at the press of the trigger.
  4. Ripple Mode Ripple Single (keyboard string **RMRS**), which releases a single weapon, one after another, per press of the trigger.
  5. Ripple Mode Ripple Pairs (keyboard string **RMRP**), which releases a pair of weapons, one after another, per press of the trigger.
- The second parameter is the Ripple Count wheel switch. Here you set how many releases occur per single trigger event.
- The third parameter is the Ripple Interval wheel switch. Here you set the time, in milliseconds, between releases after the initial trigger.

For example, let's say you wished to drop six MK-84s in a single row, carpet-bomb fashion. Select **single** from the Ripple Mode rotary switch. Then dial the Ripple Count switch to **06** (don't forget the leading zero). Finally, set the Ripple Interval dial to **50 milliseconds** or half a second. After initial trigger, the bombs will begin their release one at a time, half a second apart, until all are dispensed. As long as you

held a steady course the bombs will have fallen in a nice neat line one after the other.

### **Launching Air-to-Air**

To fire air-to-air missiles, you must master-arm the aircraft and select the weapons station (**1,11**) to activate the missiles. If a target is in range, you will hear a steady growl tone. This tone has three levels of pitch to let you know when to fire. When the third and highest tone is heard and you see the **SHOOT** command in the HUD, press **Enter**, and then press mouse button two or joystick button two to fire the missile. You can choose to fire on earlier tones with varying degrees of success.

### **Launching Mavericks**

To fire television-guided AGM 65Bs and infrared-guided AGM 65Ds you must press **M** to master-arm the aircraft and select the weapons station (**3,9**) to activate the missile. Press **+** (Plus Sign) on the numeric keypad to turn ON the television display. Place the cross hairs in the television display on the target using the **Arrow Keys** and press **Enter** to fire. Under stressful conditions, ignore the TV display and aim with the T-cross.

### **Launching Pave Weapons**

The A-10 can't designate a pave target itself; this is done instead by uncontrollable ground troops in the area. To fire AGM 65Es or other pave-guided weapons, you must press (**0**) (the number zero) to change the HUD to the Pave Penny mode. Press **M** to master-arm the aircraft and select the weapons station to activate the weapon.

While approaching the target, look through the HUD to find any illuminated targets. If found, you will see a diamond for each target that is available. To select one press **Enter** once. To cycle through them, press **Tab**. When you're in range you will see an "in range" message in the HUD and the diamond will become thicker in appearance. Press **Enter** to launch the weapon.

There are specific missions that have pave-designated targets; some that utilize pave targets are: The Breech and Wreckin' Reactor. You will require a different method of attack for the rest of the missions.

### **Launching Anti-Radar Weapons**

To fire AGM-88s you must press **M** to master-arm the aircraft and select the weapons station to activate the missile. When a target is in range, it will show up on your radar warning receiver (RWR). To select a target, press **H** to hand-off the target to your missiles guidance system. This places a diamond at the end of the target's line on the RWR. To cycle through the available targets press **Tab**. When one is selected and the target's line extends beyond the inner-most circle, you can press **Enter** to fire the missile. Make sure the aircraft is pointed directly at the target, within a 20-degree cone of centered. This will insure the ability of the missile to correct its flight path in time to hit the target. Firing outside this window will result in a miss under most conditions.

### **Releasing CCIP Weapons**

To launch a bomb using the continuously calculated impact point (CCIP) method, you must press **M** to master-arm the aircraft and select the weapons station to activate the bomb(s). Press **0** (the number zero) to change the HUD to CCIP mode, and press **B** to activate the barometer for bombing. As you approach a target, place the T-cross on the target and press **Enter** to pickle or select it. Fly level at about 225 knots and 1200 feet, keeping the line in the diamond. When you're directly over the target, you should hear and/or feel the bomb(s) release automatically. It's the most difficult method of delivery and takes practice to perfect, but it also causes the most damage.

NOTE: The bomb's trajectory will be affected by cross winds.

## **A-10 Cuba Network Hints**

### **Finding Enemies Quickly**

The most important thing to know is how to find the enemy quickly. Press **0** (the number zero) to change

the HUD to the Pave setting. In the network environments only, all aircraft will be painted unless hidden by obstruction. Use **Tab** to cycle through and select a specific target; this way, even if there are eight players, you can find specific targets quickly. In addition, all the aircraft are color-coded by individual players at start-up for close-range identification.

### Super Speed

All four current network environments have one super-speed landing field or area that will boost your thrust to 150% of normal when **NEW PLANE** is selected. This is done by landing on the target location, coming to a full stop, turning off your engine, pressing **Esc**, selecting **NEW PLANE** and, finally, re-entering the environment.

If your plane is damaged, you can land at just about any airfield for repair following the above method, but only special locations will give the speed boost. Pilot scores are based on two variables: (1) how many planes you've shot down (positive number) and (2) how many pilots you've lost (negative number). The winner is the pilot with the best combined figure. While both are displayed as positive numbers, ignore this and subtract dead pilots from planes shot down. The pilot with the highest number wins.

### Single-Player Mission Hints

All mission hints and tips are based on using a single aircraft to complete each of the missions while achieving as many points as possible. Not all of the objectives listed for each mission are required for successful completion; these are the steps for winning as seen from one perspective. Feel free to improvise.

A group of custom loadouts is provided for you in the **\LOADOUTS** directory inside the directory where you installed *A-10 Cuba!*.

### Airstrike

This mission has five steps, and requires four AIM-9s, two AGM-88s, six AGM-65Bs, two MK-84s and six CBU-15 Durandals. Let the F-15s take off before you start unless you fancy a little air-to-air highjinks. MiGs are already airborne.

1. The first objective is to find any MiGs you can reach out and touch from a distance. Take off heading 18 degrees for nine miles. The MiGs should be positioning for take-off if you waited long enough. Arm the AGM-65s and squeeze a couple of missiles off quickly as you approach, but leave yourself enough time to prep for objective #2.
2. The second objective is to destroy the enemy runway. Select all the Durandals, RMRP, RC08, RI99, NAV mode on your HUD. As you approach the runway, line up for a low, 250-foot pass directly over and in line with the runway threshold, as if you were landing. Just before you reach the threshold, press **Enter** to begin the release sequence. Hold a steady line of flight and select Rear View (press **R**), to see the results — usually the severely soiled pants of several MiG pilots. Switch weapons mode to RMS.
3. The third objective is to destroy any MiGs that are currently in the air and that, by now, are taking a close look at you. If the F-15s did their job, you should have limited or no resistance. Use the AIM-9s to clean things up. Just don't panic and take out the F-15s; use the #5 view to confirm.
4. The fourth objective is to destroy the AA sites protecting the ammo dump. Turn heading 345 degrees for eight miles. Select the AGM-88s and release one on each of the AA sites. As they acquire you, break and circle for step five.
5. The fifth and final objective is to destroy the ammo dumps themselves. Pretty simple here — using the CCIP mode, drop a single MK-84 on one of the two side-by-side dumps. This will take out both dumps and possibly the third solo dump as well. If not, line up and drop the final MK-84 on the third ammo dump. Be sure and keep a healthy distance or you will be destroyed by secondary explosions from the dumps themselves.

### Blockade

This mission has three steps, and requires four AGM-88s and six MK-84s.

1. The first objective is to destroy the long-range radars, one on each of the four cruisers. Select the 88s, taxi out of the hangar, turn right heading 270 degrees and take off. Go about a half a mile and break left 180 degrees to a heading of 90 degrees. As you come about, pickle-and-release one AGM-88 on each of the four strongest signals. These will be the long-range radar for each cruiser. Remember to turn and fire quickly, because the short-range gun radars will acquire you soon after the long-range ones do. This will confuse target selection.
2. The second objective is to destroy the cruisers themselves. Select the six MK-84s, RMP, and press **0** (zero) to select HUD mode to CCIP. Don't forget to press **B** to activate the HUD barometer. Drop down to below 50 feet and hold a 90-degree heading for around five miles. The objective is to circle around the cruisers and attack them head-on. This is the best tactic because all the cruisers are lined up. Turn right heading 180 degrees until you are perpendicular to the bow of the lead cruiser, then break hard right to 270 degrees while climbing hard to 1,200 feet. Pickle or select the lead cruiser and release a pair via CCIP. Repeat the process for each of the first three cruisers. After the final release, break hard right to 0 degrees and land at home before the MiGs arrive. Reload.
3. The third objective is to destroy the MiGs. Just as the MiGs are arriving, take off heading 90 degrees and activate the 88s. Wait until you get a good rear shot and fire on their radar source. If they cooperate, they will hold a fairly straight flight path and die like good airman; if not, get rid of the 84s by selecting RMJ and pressing **Enter**. Prepare to have your hands full. By now your friendlies should have bagged the final cruiser; if not, you may choose not to engage the MiGs after launching the 88s. Simply disengage, land at home, reload, wait until the MiGs leave, then take off and bag the final cruiser via CCIP.

### **The Breech**

This mission has four steps, and requires four AIM-9s, two AGM-88s, six AGM-65Bs and four MK-84s.

1. The first objective is to destroy the AA cover for the incoming tanks. Taxi out of the hangar, turn right to 270 degrees, and take off over the grass with full flaps. If you're into a little fun, buzz your ground-pounding friendlies on the way out. Go out about a half-mile and turn right heading 35 degrees for about four miles. Select the AGM-88s and fire one on each of the two AA sites as they acquire you. Remember to break hard after firing to prevent them from shooting your missiles while trying to get at you.
2. The second objective is to destroy the pave-painted tanks. Press **0** (zero) to select the Pave Penny HUD mode and select the MK-84s and RMS. Launch one on each of the painted targets, then have a sandwich while in the #7 view because, after all, this is entertainment. Press **0** (zero) to return the HUD to NAV.
3. The third objective is to destroy the incoming SU-25 bombers heading for your base. Select the AIM-9s and turn heading 45 degrees for about five miles to go at them head-on. As they approach, fire with the cannon to do what damage you can on the first pass, then turn hard 180 degrees to come in from behind them. Fire the AIM-9s to bag what you can, then activate the AGM-65Bs. Use these and the cannon to get any SU-25s left flying before they release their bombs.
4. The fourth objective is to destroy the remaining tanks and incoming MiGs. Use the cannon to clean up the tanks before they reach your base. Do this while looking for the MiGs, which can sneak up on you. There is F-16 support helping to keep them off your back, but there are no guarantees they will be successful.

### **No Brainer**

This mission has four steps, and requires four AIM-9s, two AGM-88s, one MK-84 and one MK-83.

1. The first objective is to destroy the flak sites protecting the target location. Take off heading 0 degrees for 13 miles and climb to 5,000 feet. Select the HARMs and fire one on each of the two flak sites as they acquire you.
2. The second objective is to destroy the target intelligence building. Press **0** (zero) to select the Pave



Penny mode in the HUD, and select the two bombs and RMP. When the target is confirmed, pickle or select, and launch. If no target is acquired, press **0** (zero) to select the CCIP HUD mode. The target is the complex with the satellite dishes on the west side of the city. Be careful not to get any of the three surrounding buildings (the school, church and hospital). The use of two MK-84s is too powerful and two MK-83s is not enough, so be sure you're accurate.

3. The third objective is to destroy any MiGs in the area. They will arrive if you take too long and must be dealt with before pressing on. You'll have friendly fighter support but, once again, their effectiveness is not predictable, so be prepared. Use the AIM-9s on any that appear around the city; watch for friendlies.
4. The fourth and final objective is the easiest yet: stay alive! That's right — just follow the TACAN home but watch for the MiGs patrolling the enemy field as you pass by. If you stay below 50 feet they will not acquire you and all will be fine. If you go above that while around their base, even for a short period, you'll be fertilizer.

### **Drop Zone**

This mission has three steps, and requires four AIM-9s, two AGM-88s, six AGM-65s and 38 HVRs.

1. The first objective is to destroy the incoming SU-25s headed for your base. Select AIM-9s. The SU-25s are coming in two waves of three each. The first three are loaded with bombs only, while the final three are loaded for air-to-air only. Take off and turn right heading 135 degrees for about 1,000 feet, then turn left heading 90 degrees and stay below 50 feet to remain safe. You want to be about 500 feet or so offshore running parallel to your take-off runway. If done correctly, you'll pass over the tip of the jetty, nose-to-nose with the incoming SU-25s. Let the first wave pass; your guys should be able to handle them. You should go after the second wave. Fire on them as soon as you can; as you pass, assess the damage and turn to engage who's left. Make it quick and break from the fight ASAP; your wingmen will cover you, as you have more pressing matters to deal with.
2. The second objective is to destroy the incoming AN-124s with paratroopers. Turn heading 90 degrees for about five miles, and go for the floor, less than 50 feet. This should keep any remaining SU-25s from following you. Select the HVRs and prepare to party! When acquired by enemy radar, climb to address the threat. Do as much damage on the first pass as possible, then turn hard left 180 degrees to come at them from behind. Drill them with HVRs and cannon; if they've slipped out of range, use the AGM-65s.
3. The third and final objective is to destroy the incoming tanks attempting to take the airfield. They will be on the road leading to McCalla from the main gate, which they've overrun. Select the HARMs and fire on each of the two AA vehicles as they acquire you. Select the remaining AGM-65s, HVRs and cannon to destroy the tanks before they reach the airfield. Press for home.

### **Smoke 'Em**

This mission has three steps, and requires eight AGM-88s and two MK-84s.

1. The first objective is to destroy the SAM, flak and AA sites protecting the tobacco fields. Don't expect to get them all with 88s; there are too many, so you'll have to get gun friendly. Take off heading 125 degrees for about 20 miles. Select AGM-88s and fire on the first eight RWR targets. As you close in, use guns to clean up any further resistance.
2. The second objective is to destroy the tobacco trucks. Arm the MK-84s, select CCIP mode and find the two biggest groupings of trucks to take out as many per bomb as possible.
3. The final objective is to clean up the surviving trucks with the cannon. Use the low-speed cannon to conserve rounds, as the trucks don't take much.

### **Bridge Buster**

This mission has two primary and three secondary targets using eight AGM-88s and two MK-84s.

Timing is critical as the armor will pass over the bridge at about the same time you arrive at full throttle.



Any delay will allow some to pass, thus exposing you to dangerous clean-up tasks. This means you generally get one shot at each target in question.

1. The first objective is to destroy the five SAM sites on the canyon walls as you approach the main target. Considering the limit of eight shots, use each AGM-88 to take out half a site, and use the cannon to get the remaining half. Repeat this process for each of the five sites along the canyon rim. This should leave you with three remaining AGM-88s.
2. The second objective involves a primary target, and requires that you destroy a bridge. Select the MK-84s, RMP, Pave Penny mode. As you approach the bridge, look for the pave designator, pickle or select, and fire. If no designator is seen, switch to CCIP, pickle or select, and release. Be sure you'll release cleanly. If you are not sure, it's best to go around for a second pass.
3. The third objective involves a primary target, and requires that you destroy the armor that is on the road. If any have passed the bridge, get the lead vehicles first and work your way back. If the bridge is out, you can ignore any on the other side as they will eventually roll off the edge to their doom. If the bridge is intact, you'll have to clean them all up. If any manage to pass up the coastal road, the mission is lost.
4. The fourth objective is to destroy the off-shore patrol craft. Their weakness is from behind where they cannot fire. They are on patrol over most of the tip of Cuba. Just work your way in behind one and run up the coast killing any you come upon. Be careful not to get sandwiched between these and objective number five.
5. The fifth and final objective is to destroy the 18 SAMs on the hill overlooking the coast, north of the bridge. Use your final AGM-88s to get what you can. Move off-shore about one-to-two miles and climb to 10,000 feet while staying parallel to the coastline. Position yourself in front of the site, and turn towards it to decoy them into firing. When you feel you've gotten enough to launch, turn 90 degrees and run parallel to the coast again while dropping flares. Repeat this until all are gone. Use the cannon to kill the launch sites when disarmed. Head home.

### **The Red Eye**

This mission has three objectives, and requires eight AGM-88s and two MK-84s.

1. The first objective is to destroy the flak sites along the canyon. The first of these is best destroyed by bombing. Take off heading 55 degrees for nine miles, and spot the flak site by the bridge on your two-o'clock low. Come right, then high yo-yo left to line up on that site. Select two MK-84s, CCIP, RMRS, RI20, RC02. Pickle or select the site, and hold level for release.
2. The second objective is to destroy the remaining sites along the rim and in the river bed of the canyon. Since you used the bombs on the first site there should be just enough 88s left over to do the job. If you can get any with the cannon, it's advised, since there are MiGs in the area you may need to use any left over 88s on them.
3. The third objective is to destroy the MiGs near the end of the canyon. If you have any 88s left, go for a head-on shot. If not, it's a hard fight. If you're lucky, you'll get one on the merge. After that, you'll want to keep them on you and off of the 727. There are F-16s assigned to meet you, so if you can hold long enough they will break the lock and allow offensive action.

### **Out'a Business**

This mission has two primary and three secondary targets requiring two MK-84s, two MK-83s, six MK-82s, six AGM-65s and four AIM-9s.

1. The first objective is to destroy primary target number one, the factory. Select one MK-84, and then select Pave Penny mode and look for a pave designation while approaching the third waypoint. Launch as soon as you are in range, then break right to the east and head for the enemy airfield. While heading to target number two, confirm the factory using the #7 weapon view.
2. The second objective is to destroy secondary target number one, the enemy SU-25s waiting for take-off, and support an attack on your friendlies. If the factory is confirmed killed, switch to CCIP and drop

the second MK-84 on the middle SU-25 in line for take-off. If the factory still exists, redirect and release the MK-84 on it instead, and gun the SU-25s.

3. The third objective is to destroy primary target number two, the oil tanks. Select the MK-82s, Pave Penny mode and fire on the first six pave-designated targets you get within range of; use cannon on the rest. By this time you should have MiGs tailing you, so check your six frequently.
4. The fourth objective is to destroy secondary target number two, the SU-25s and MiGs already in the air. Prioritize the SU-25s since they are the primary offensive to your friendly forces. Chase the MiGs when they are a targets of opportunity or when immediately threatened. Use cannon on the SU-25s and AIM-9s on the MiGs.
5. The final objective is to destroy secondary target number three, the enemy tanks battling your friendlies from across the lake. If any SU-25s slipped by, get them first, then go after the tanks. Select the MK-83s and CCIP mode, and nail the two biggest groupings you see. Finish up with the cannon, then head home.

### **Deep Six**

This mission has two primary and three secondary targets requiring four AGM-88s and six MK-84s.

1. The first objective is to destroy secondary target number one, the SAM sites affording protection to the ships. Use the TACAN to guide you to target but, just after waypoint number four, go out over the lake and make a wide right turn to open some distance between you and the SAM targets. Select 88s and fire on the first four strongest signals, then fall immediately back to waypoint number four and approach, using TACAN, from that direction.
2. The second objective is to destroy primary target number one, the ships in port. Select MK-84s, CCIP mode, RMP and pickle or select the tanker on the north end of the dock. It will take two MK-84s to sink it, but that blast will take out all but the one cargo ship on the south end of the dock and the lone tanker in the harbor. All this time, watch your six since there will still be MiGs and SAMs in the area. Now drop another pair on the tanker in the harbor. Leave the last cargo ship for the clean-up crew.
3. The third objective is to destroy primary target number two, the ships in target location number two. Use TACAN by selecting **T** to navigate to waypoint number seven. Depending on what has survived, target the remaining ships. If it's a tanker, set up for a RMP release; if not use single-release MK-84s to kill the cargo ships. Get what you can while avoiding the incoming, and let the cleaning crew get the rest.

NOTE: You can move these following priorities up as needed, but considering the primary reason for your being there and the added weight, you won't usually have time or maneuverability to do so effectively. Lose the weight by dropping bombs first to survive.

4. The fourth objective is to destroy any enemy air support not already destroyed. They can be at either dock location or at the airfield across the lake. Clean them up.
5. The fifth objectives is to destroy secondary target number three, any remaining SAM or AA sites found at the docks and enemy airfield. Once completed, return home.

### **Wreckin' Reactor**

This mission has one primary and three secondary targets requiring eight AGM-88s and two MK-84s.

1. The first objective is to destroy primary target number one, the control facility for the nuclear substation. Wait for your friendlies to take off first, and then take off and advance your TACAN to waypoint number four. Select MK-84s, Pave mode, RMP, RI00. Get very low (50 feet or less off the water) or one of the MiGs will nail you. About 1,000 miles before landfall, climb hard and level off just above the lip of the hill so you can see the target. Once the pave designator shows up, pickle or select, and release the MK-84s. Don't worry about the range; the bomb will make it without a problem. Break hard left to avoid the incoming that will, no doubt, be after you, and dive down back behind the hill out of sight. As you keep coming, left check your six for MiGs and watch for land-launched SAMs from across the lake.

2. The second objective is to destroy secondary target number one, the SAMs and AA covering the site. As you come around left, you should have just done a 360 and be lined up on the target again. Select AGM-88s, RMS and fire on the first four strongest signals. Break hard left again, and dive down behind the hill to make another 360 and final pass, all while checking your six. On the final pass, let the last four missiles go on the next strongest signals. Be careful not to target something twice or you'll just waste a missile.
3. The third objective is to destroy secondary target number two, the defending MiGs. Using the cannon, destroy everything left in the air.
4. The fourth objective is to destroy secondary target number one, the remaining SAM and AA sites at the nuclear facility. For this you need to land, re-load with AGM-88s alone and take off heading to waypoint number four. As you approach, fire on the eight strongest signals, then break hard again to avoid the incoming. Use your cannon to clean up what's left.
5. The fifth objective is to destroy secondary target number three, the SU-25s flying by. They are not directly involved but, if you can, take them out anyway.

### **Canyon Run**

This mission has one primary and three secondary targets requiring eight AGM-88s and two MK-84s.

1. The first objective is to destroy the primary target, the leader's hacienda. Take off and follow the other friendlies. Select the two MK-84s, CCIP, RMP and stay low in the canyon. As you approach the target, slow down enough to give yourself time to pickle or select, but don't go too slowly or you won't have enough energy to climb out — about 225-250 knots should be about right. You may want to slip in around the same time as your friendlies so they can draw fire from you. Once you've selected the target, pull gently so you don't overshoot the target.
2. The second objective is to destroy secondary target number one, the air cover. Stay low, since there are still lots of SAMs, and take out what you can using cannon.
3. The third objective is to destroy secondary target number two, the SAM and AA sites along the lip of the canyon. Using your AGM-88s get as many as you can and use your cannon on the rest.
4. The fourth objective is to destroy secondary target number three, the enemy tanks slowing the land assault from your friendly tanks. Use the cannon to destroy them and then head home.

## Heads Up Display (HUD) Control Panel



Selector switch to change the flight data displayed on the HUD, a set of push-buttons to select HUD options, and a malfunction warning light. Press **0** (zero) to rotate the selector clockwise and **9** to rotate the selector counter-clockwise. Press **T** to toggle TACAN on and off, and **B** to toggle the radar and barometric altitude display. The HUD options are used to customize the information displayed on the HUD.

- **TAPE** — Toggles the airspeed and attitude indicators between tape and digital readout.
- **TACN** — Enables the TACAN and displays the destination tadpole and waypoint number on the HUD.
- **BARO** — Toggles the altitude reading between radar altitude above ground level, and barometric altitude above sea level.
- **LADR** — Toggles the flight ladder.
- **NITE** — Reduces the intensity of the HUD for reduced-light operations.

## Horizontal Situation Indicator



The horizontal situation indicator (HSI) displays a plane view of aircraft heading and is also known as a directional gyro (DG). To compensate for gyroscopic precession, a magnetic compass mounted on the HUD frame is used in conjunction with the HSI.

## Interactive Cockpit

Click here to view [cockpit](#).

One of the unique features of *A-10 Cuba!* is the interactive cockpit. This feature allows you to interact directly with the instrument panel by pointing and clicking on the desired controls with the mouse. This is especially helpful for those folks who like to make a visual association with the controls. For example, if you want to pull the fire extinguisher, just reach out and pull it! What could be easier? Well, OK, a direct neural interface enabling control by thought alone would be easier, but we think this is pretty cool in its own right.

To take advantage of the interactive cockpit you must be in either cockpit view or panel view. Basically, the interactive cockpit lets you push buttons, flick switches, pull handles, rotate knobs and increment counters by clicking on the screen with the virtual hand.

The virtual hand is displayed permanently when **Caps Lock** is depressed, or temporarily when **Ctrl** is pressed. Using the **Ctrl** method is helpful when flying with the mouse because, when the virtual hand is active, mouse inputs are not used for aircraft control.

When the virtual hand passes over an interactive cockpit feature, it changes to a directional or rotational cursor that indicates the direction in which the knob in question will be turned. Of course, equivalent keyboard commands are available for many of the important functions of the instrument panel and are listed at the end of this section ("[Keyboard Commands](#)").

Here's a handy list of cockpit instruments and controls that can be accessed using the virtual hand:

- Armament control panel
- Chaff and flare control panel
- Display control panel
- Emergency jettison
- Engine start
- Fire handles
- HUD control panel

In low-light conditions, it may be too dark to see the instrument panel clearly. To turn on the cockpit lighting, press L.

## Flight Instruments and Systems

Aircraft, especially military aircraft, are annoyingly complicated at times. There are scores of instruments and system sensors to be aware of if you really want to be an ace. However, most of these systems and gauges are not really necessary for the enjoyment of *A-10 Cuba!*, so don't feel that you have to know the difference between the directional gyro and the horizontal situation indicator. If you simply *must* know, however, here is a brief roll call of your instruments.

### Altimeter



The altimeter displays the altitude of the aircraft above sea level in feet. The smaller hand on the altimeter reads in thousands of feet while the larger hand reads in hundreds of feet. Clockwise movement means you're gaining altitude, and counter-clockwise means you're losing altitude. Of course the easiest way to read the altimeter is just to look at the digital readout contained within the gauge.

### Airspeed Indicator



The airspeed indicator measures the velocity of your aircraft. Airspeed is displayed in knots (nautical miles per hour). The airspeed indicator has a fixed circular scale, moving pointer display that is graduated from a 50-knot minimum, in increments of 10 knots to a maximum of 550 knots. It is usually easier to see your airspeed by looking at the HUD.

### *Vertical Speed Indicator*



The vertical speed indicator (VSI) measures the vertical speed of the aircraft in feet/minutes. The climb/sink rate is displayed in thousands of feet per minute. Again, this is not a gauge you will normally be using often, but it can come in handy for advanced pilots.

### *Attitude Director Indicator*



The attitude direction indicator (ADI) is what's commonly referred to as an artificial horizon. It provides a pictorial display of the aircraft pitch and bank attitude relative to the horizon. The ADI consists of an attitude sphere with pitch references graduated in 10-degree increments, and an inclinometer.

### *Horizontal Situation Indicator*



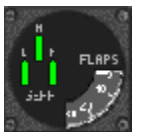
The horizontal situation indicator (HSI) displays a plane view of aircraft heading and is also known as a directional gyro (DG). To compensate for gyroscopic precession, a magnetic compass mounted on the HUD frame is used in conjunction with the HSI.

### *Clock*



The real-time mission clock has a standard 12-hour configuration. To advance the time of day by 30 minutes, press **N**. To go back in time by 30 minutes, press **Shift+N**. Changing the time of day affects only the ambient lighting conditions and visibility.

### *Flap/Gear Indicator*



The gear indicators are green when the undercarriage is down and locked, and red when the gear is

retracting or damaged. When the undercarriage is stowed and locked, the indicator is not lit. To raise and lower the gear, press **G**. The flap indicator shows the deflection of the flaps to a maximum of 30 degrees. To lower your flaps in increments of 10 degrees, press **F**. To retract flaps in increments of 10 degrees, press **D**. Remember, at speeds over 200 knots, the flaps automatically retract.

### Accelerometer



The accelerometer is a direct reading instrument used to measure the acceleration of the aircraft along the vertical axis. This is a measure of the forces that act on the airframe and the pilot when the aircraft is maneuvering. When the GAU-8/A cannon is fired, the vibration of the airframe causes the accelerometer needle to oscillate wildly, giving a false indication of the forces acting on the pilot.

### Magnetic Compass



The magnetic compass displays the magnetic heading of the aircraft, and acts as a backup in case of a power failure to the electrical instruments.

### AOA Indexer



The angle of attack (AOA) indexer is activated when the undercarriage is lowered; it is used as a landing aid. The green circle in the center illuminates when airspeed and rate of descent are correct. The upper red triangle illuminates when airspeed is too low and the pilot needs to either lower the nose or increase thrust. The lower red triangle illuminates when airspeed is too high and the pilot needs to either raise the nose or reduce thrust. The ideal landing speed depends on the weight of the aircraft and is automatically calculated by the flight computer.

### Fire Handles



A fire in the engines or auxiliary power unit is indicated in the cockpit by the flashing fire handles. There are a couple ways you can deal with this: pull the fire handles, or press **Z** for the left engine and **X** for the right engine. The performance of a burning engine quickly degrades, and no power means a very short flight.

### Engine Start

The engine start is located on the chaff and flare control panel. To start the engines and increase throttle, press the **Plus Sign** (+). To reach maximum throttle instantly, press **Shift+Plus Sign** (+). To reduce throttle down to the idle position, hold down the **Hyphen** (-). To reduce the throttle setting to idle instantly, press **Shift+Hyphen** (-). To shut down the engines, press **Shift+Hyphen** (-) when the engines are at the idle setting.



## Warning Lamps



The warning lamps are invaluable tools for many aspects of A-10 flight. These lamps turn red when illuminated, and some are accompanied by a sound.

- **R** — This lamp illuminates briefly when the aircraft is swept by radar energy. If this light is consistently on, you are probably being tracked by enemy radar, so stay alert.
- **Stall** — The stall indicator works with the stall horn to give you a visual warning of an impending stall. It is still possible to stall at high speed when executing a hard turn.
- **Caution** — The caution lamp warns you of damage to your aircraft, and lights up for approximately 10 seconds.
- **Steering Engaged** — Below 60 knots, ground steering is linked to the ailerons. Ground steering disengages above 60 knots.
- **Gun Ready** — On the ground, the cannon is safe and gun-firing is inhibited. In the air, the gun ready lamp lights up to indicate that the cannon is armed. When the gun is damaged, the gun ready lamp goes out.

## System Lamps



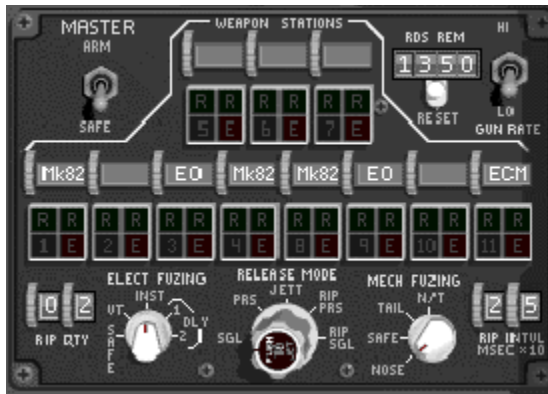
This convenient conglomerate of four gauges provides much-needed quick-look information about various systems. These lights are always visible in the Panel View mode.

- **Autopilot** — The autopilot levels the wings and maintains a minimum airspeed of 150 knots and a minimum altitude of 250 feet. For airspeeds and altitudes greater than these minimums, the autopilot will maintain the current heading, airspeed and altitude. To engage autopilot, press **A** when airspeed is above 85 knots.
- **ECM** — The electronic countermeasure system (ECM) detects threat radar emitters and jams the signal. To activate the ECM system, press **E** when an ECM pod is attached.
- **SAS** — The stability augmentation system (SAS) is used to enhance the handling characteristics of the aircraft. The SAS should be engaged at all times, but may disengage when the aircraft is damaged. You can disengage the SAS manually by pressing **S**. If the SAS lamp is off, rest assured that things just got harder.
- **Brake** — The brake lamp is illuminated when the speed/ground brakes are in use.

## Weapons System

The weapons system is what makes things go boom and consists of several display areas. The armament control panel, radar warning receiver display, TV monitor display, display control unit, chaff and flare control panel, and emergency jettison are all part of the weapons system.

### Armament Control Panel



The armament control panel allows the selection of weapons stations, gun firing rate, external Release and Jettison modes, and ripple quantity and interval controls. This panel also displays the rounds remaining in the GAU-8/A cannon. Rippling your weapons simply means having your weapons ripple off your A-10 without your having to press the **RELEASE** button a hundred times. For example, if you want to launch a large number of hyper-velocity rockets, you can have them ripple out very quickly with the touch of one button. This not only increases the damage the rockets do, but also decreases strain on your firing finger.

- **Master Arm** — To activate the weapon control system, toggle the master arm switch to **ARM**. To toggle the master arm switch from the keyboard, press **M**.
- **Weapon Station** — The 11-weapon station-select push-button switches on the armament control panel allow you to control the weapon stations individually. Each station has four colored alphanumeric lights that indicate the status of each weapon. When the master arm switch is in **ARM** position, the station is selected and the weapon on that station is armed. The selected station ready lights are illuminated steadily in green for Selective Jettison and normal Release modes. Weapons can be released only from stations showing a steady green light. The station(s) show steady red light(s) when the pylon, rail and/or rack is/are empty.
- **Ripple Quantity** — The ripple quantity is shown in the ripple quantity counter. To set the ripple quantity, press **R** followed by **Q**, and then any two numbers in succession. For example, to set the ripple quantity of 12, press **R, Q, 1** and **2**.
- **Ripple Interval** — The ripple interval is shown in the ripple interval counter, and determines the time that elapses between successive munitions releases when rippled from selected stations. The ripple interval is specified in hundredths of a second. To set the ripple interval, press **R** followed by **I** (the letter), and then any two numbers in succession. For example, to set a ripple interval of 500 ms, press **R, I, 5** then **0**. Note that the last zero is dropped.
- **Release Mode** — The Release mode selector is used to set the weapon release sequence. To maintain an even load distribution across the wings, the armament system alternates store release between opposing wings where possible. The five release modes are summarized as follows:
  - **SGL** — In Single mode, single munitions are released from the selected station.
  - **PRS** — In Pairs mode, multiple munitions are simultaneously released from pylons loaded with identical stores. This is a handy way of delivering a simultaneous double-punch.
  - **JETT** — Once in a while you may want to get rid of your ordnance without actually arming the weapons. For example, if your landing gear is damaged and you have to do a belly flop on the runway it might be best if you don't have a pair of 2,000-pound bombs underneath you. In Jettison mode, all weapons on selected stations are released unarmed.
  - **RIP PRS** — In Ripple Pairs mode, munitions ripple in pairs from pylons with similar stores.
  - **RIP SGL** — In Ripple Single mode, single munitions ripple from selected stations.
- **Gun Rate** — For those times when you really want to lay some waste to a particular aircraft or structure, you can double the firing rate of your cannons. To toggle the firing rate of the GAU-8/A

cannon between **low** (2,100 rounds/minute) and **high** (4,200 rounds/minute), use the gun rate switch. This can also easily be accomplished by pressing **C**.

### TV Monitor



The TV monitor displays a video image from an electro-optical AGM-65B Maverick missile. Low-light maneuvers in the A-10 are facilitated by an infra-red projection onto the HUD when an AGM-65D is loaded. The Maverick has a TV camera in its nose to provide the picture you see on the monitor.

Set the monitor's cross hairs on the target by using the **Arrow Keys**. You can even zoom in on your target by pressing **Shift+Up Arrow** to watch your enemy receive missiles right up the tailpipe.

### Radar Warning Receiver



Most of us are used to radar systems that tell us exactly where the enemy fighters are. The A-10, however, deals with the enemy threat in a different way. Your A-10 is equipped with a radar warning receiver (RWR) that detects threat radar emitters and warns you that a radar source is tracking your aircraft. Fortunately, ECM pods mounted on the wings not only detect hostile radar emissions but also degrade them by transmitting jamming signals.

The radar warning system provides both visual and aural indications of threat radar emitters. Visual indications of threat signals are displayed on the azimuth indicator unit. The azimuth indicator unit displays the threat bearing (the direction from which the radar signal is originating) with lines radiating outward from the center of the azimuth indicator. Keep in mind that the length of these lines is a measure of the signal strength only, and does not relate to distance to target.

A radar threat marked by a dim threat signal indication represents a radar source in Search mode, while a bright line shows a locked radar source. The azimuth indicator works in conjunction with a radar warning light that flashes when the aircraft is swept by radar energy. When the enemy tries to acquire a radar lock, the RWR emits a discontinuous high-pitched warning. When this sound is continuous, the radar is locked, and it's probably a good time to think about evasive maneuvers.

### Display Control Panel



The display control panel is used to control both the RWR azimuth indicator and TV monitor, and contains the following switches:

- **PWR** — This is the power switch for the RWR azimuth indicator and TV monitor.
- **TEST** — This will cause the RWR azimuth indicator and TV monitor to enter a self-test mode.
- **DMG** — This displays current engine, airframe, gun, fuel, HUD, gear and control system status on the TV monitor.
- **TV** — The TV monitor displays either the view from the targeting camera on the electro-optical and infrared Mavericks or the damage status of the aircraft.
- **HOFF** — This hands off target information from the RWR to the HARM. The target is indicated in the

azimuth indicator by a diamond. To cycle targets, press **H**. To clear the target, press **Backspace**.

- **PRI** — The five strongest radar signals only are displayed on the azimuth indicator in Priority mode.
- **GND** — Ground targets only are displayed on the azimuth indicator in the Ground mode.

## Emergency Jettison



The emergency jettison is used to jettison all external stores from the aircraft in case of an emergency. Since the A-10 cannot jettison the actual pylon or rack from the hardpoint, all bombs and missiles are dropped or fired from the racks unarmed. Rocket pods will remain attached to the wing after the rockets have fired. Emergency jettison is different from the selective Jettison mode since everything is jettisoned in a predetermined sequence. To jettison all stores, press **Alt+J**.

## Chaff and Flare Control Panel



One of the hazards of air combat is the presence of nasty anti-aircraft missiles. The only reason for their existence is to see you and your aircraft go down in a rather unpleasant fireball. Fortunately, you have chaff and flares to confuse the guidance systems of enemy missiles. Chaff is used against radar-guided missiles, while flares are used to confuse heat-seeking missiles.

The chaff and flare control panel displays the remaining number of chaff and flares, and also allows the pilot to control the release quantity. Press the **Semicolon (;)** for chaff and **Apostrophe (')** for flares.

## Engine Instruments

### Engine Panel



The engine panel contains a cluster of gauges that display somewhat necessary information on engine and APU condition. These gauges on the panel also display the fuel load and fuel consumption, but it is not necessary to learn the intricacies of any of these gauges to play *A-10 Cuba!* successfully. These gauges are purely for the benefit of those who want the inside scoop on engine performance or for those who like to look at large numbers of indicators. Think of them as a nice added feature that you may or may not ever use. The following gauges are found in the engine panel:

- **Engine RPM Gauges** — The turbine speed of both engines is shown on the engine RPM gauge as a percentage of the maximum RPM. The gauge reads 0% when the engine is shutdown and 100% at the maximum engine speed.
- **Engine Fuel Flow Gauges** — The rate of fuel consumption of both engines is shown on the engine fuel flow gauge in hundreds of pounds per hour.
- **Engine Temperature** — The inter-stage turbine temperature of both engines is shown on the engine temperature gauge in hundreds of degrees Celsius.
- **APU RPM** — The turbine speed of the APU is shown on the APU RPM gauge as a percentage of the maximum engine speed.

- **APU Temperature** — The exhaust gas temperature of the APU is shown on the temperature gauge in hundreds of degrees Celsius.
- **Fuel Gauge** — The fuel gauge shows the amount of fuel remaining in the tanks. If the aircraft takes damage to the fuel system, fuel may drain from the system and the aircraft may run out of fuel before getting back to base.

### Heads Up Display (HUD) Control Panel



Selector switch to change the flight data displayed on the HUD, a set of push-buttons to select HUD options, and a malfunction warning light. Press **0** (zero) to rotate the selector clockwise and **9** to rotate the selector counter-clockwise. Press **T** to toggle TACAN on and off, and **B** to toggle the radar and barometric altitude display. The HUD options are used to customize the information displayed on the HUD.

- **TAPE** — Toggles the airspeed and attitude indicators between tape and digital readout.
- **TACN** — Enables the TACAN and displays the destination tadpole and waypoint number on the HUD.
- **BARO** — Toggles the altitude reading between radar altitude above ground level, and barometric altitude above sea level.
- **LADR** — Toggles the flight ladder.
- **NITE** — Reduces the intensity of the HUD for reduced-light operations.

### Keyboard Commands

#### Aircraft Controls

<b>Comma (,)</b>	Rudder Left
<b>Period (.)</b>	Rudder Right
<b>Slash (/)</b>	Rudder Reset
<b>F</b>	Flaps Down
<b>D</b>	Flaps Up
<b>G</b>	Gear Up/Down
<b>ALT+E</b>	Eject
<b>[</b>	Elevator Trim Up
<b>]</b>	Elevator Trim Down
<b>Shift+{</b>	Rudder Trim Left
<b>Shift+}</b>	Rudder Trim Right
<b>Spacebar</b>	Ground/Speed Brakes

#### Instrument Panel

<b>B</b>	Radar/Barometric HUD Altitude Toggle
<b>H</b>	RWR Hand-Off
<b>L</b>	Cockpit Illumination
<b>S</b>	SAS ON/OFF
<b>9</b>	HUD Mode Rotate Counter-Clockwise
<b>0</b>	HUD Mode Rotate Clockwise
<b>Caps Lock</b>	Cursor Hot-Key Lock
<b>Backspace</b>	Target Deselect
<b>ALT+I</b>	Panel Toggle
<b>ALT+C</b>	HUD Color
<b>ALT+H</b>	HUD Frame Toggle
<b>Page Up</b>	HUD Intensity Increase
<b>Page Down</b>	HUD Intensity Decrease

## Views

1	Cockpit View
2	Panel View
3	Chase View
4	Friendly View
5	Enemy View
6	Tower View
7	Weapon View
R R	Rear View
Up Arrow	Up
Down Arrow	Down
Left Arrow	Left
Right Arrow	Right
Shift+Up Arrow	Zoom In
Shift+Down Arrow	Zoom Out

## Weapons/Stores

C	Cannon Rate High/Low
M	Master Arm
E	ECM ON/OFF
Semicolon (;)	Chaff
Apostrophe (')	Flare
F1-F11	Select Station 1-11
F12	Clear All Stations
Enter	Target Select/Weapons Release
Backspace	Target Deselect
Tab	Cycle HUD Targets
Alt+J	Jettison All Stores

NOTE: Tab is used in Friendly/Enemy View to cycle between aircraft within a five-mile radius.

## Engine

Hyphen (-)	Throttle Down
Plus Sign (+)	Throttle Up
Shift+Hyphen (-)	Throttle Minimum/OFF
Shift+Plus Sign (+)	Throttle Maximum
Z	Extinguish Left
X	Extinguish Right

## Navigation

T	TACAN
A	Autopilot
Esc	Tactical Map
W	Cycle Waypoint

## Clock

N	+30 minutes
Shift+N	-30 minutes

## Stores Release Sequence

R M S	Release Mode SGL (Single)
R M P	Release Mode PRS (Pairs)
R M J	Release Mode JETT (Jettison)
R M R P	Release Mode RIP PRS (Ripple Pairs)
R M R S	Release Mode RIP SGL (Ripple Single)
R I n n	Ripple Interval (nn x 10 ms)
R C n n	Ripple Count nn



## Introduction

Welcome to *A-10 Cuba!: Missions at Guantanamo Bay*. *A-10 Cuba!* puts you at the controls of one of the most effective and versatile fighting aircraft in the world, the A-10 attack jet. In fact, *A-10 Cuba!* is probably the most realistic, stomach-churning, white-knuckled flight simulator ever produced, and will provide you with many hours of entertainment.

Flying a modern jet aircraft is no walk in the park. Fortunately, *A-10 Cuba!* has the rare distinction of being easy to fly, but challenging to master. No matter what your aeronautical aptitude, if you find yourself with the better part of your Warthog lodged in the side of a mountain, cheer up. This Help file is here to help you get back out there where you belong — strafing enemy targets with a hail of hyper-velocity rockets. Of course, most people don't bother to read the Help file before trying out a game, so if you have made it this far, you're doing better than most. However, since you've come this far, we recommend you take some time to run through this Help file to introduce yourself to the basics of flying and *A-10 Cuba!*.

By its nature, *A-10 Cuba!* single-player player missions are somewhat open ended. If you crash while flying a mission and receive a "mission successful" message, it may be because your other friendlies have been able to complete the mission objectives without you. Try playing the mission again to achieve different results from your friendlies and the enemy aircraft.

Please review the *A-10 Cuba!* README.TXT for additional information not included in this manual.



## Magnetic Compass



The magnetic compass displays the magnetic heading of the aircraft, and acts as a backup in case of a power failure to the electrical instruments.

**Master Arm** — To activate the weapon control system, toggle the master arm switch to **ARM**. To toggle the master arm switch from the keyboard, press **M**.

## Radar Warning Receiver



Most of us are used to radar systems that tell us exactly where the enemy fighters are. The A-10, however, deals with the enemy threat in a different way. Your A-10 is equipped with a radar warning receiver (RWR) that detects threat radar emitters and warns you that a radar source is tracking your aircraft. Fortunately, ECM pods mounted on the wings not only detect hostile radar emissions but also degrade them by transmitting jamming signals.

The radar warning system provides both visual and aural indications of threat radar emitters. Visual indications of threat signals are displayed on the azimuth indicator unit. The azimuth indicator unit displays the threat bearing (the direction from which the radar signal is originating) with lines radiating outward from the center of the azimuth indicator. Keep in mind that the length of these lines is a measure of the signal strength only, and does not relate to distance to target.

A radar threat marked by a dim threat signal indication represents a radar source in Search mode, while a bright line shows a locked radar source. The azimuth indicator works in conjunction with a radar warning light that flashes when the aircraft is swept by radar energy. When the enemy tries to acquire a radar lock, the RWR emits a discontinuous high-pitched warning. When this sound is continuous, the radar is locked, and it's probably a good time to think about evasive maneuvers.

**Release Mode** — The Release mode selector is used to set the weapon release sequence. To maintain an even load distribution across the wings, the armament system alternates store release between opposing wings where possible. The five release modes are summarized as follows:

- **SGL** — In Single mode, single munitions are released from the selected station.
- **PRS** — In Pairs mode, multiple munitions are simultaneously released from pylons loaded with identical stores. This is a handy way of delivering a simultaneous double-punch.
- **JETT** — Once in a while you may want to get rid of your ordnance without actually arming the weapons. For example, if your landing gear is damaged and you have to do a belly flop on the runway it might be best if you don't have a pair of 2,000-pound bombs underneath you. In Jettison mode, all weapons on selected stations are released unarmed.
- **RIP PRS** — In Ripple Pairs mode, munitions ripple in pairs from pylons with similar stores.
- **RIP SGL** — In Ripple Single mode, single munitions ripple from selected stations.

**Ripple Interval** — The ripple interval is shown in the ripple interval counter, and determines the time that elapses between successive munitions releases when rippled from selected stations. The ripple interval is specified in hundredths of a second. To set the ripple interval, press **R** followed by **I** (the letter), and then any two numbers in succession. For example, to set a ripple interval of 500 ms, press **R**, **I**, **5** then **0**. Note that the last zero is dropped.

**Ripple Quantity** — The ripple quantity is shown in the ripple quantity counter. To set the ripple quantity, press **R** followed by **Q**, and then any two numbers in succession. For example, to set the ripple quantity of 12, press **R**, **Q**, **1** and **2**.

## System Lamps



This convenient conglomerate of four gauges provides much-needed quick-look information about various systems. These lights are always visible in the Panel View mode.

- **Autopilot** — The autopilot levels the wings and maintains a minimum airspeed of 150 knots and a minimum altitude of 250 feet. For airspeeds and altitudes greater than these minimums, the autopilot will maintain the current heading, airspeed and altitude. To engage autopilot, press **A** when airspeed is above 85 knots.
- **ECM** — The electronic countermeasure system (ECM) detects threat radar emitters and jams the signal. To activate the ECM system, press **E** when an ECM pod is attached.
- **SAS** — The stability augmentation system (SAS) is used to enhance the handling characteristics of the aircraft. The SAS should be engaged at all times, but may disengage when the aircraft is damaged. You can disengage the SAS manually by pressing **S**. If the SAS lamp is off, rest assured that things just got harder.
- **Brake** — The brake lamp is illuminated when the speed/ground brakes are in use.

# Gameplay

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## TV Monitor



The TV monitor displays a video image from an electro-optical AGM-65B Maverick missile. Low-light maneuvers in the A-10 are facilitated by an infra-red projection onto the HUD when an AGM-65D is loaded. The Maverick has a TV camera in its nose to provide the picture you see on the monitor.

Set the monitor's cross hairs on the target by using the **Arrow Keys**. You can even zoom in on your target by pressing **Shift+Up Arrow** to watch your enemy receive missiles right up the tailpipe.

## Views

one of the great features in *A-10 Cuba!* is the ability to alter your viewing perspective dramatically. The key sequences listed below apply to all of the viewing environments. There are seven view modes in all.

### Arrow Keys

To shift the viewing angle by 22.5 degrees, press a single discrete **Arrow Key** in the desired direction. For continuous view shifts, hold down an **Arrow Key**. Experiment freely with the viewing perspectives — it is truly a neat-o part of the game. The **Arrow Key** directions are listed below.

<b>Up Arrow</b>	up
<b>Down Arrow</b>	down
<b>Left Arrow</b>	left
<b>Right Arrow</b>	right
<b>Shift+Up Arrow</b>	zoom in
<b>Shift+Down Arrow</b>	zoom out

### Cockpit View

When in the cockpit, using the **Arrow Keys** enables the Virtual Cockpit and permits you to turn your virtual head 360 degrees. To enable the Cockpit View, press **1** (the number one). While in the Cockpit View you are in the pilot's seat and can see the flight instruments and heads up display. Pressing an **Arrow Key** at this time enables the Virtual Cockpit. This allows you to look around from the pilot's seat in all directions just as if you were turning your head. This is convenient for visually following enemy aircraft or ground targets because you need only turn your head rather than adjust the flight path of your A-10.

For a fast rear view, press **R** twice. To make the heads up display (HUD) frame invisible, press **Alt+H**. To make the entire instrument panel invisible, press **Alt+I** (the letter I).

### Panel View

Once in the Cockpit View you'll notice that you can only see the upper portion of the total control panel. The Panel View shows the pilot the full instrument panel, ostensibly by looking down. This perspective is handy for glancing at the weapons control panel, perhaps to check that the weapons stations and munitions are correctly armed or to examine the engine panel to check on the fuel status and engine performance. Truth be told, unless you are really interested in the minutiae of your engines, you can ignore the engine panel. For Panel View, press **2**.

### Chase View

The Chase View is a direct external view of your aircraft. Use the **Arrow Keys** to move the viewpoint around the aircraft. Holding down an **Arrow Key** while you spin around your aircraft can produce some fairly stunning visual candy. Talk about out-of-body experiences! Don't forget to use **Shift+Arrow Keys** to zoom in and out. To select Chase View, press **3**.

### Friendly View

The Friendly View is a great way to see what your buddies are up to. Friendly View allows you to observe all aircraft within a 10-mile radius (of yourself) from Chase View perspective. Once in the Friendly View mode, you can cycle through other enemy aircraft within the 10-mile radius by pressing **Tab**. To select Friendly View, press **4**.

### Enemy View

The Enemy View is a great way to peek in on your foes. Enemy View works in the same way as Friendly View. To select Enemy View, press **5**.

## Tower View

The Tower View places you in the nearest airport control tower looking directly at your A-10. In the Tower View, the viewing direction is locked at the aircraft, so the **Arrow Keys** don't add any effect here. To zoom in or out, use the **Up Arrow** or **Down Arrow**. When there are no control towers nearby, the Tower View is inactive. To select Tower View, press **6**.

## Weapon View

Weapon View follows the last munition released from or nearby the aircraft. Once the weapon strikes something, the view remains at the point of impact, which can be surveyed with the directional view controls, until another view is selected. Once you have selected another view, however, it is not possible to return to the point of impact. To select Weapon View, press **7**.

## Vertical Speed Indicator



The vertical speed indicator (VSI) measures the vertical speed of the aircraft in feet/minutes. The climb/sink rate is displayed in thousands of feet per minute. Again, this is not a gauge you will normally be using often, but it can come in handy for advanced pilots.

# Weapons

## Air-to-Air Missiles

Although the A-10 was not designed for air combat, up to four heat-seeking AIM-9L Sidewinder missiles can be carried on the outer wing stations 1 and 11.



### AIM-9L Sidewinder

Sidewinders constantly seek heat sources in front of the aircraft. When the missile has a lock, it emits a tone that indicates the strength of the lock. A weak tone indicates that the aspect is poor and the chance of the missile hitting the target is small. The Sidewinder growl gets progressively louder as firing aspect improves. When the missile has its best lock, a SHOOT prompt appears in the HUD.

## Air-to-Ground Bombs

The A-10 carries 500-pound MK-82, 1,000-pound MK-83, and 200-pound MK-84 general-purpose iron bombs in many variants.



### General-Purpose Bombs

The general-purpose bomb is cheap and readily available munition. To release a general-purpose bomb from the aircraft, press **Enter**. The HUD has a CCIP mode that displays an impact point to aid ordnance delivery. To select a target for the automatic release feature, point the gun cross at the target and press **Enter**. Fly the release reticle over the diamond-shaped target designator and the bombs will automatically release. To release the bombs manually, press **Enter**.



### Retarded Bombs

Retarded bombs are useful when bombing targets from a low altitude. Shortly after release from the aircraft, retarding fins unfold at the back of the bomb to slow it down, increasing the distance between the aircraft and the explosion. To release retarded bombs, use the same release procedures as with the general-purpose bombs.



### Laser-Guided Bombs

Laser-guided bombs are used when pinpoint accuracy is essential. The bomb is capable of minor course corrections along the path to a target that is illuminated by ground forces or an airborne designator. Laser-guided bombs have greater effectiveness when released from medium-to-high altitudes.

To see designated targets, the HUD must be in Pave Penny mode. Illuminated targets are indicated on the HUD with a diamond-shaped identifier. To cycle through targets on the HUD, press **Tab**. To release the bomb, press **Enter**.



### CBU-15 Durandal

The Durandal is designed to deny the enemy use of their runways. On release, a drag chute is deployed

to slow the bomb. When the bomb is hanging from the chute and pointing down, a rocket motor fires and drives the warhead below the tarmac before it detonates. This forms a huge crater in the runway, making it unusable for flight operations.

### **Air-to-Ground Missiles**

The A-10 can carry three types of Maverick missiles: the anti-radar HARM, the Hellfire anti-tank missile and hyper-velocity rockets.



### **Hyper-Velocity Rockets**

The hyper-velocity rockets are loaded in large pods under the wings, each carrying a total of 19 rockets. This is a kinetic energy weapon with no explosive warhead and is particularly devastating when ripple-fired.



### **AGM-88A Harm**

The HARM is a high-speed anti-radar missile that homes in on a radar source. Radar emitters are displayed in the RWR indicator. To cycle through the radar targets, press the **H** key, or press **Hand Off** in the display control panel. To launch the HARM, press **Enter**.



### **AGM-114A Hellfire**

The Hellfire is a laser-guided anti-tank missile. The Hellfire is used in the same way as laser-guided bombs, except they can be launched from a much greater distance.



### **AGM-65B Electro-Optical Maverick**

When an electro-optical Maverick is selected, the view from the internal camera is displayed on the TV monitor. Select TV mode on the display control panel to show the camera view. Use the **Shift** and **Arrow Keys** to zoom and pan the camera until the cross hairs are centered over the target. Press **Enter** to launch the missile.



### **AGM-65D Infrared Maverick**

The infrared Maverick is used in the same way as the electro-optical Maverick.



### **AGM-65E Laser-Guided Maverick**

The laser-guided Maverick is used in the same way as the Hellfire. The Maverick has a greater range and larger warhead.

## Warning Lamps



The warning lamps are invaluable tools for many aspects of A-10 flight. These lamps turn red when illuminated, and some are accompanied by a sound.

- **R** — This lamp illuminates briefly when the aircraft is swept by radar energy. If this light is consistently on, you are probably being tracked by enemy radar, so stay alert.
- **Stall** — The stall indicator works with the stall horn to give you a visual warning of an impending stall. It is still possible to stall at high speed when executing a hard turn.
- **Caution** — The caution lamp warns you of damage to your aircraft, and lights up for approximately 10 seconds.
- **Steering Engaged** — Below 60 knots, ground steering is linked to the ailerons. Ground steering disengages above 60 knots.
- **Gun Ready** — On the ground, the cannon is safe and gun-firing is inhibited. In the air, the gun ready lamp lights up to indicate that the cannon is armed. When the gun is damaged, the gun ready lamp goes out.

**Weapon Station** — The 11-weapon station-select push-button switches on the armament control panel allow you to control the weapon stations individually. Each station has four colored alphanumeric lights that indicate the status of each weapon. When the master arm switch is in ARM position, the station is selected and the weapon on that station is armed. The selected station ready lights are illuminated steadily in green for Selective Jettison and normal Release modes. Weapons can be released only from stations showing a steady green light. The station(s) show steady red light(s) when the pylon, rail and/or rack is/are empty.



