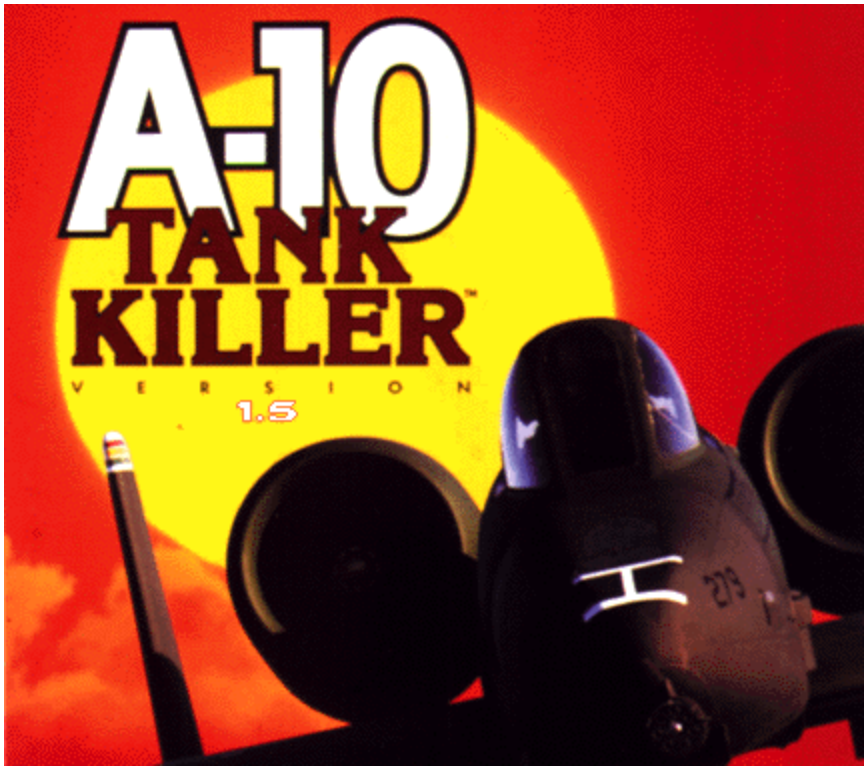
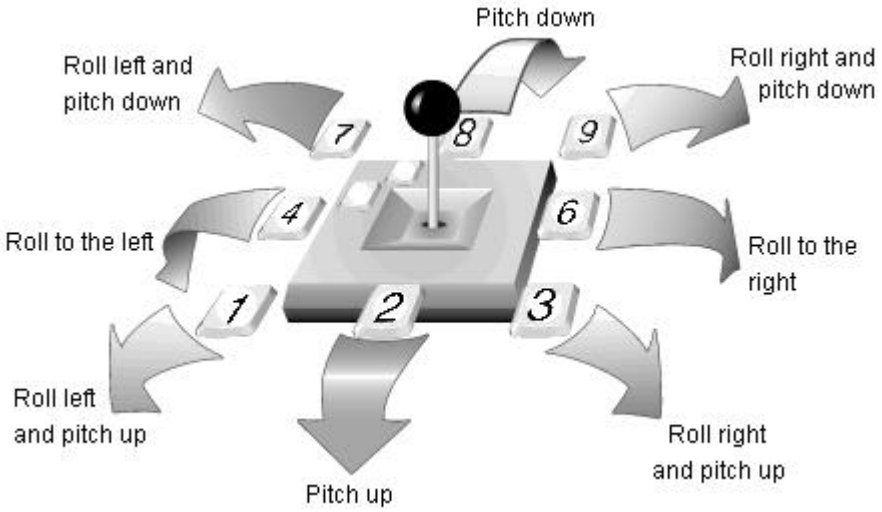
Contents



Controls & Simulations

Flight Controls

Movement
You use the control surfaces and the throttle to maneuver the A-10. The control surfaces include the ailerons, the elevators, the rudder, and the throttle. A-10 Tank Killer Version 1.5 supports an optional second joystick as detailed in the following sections. From the Control menu, you may select which peripherals you have attached. You may select: keyboard, joystick, and mouse control.



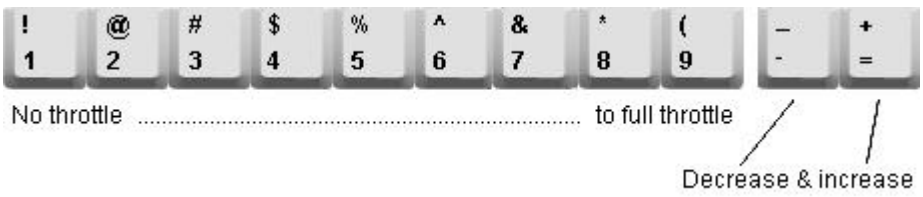
The mouse is self-centering and will automatically recenter itself after each movement command.

Rudder
The rudder can be controlled from either the keyboard or second joystick.

Joystick #2

Keyboard

Throttle
The throttle can be controlled only from the keyboard.



Weapons Control

IMPORTANT! When the Floating Camera is ON, firing the Selected Weapon is possible only with the BACKSPACE key.

Joystick #1
Button #1 = Fire Avenger Cannon
Button #2 = Fire Selected Weapon

Joystick #2
Button #1 = Chaff Release
Button #2 = Flare Release

Keyboard

SPACEBAR	= Fire Avenger Cannon
ENTER	= Fire Selected Weapon or control Floating Camera view
BACKSPACE	= Fire Selected Weapon

Mouse controls for weapon firing are identical to those of the joystick.

Joystick #1=	**Mouse**
Button #1 =	Left Button
Button #2 =	Right Button

Weapons Select

H	Maverick	L	Durandal			C	Release chaff
J	LGB	;	Sidewinder	[	]	Weapons cycle	
K	Rockeye	F	Release flare	Tab	Target cycle		

Additional Controls

G	Landing gear up/down			Esc	Quit mission requestor
P	Pauses game	Alt	M	Music on/off	
M	Bring up strategic map	Alt	S	Sound effects on/off	
S	Bring up status screen	Alt	J	Joystick(s) on/off	
D	Display message log	Alt	C	Calibrate joystick(s)	
Q	Quit mission requestor	Alt	D	Mouse on/off	
F10	Display control menu	Alt	Q	Quit to DOS	

View Commands

While in the heat of battle, it's always important to remain aware of the situation around you. Learning to quickly switch between different viewpoints will greatly increase your chances for survival.

Preset Views

Cockpit

F1	Look forward
F2	Look left
F3	Look right

External

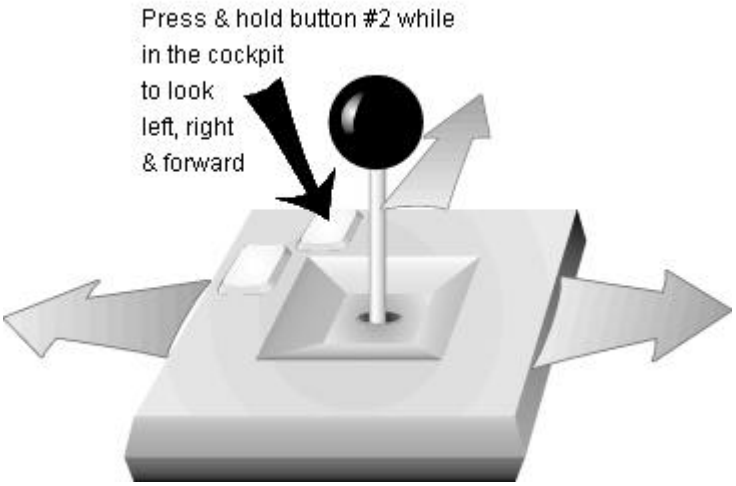
F4	Front view
F5	Left side view
F6	Right side view
F7	Rear view
F8	Victim view
F9	Engagement view

Floating Camera Views
Along with preset side and external views, A-10 Tank Killer Version 1.5 also allows you to activate a floating camera that will enable you to move the viewpoint around and away from your aircraft.

> ***IMPORTANT!*** When the Floating Camera is ON, ONLY the Backspace key (not Enter) can fire the selected weapon.

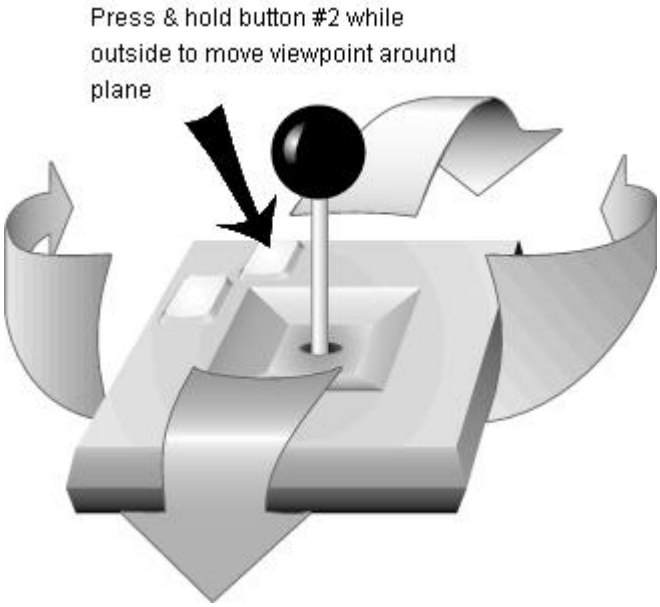
Use **Alt - V** on the keyboard or the View switch on the Control menu (**F10**) to toggle the Floating Camera on/off.

Controlling the Floating Camera with the joystick
Once the floating camera has been switched on, you may control the current view without touching the keyboard.



From Within the Cockpit
Holding down button #2 and moving the joystick forward will switch to Look Forward (F1), to the left will switch to Look Left (F2), etc. Pressing and releasing button #2 with the joystick centered will switch from the cockpit to the outside rear view.

From Outside the Aircraft
Holding down button #2 while moving the joystick will pan the view smoothly around the aircraft: moving the joystick to the left will pan the view clockwise around your aircraft, moving the joystick forward will pan the view up around the aircraft, etc. Holding down both buttons while moving the joystick forward/backwards will move the camera closer to or away from the aircraft. Pressing and releasing button #2 with no joystick movement will switch to the front cockpit view.



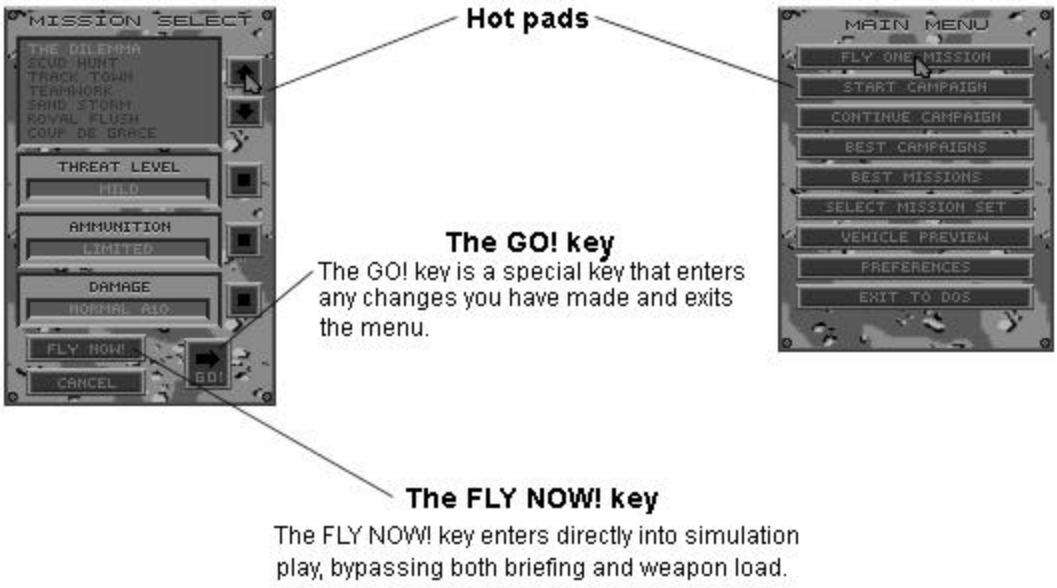
Controlling the Floating Camera From the Keyboard
The previously described commands may be duplicated without a joystick: the keyboard numeric keypad will function like the joystick, the Space Bar will function like button #1, and the [Enter] key will function like button #2.

Mouse controls for view commands are identical to those of the joystick.

Joystick #1=	**Mouse**
Button #1 =	Left Button
Button #2 =	Right Button

Menu Controls

The menu system for A-10 Tank Killer was designed to be intuitive and easy-to-use for both novice and advanced users. The following are a few simple tips and instructions that explain basic menu use.



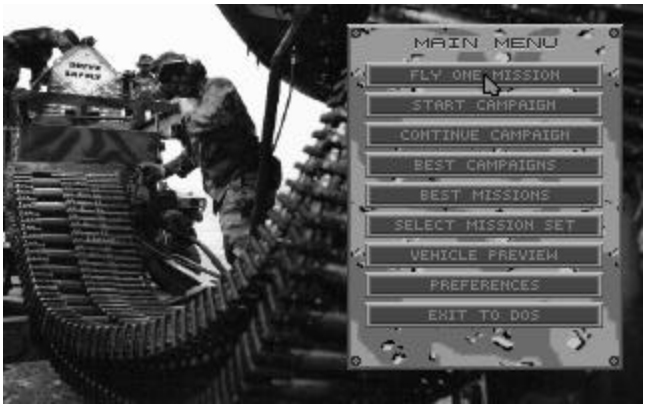
Mouse, Joystick or Keyboard Control
The on-screen arrow can be moved by mouse, joystick, or keyboard.

Mouse
To select Hot Pad: Move mouse to position arrow on Hot Pad and press either mouse button to select.

Joystick
To select Hot Pad: Move joystick to position arrow on Hot Pad and press either joystick button to select.

Keyboard
To select Hot Pad: Press the [TAB] key to move the arrow from one Hot Pad to another. Press the SPACEBAR to select.

Main Menu



Mission or Campaign?

Among the nine menu choices on the Main Menu are **Fly One Mission** and **Start Campaign**. These are the two modes of game play that A-10 Tank Killer offers.

Fly One Mission

Fly One Mission allows you to individually select which mission to fly. Each mission includes a **Briefing/Debriefing**, Weapons Select (except Scramble missions) and Mission Summary. When a mission is completed or exited, you will be returned to the **Main Menu.**

Start Campaign

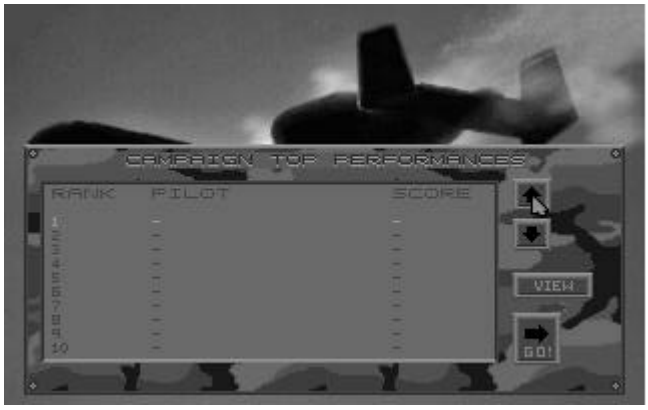
Start Campaign enters you into a preset "tour of duty." You will start at mission #1 of the selected mission set and continue until you have either completed all of the missions in the set, are shot down, or lose the war. A key element of Campaign Mode is that goals, objectives, and key players are carried over from one mission to the next.

Continue Campaign

In Campaign Mode, if you do poorly in the first mission, it may come back to haunt you. Also important in Campaign Mode is that campaigns can be saved for later continuation. When beginning a campaign, you will enter a character name. The campaign will be saved under this name and can later be viewed/continued in **Continue Campaign.**

Best Campaigns

Best Campaigns allows you to view the best performances of all Campaign Mode players.



Best Missions

Best Missions displays a "Hall of Fame" for best performances on a single mission.

Vehicle Preview

Vehicle Preview allows you to preview the weapons and vehicles used by friendly or enemy forces.

Preferences

Preferences allows you to adjust sounds, music, joystick, and mouse.

Select Mission Set

Choosing **Select Mission Set** from the Main Menu will take you to the **Select Mission Set** menu. Under this menu, you will be able to choose which of the three scenarios you will play under.

Mission Sets

You can select from three mission sets:

Central Europe #1 takes you through basic flight training in Europe and through increasingly difficult missions.

Central Europe #2 places you back into the European theater with missions that are more involved than those of Central Europe set #1.

Desert Storm takes you into the war-torn period of the Gulf War. You will fly against new enemies and threats in the deserts of the Middle East.

> ***Important!*** It's important to note that mission sets are not interconnected. Each set acts as an individual simulation module. Features such as Campaign Play, Best Missions, and Continue Campaign are all dependent upon which mission set is currently selected.

Mission Select Menu

Choosing **Fly One Mission** from the Main Menu will take you to the **Mission Select** menu. Under this menu, you will be able to select a single mission and tailor its difficulty level and game play parameters to your level.

Threat Level
You can individually tailor the degree of difficulty in each mission.
Mild = Wimp Mode
Moderate = Pretty Mean Suckers
Aggressive = Major Bad News

Ammunition
You may select a "limited" or "unlimited" ammunition supply. On the unlimited setting, the Avenger cannon will NOT jam due to overheating.

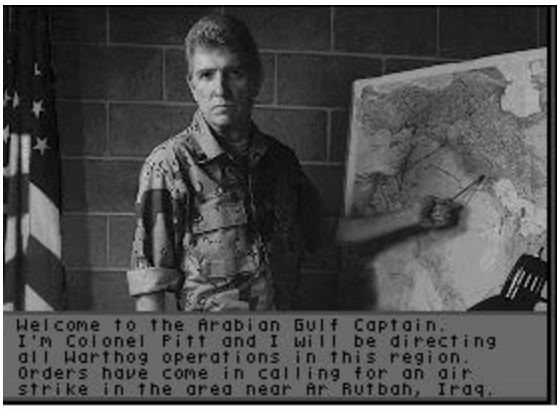
Damage
You may select a "normal" or "invincible" A-10. "Normal" means that your A-10 can be damaged, while "invincible" means that your A-10 cannot be damaged and the Avenger cannon will NOT jam.

Fly Now!
Selecting the Fly Now! option will take you immediately into simulation play, bypassing both the briefing and weapons load.

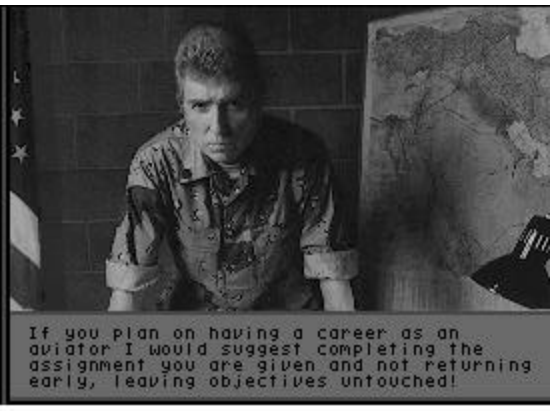
NOTE: Scores achieved with selection of either "unlimited" ammunition or "invincible" damage WILL NOT be recorded into the Hall of Fame. Also, the Avenger cannon will not be subject to jamming when you are in either "unlimited" or "invincible" modes.

Briefing/Debriefing

Meet your commanding officer. He's full of advice, wisdom, and orders. You will meet with him before and after each mission. In the briefing, he will instruct you as to the current situation and give you your orders. Of course, once airborne you and your co-pilot are free to do as you wish. REMEMBER: You'll have to answer to your CO in debriefing, assuming you make it back alive.



Mission Briefing



Mission Debriefing

NOTE: Press the SPACEBAR or either joystick button to advance to the next text box. Press the ESC key to bypass the briefing/debriefing completely.

Weapons Load

The final screen you will encounter before entering the simulation will be Weapons Load. You may choose the default load (custom tailored for the individual mission) or you may build your own by individually filling the load pylons on the A-10. The default load is based upon the specific goals of each mission and will, for the most part, prove most effective. However, as you play each mission and develop your own strategy, you may find that selections other than the default are more useful. **(See Weapons Systems).** To erase the current weapon load, press the CLEAR button.

Weapon Selection

Place Weapon Keys
Spacebar
Joystick #1 button #1
Left Mouse button

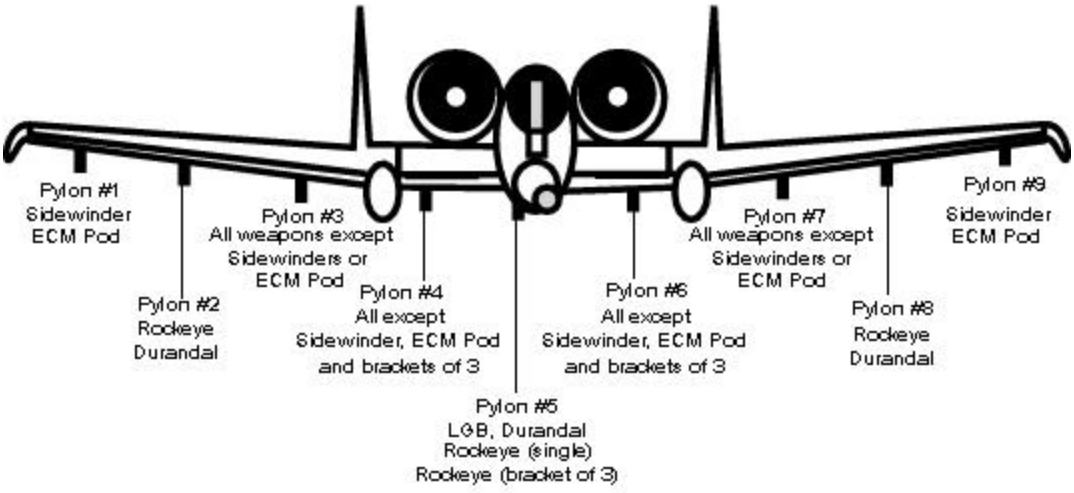
Copy Placed Weapon Keys
Enter
Joystick #1 button #2
Right Mouse button

For custom weapon loads, you'll need to select the desired weapon and designate its placement on the pylons of the A-10. To load a weapon:

1. Press the up and down arrow hot pads to cycle through the possible weapons until the weapon you wish to place is displayed or, press the Enter key while over a currently placed weapon to copy that weapon.
2. Move the cursor over one of the nine pylons on the undercarriage of the A-10. The cursor will change to the selected weapon when over a pylon that can carry it.
3. Press the Spacebar to place the weapon.

Weapon Placement
There are nine pylons located on the undercarriage of the A-10. The program will automatically determine if the currently selected pylon can be loaded with the selected weapon. If a weapon can be placed on a selected pylon, the cursor shape will change to the currently selected weapon.

The following diagram illustrates the valid weapon placement choices for each of the A-10's pylons.



Chaff, Flare, and Avenger Load
The load selection of chaff, flare, and Avenger ammo is automatic. You will always receive a load of 30 chaff, 30 flares, and 1,350 rounds of ammo for the Avenger 30 mm cannon.

Counter Balancing
Placing an LGB or a bracket on pylons 3, 4, 6, or 7 will automatically place the same load on the opposite pylon to counter balance the load.

Mission Summary

After each mission debriefing, you will receive a Mission Summary. Mission Summaries contain all data on your latest performance. You will be given the overall result of the mission and your tactical score (a point system based on the number and type of kills).

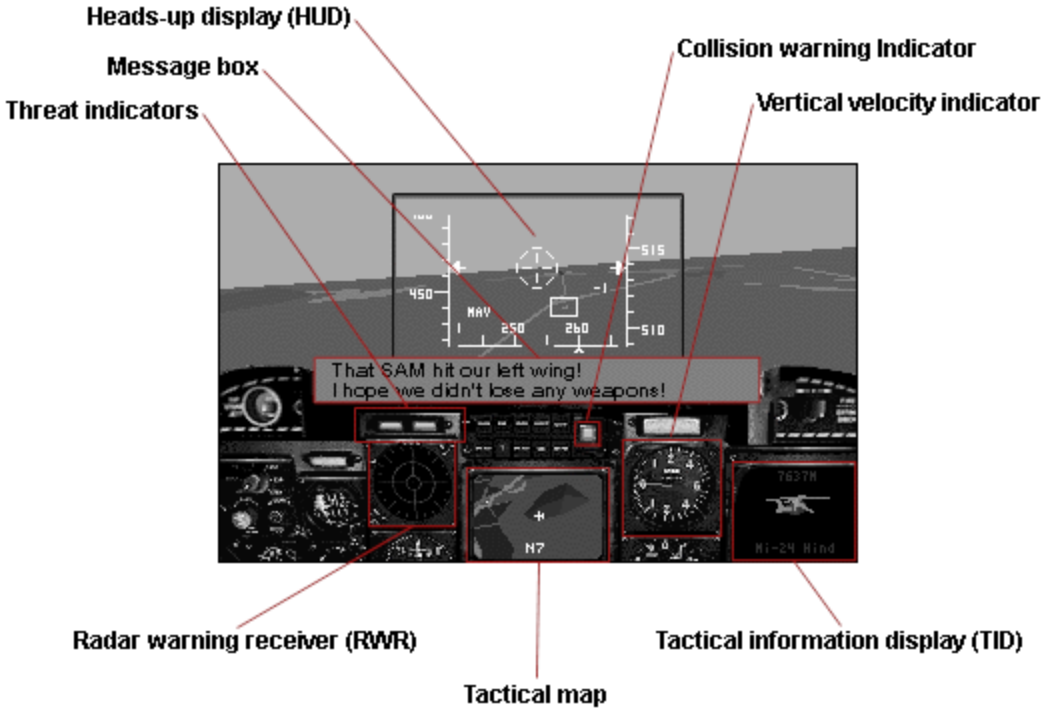
Campaign Summary
In Campaign Mode, you will receive both a Mission Summary and a Campaign Summary. The Campaign Summary contains a cumulative tactical score (compiled from all missions played).

Following the Campaign Summary screen will be the Campaign Decision screen. At this point you can decide to **Receive Next Assignment** or **Return To Main Menu.** Choosing **Receive Next Assignment** will place you into the next mission of the campaign. Choosing **Return To Main Menu** will save your place in the current campaign and return you to the **Main Menu**. Once saved, a campaign can be restarted at any time from the **Continue Campaign** section of the **Main Menu.**

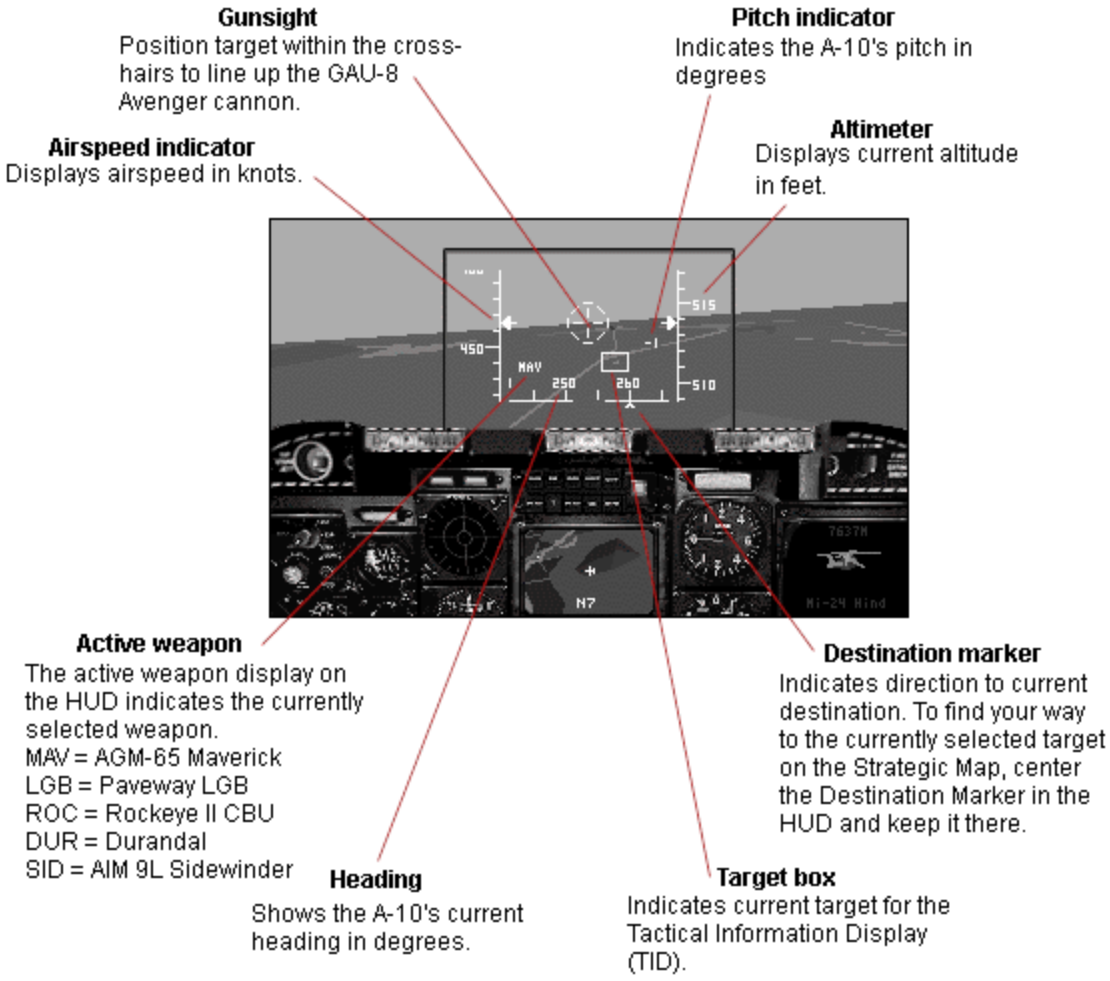
The Simulation

The A-10 Thunderbolt II simulation is as realistic as possible without bogging the game down with complicated controls. What you get is a very accurate representation of the feeling of A-10 flight without the burden of intricate flight knowledge. Flying the A-10 is as simple as grabbing the joystick and throttling up. The control screen lets you define graphics resolution, window size, and mission difficulty levels.

Cockpit Instruments



Heads-Up Display (HUD)

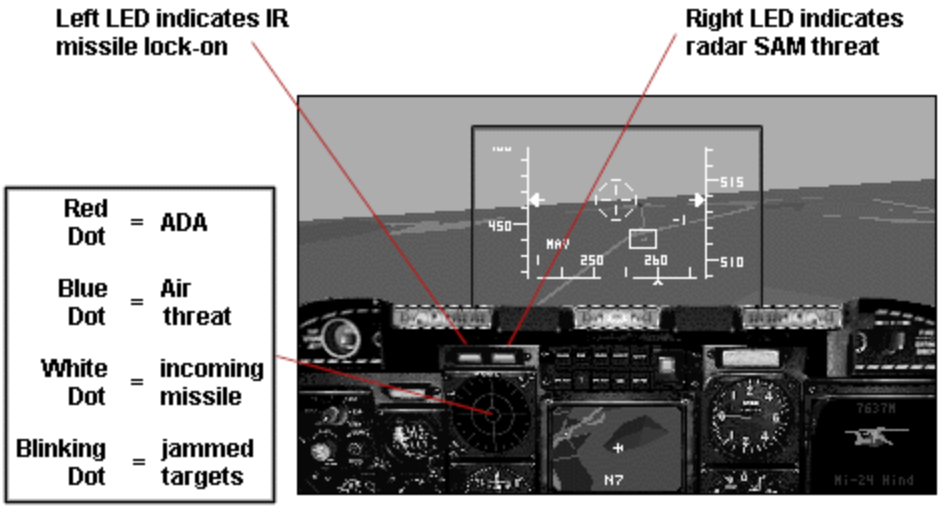


Target Box
Indicates current target for the Tactical Information Display (TID).

Destination Marker
Indicates direction to current destination. To find your way to the currently selected target on the Strategic Map, center the Destination Marker in the HUD and keep it there. (See Strategic Map Icons).

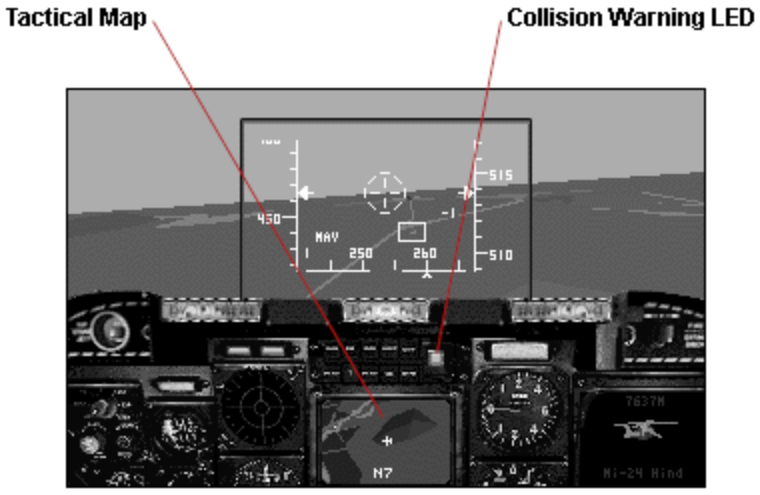
NOTE: FOR HEADING
NORTH is at 0
SOUTH is at 180
EAST is at 90
WEST is at 270

Threat Indicators
This pair of LEDs mounted above the Radar Warning Receiver (RWR) warns the A-10 pilot when an infrared (IR) or radar-guided missile has locked on to his aircraft. The left LED indicates an IR missile has locked on to the A-10. The right LED indicates a radar SAM threat.



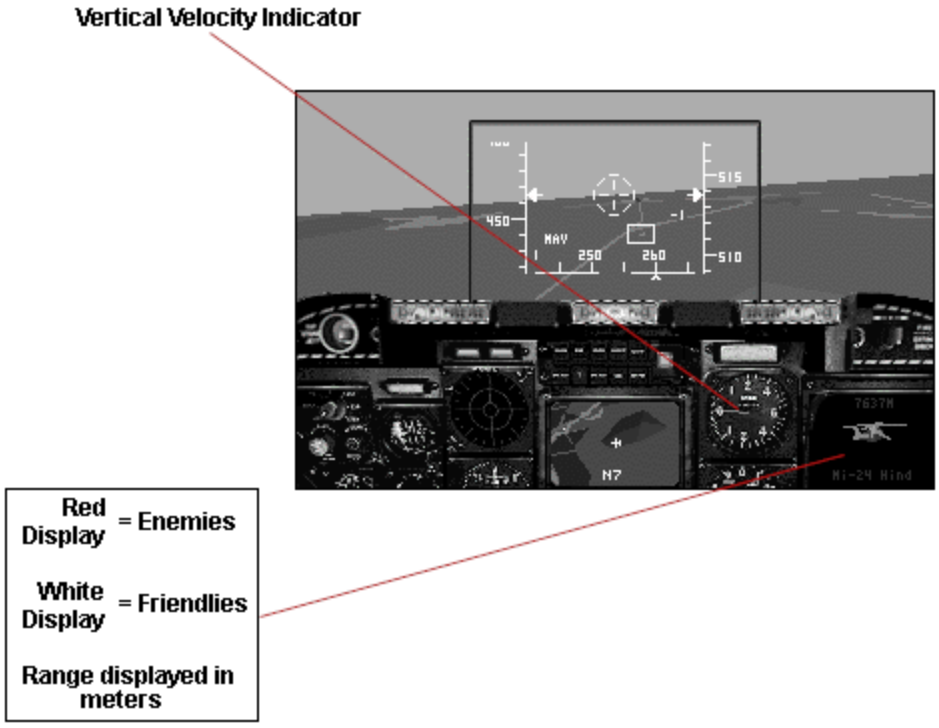
Radar Warning Receiver (RWR)
The RWR senses Air Defense Artillery (ADA), aircraft and missiles. A dot representing each of these threats is displayed on the RWR console. A red dot indicates an ADA threat, a blue dot represents an air threat and a white dot indicates an incoming missile. These dots blink when you have successfully jammed a target with the automatic jamming equipment (ECM Pod) which can be mounted standard on your A-10 Thunderbolt II. (See Defensive Weapons Systems).

Tactical Map
The tactical map displays all terrain in a 40 km X 30 km area around the A-10. The A-10's current grid position is displayed at the bottom center of the tactical map.



Collision Warning Indicator
This LED warns the pilot of an imminent crash into the ground.

Vertical Velocity Indicator
The Vertical Velocity Indicator gauge displays how quickly the A-10 is gaining or losing altitude. It points directly to the left in level flight.



Tactical Information Display (TID)
The TID displays the current target that the Weapons System is locked onto. If a weapon is fired, it will engage the displayed target. The TID provides target range, target identification and IFF (Identify Friend or Foe) information with hostile targets displayed in red text and friendly targets displayed in white text.

IMPORTANT! Always check the TID before firing! Wasting friendlies isn't usually considered a good thing.

Simulation Systems

Along with the main cockpit and its instruments, there are several screens and menus that are available from the simulation mode that will prove very beneficial to a successful mission. (See Game Overview).

Strategic Map
Pressing "M" during the simulation brings up the Strategic Map. This is the main source of information on the flow of the battle during the course of each mission. Each target shown on the map can be selected by cycling the current target box until it is placed over the desired target. Cycling the target box can be done in two ways:

1) By pressing the arrow hot pads in the lower right corner of the screen.
2) By clicking on the desired target with the on-screen cursor using a mouse.

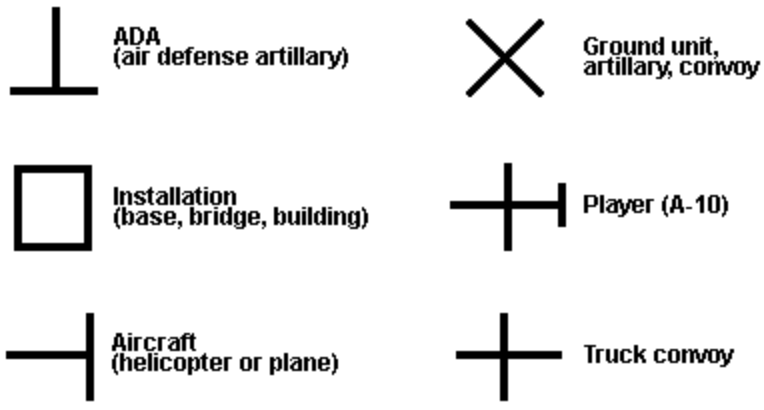
Once a target is selected, the Strategic Map will provide a description of the designated target. This description includes:

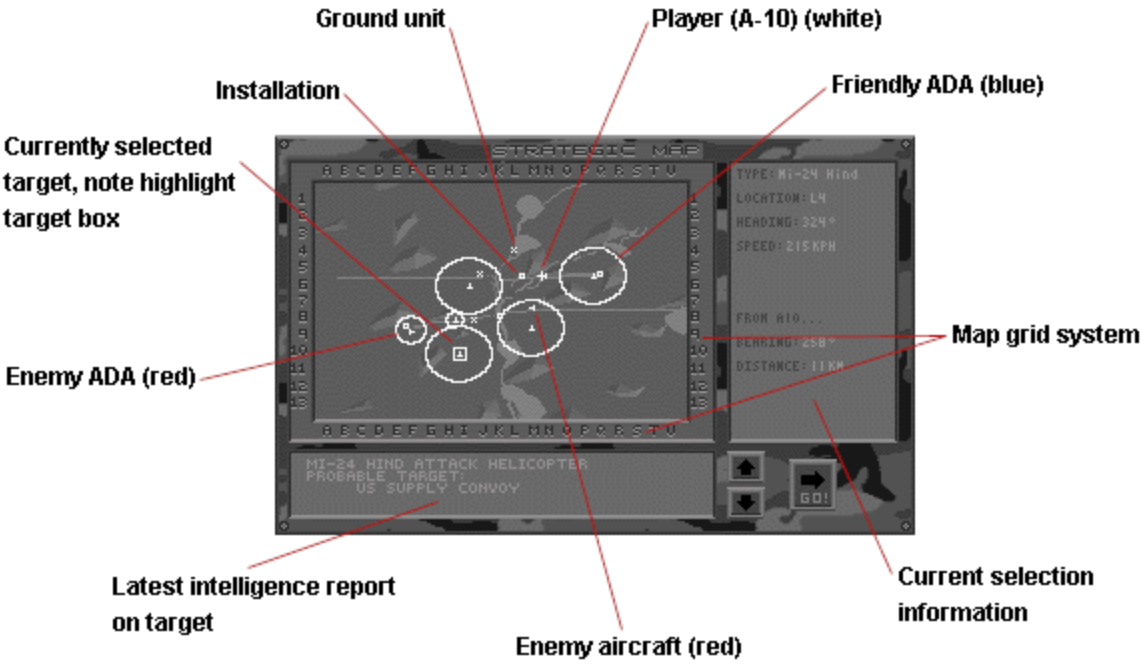
-- Target Type
-- Target Location (in Grid Coordinates)
-- Target Heading
-- Target's Estimated Speed
-- Target's Bearing relative to the A-10's current position
-- Target's Distance relative to the A-10's current postion
-- Intelligence Reports (if any) on the target

All enemy targets are displayed in RED while friendly units are shown in BLUE.

Strategic Map Icons
The Strategic Map uses several different icons to represent a variety of targets. The following is a listing of all icons used and their meanings.

IMPORTANT: The currently selected target becomes a directional guide for the Destination Marker on the HUD. Following the Destination Marker will lead directly to the last target selected on the Strategic Map.

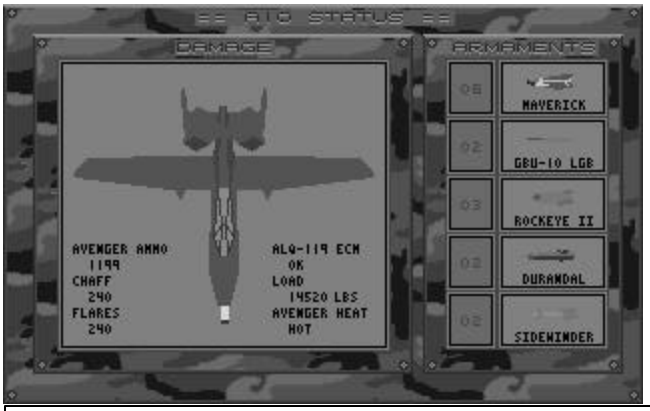




NOTE: Pressing "R" in the Strategic Map toggles the display of the ADA ranges on and off.

Status Screen

Pressing "S" brings up the A-10 Status Screen. This screen graphically displays the amount of damage sustained by the A-10 and shows its remaining armaments, gun ammunition, chaff, and flare salvos. The weapon load weight and Avenger heat status are also displayed.

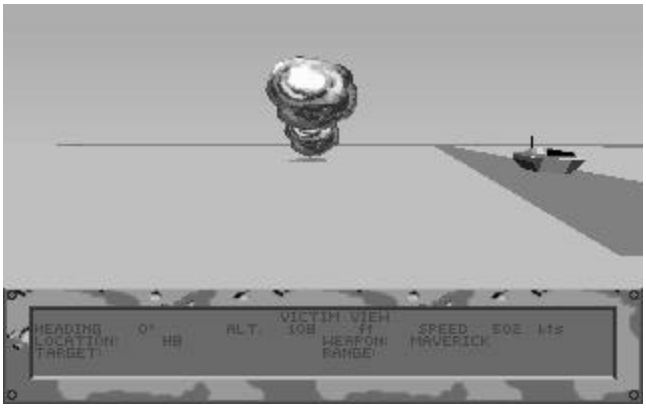


IMPORTANT: If the A-10 loses a wing, all the weapons on that wing are lost.

Preset Views

Along with three internal cockpit views, A-10 Tank Killer is capable of displaying 6 preset external views, including Victim and Engagement Views.

Victim View is an external camera that moves to constantly keep a fired weapon and its target in view.



A Maverick destroys an enemy target as seen from Victim View

Engagement View is an external camera that pans to keep both the enemy and the A-10 in view.

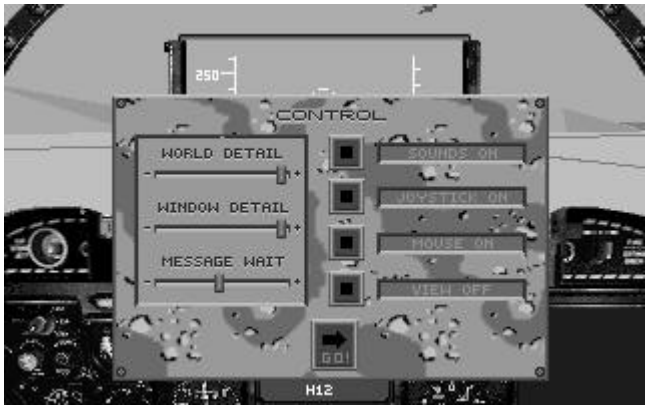
Floating Camera Mode
Along with preset views is the Floating Camera Mode of viewing. When activated, the view is user controlled, allowing the use of joystick, keyboard or mouse for "live" movement inside and outside of the A-10. The Floating Camera Mode can be activated from the keyboard or from the Control menu.

Floating Camera Mode
From the keyboard:
Pressing Alt-V toggles on/off

From the Control menu:

Press F10 from the simulation and select View On/View Off.

Control Screen
The Control screen gives you in-game control over the many simulation elements including detail of the 3-D world, the size of the viewing window, the length of time that messages are displayed on screen, sound on/off, choice of input devices, and Floating Camera on/off. The Control menu can be accessed at any time by simply pressing the "F10" key.



World and Window Detail Slider Bars
Because A-10 Tank Killer uses a highly advanced 3-Dimensional modeling system called 3Space™, older computers may have some difficulty handling the complex mathematical equations that are necessary to drive the detailed 3-D worlds. The Detail Slider Bars allow you to customize the detail of the game to fit the speed of your computer. By using the Slider Bars, you can "adjust" the amount of detail in the cockpit or in the 3-D world.

NOTE: Whenever any of the Simulation System screens are called up, the game is paused.

The Quit Menu
At any time during game play, if the "ESC" key is pressed the Quit mission menu will appear. This menu presents you with two options: **Return To Base** or **Continue Flying**.

Selecting **Return To Base** will place you directly into your Mission Debriefing. Selecting **Continue Flying** will re-enter the simulation.

IMPORTANT: Quitting a mission before it is completed will leave any remaining Allied troops open to attack. If this happens, your mission evaluation may suffer.

A-10 Pilot's Manual

A-10 Warthog Specifications

Manufacturer: Fairchild Republic Co.

Primary Mission: Sustained, close air support

Powerplant: Two General Electric TF34-GE-100 turbofan engines, each developing approximately 9,000 lbs. (4,082 kg) of thrust

Length: 53 feet, 4 inches (16.25m)

Height: 14 feet, 8 inches (4.47m)

Wingspan: 57 feet, 6 inches (17.53m)

Internal Fuel Capacity: 10,700 lbs. (4,853 kg)

Operating Weight: 25,000 lbs. (11,340 kg)

Max Gross Weight: 50,000 lbs. (22,680 kg)

Ammunition Capacity: 1,350 rounds: mixed HE and depleted uranium

Armament: One 30mm General Electric GAU-8 Avenger seven barrel cannon

Firing Rate: 2100/4200 rounds per minute

Ordnance Capacity: Up to 17,000 lbs. (7,727 kg) of mixed ordnance on nine underwing pylon stations with partial fuel

Ferry Range: 2,173 nautical miles (4,026 km)

Combat Radius with Typical Weapon Load: 250 nautical miles

Max Speed (clean): 450 kt

Combat Speed with Typical Weapon Load: 380 kt

OVERVIEW OF THE A-10 AND ITS ROLE
The A-10 is a close air support attack aircraft. It assists ground troops by eliminating threats such as hostile tanks, tank destroyers, and other armor. Its extensive weapon load also enables it to take out larger targets such as bridges, airstrips, and buildings.

In Vietnam, it was found that an aircraft must be able to survive severe concentrations of anti-aircraft (AA) fire. The A-10 is built with redundant structural parts so that it can take a lot of damage. In fact, an A-10 can fly with one engine and half a wing blown off! The engines are placed high on the aircraft to protect them from AA fire. The "bathtub" of armor around the cockpit can withstand 23mm rounds.

The most striking feature of the A-10 is its 30mm cannon, the Avenger. It fires shells the size of milk bottles at a rate of 4,200 rounds per minute! The shells can rip through the armor of any tank in service.

WEAPONS SYSTEMS

Avenger 30mm Cannon
Effective against: TANKS, VEHICLES

The GAU-8 "Avenger" is the most powerful gun ever mounted on an aircraft. It can fire 2.5 lb. depleted uranium shells at a rate of 4,200 rounds per minute into a target 4,000 feet away with 80% accuracy. The energy of these rounds is enough to rip through the armor of any Main Battle Tank currently in service.

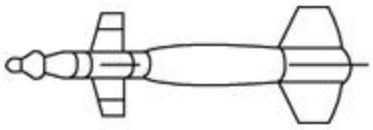
Anything that moves on the battlefield can be annihilated by the firepower of this awesome weapon.

WARNING: Continuously firing the Avenger cannon for extended periods of time will cause the gun to overheat and jam. You will be forced to wait for the gun to cool down before it becomes operational again.

Maverick
MAV
Effective against: TANKS, VEHICLES

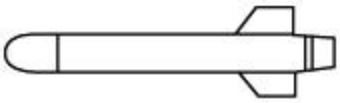
The Hughes Aircraft AGM-65D IIR (Imaging InfraRed) Maverick is a fire-and-forget air-to-ground missile system capable of engaging targets at ranges of up to five miles under ideal conditions. The Maverick's infrared heat-seeker locks on to the heat emitted by the target vehicle. This enables it to home in on a target without guidance from the aircraft once it is launched. The Maverick's armor-piercing warhead can vaporize the armor of any tank currently fielded by the Warsaw Pact. Operationally, the Maverick is a very lethal system, obtaining an 85% kill probability in weapons trials. Any vehicle or grounded aircraft can be taken out with Mavericks.

Paveway Laser Guided Bomb
LGB
Effective against: BRIDGES, BUNKERS, BUILDINGS, INSTALLATIONS



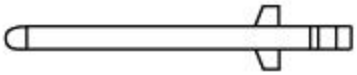
Another precision munition carried by the A-10 is the Texas Instruments GBU-10E Paveway II Mk 84 laser-guided 2,000 lb. bomb. The Paveway is basically an "iron bomb" with a laser-seeker and control surfaces added. In a typical attack, the pilot locks on to a target illuminated by a ground or air-based laser using the A-10's Pave Penny acquisition pod. Then he releases the weapon which glides to the target on its own, making mid-flight corrections as needed. The Paveway is most effective against hard targets such as bridges, hardened aircraft revetments, and large buildings.

Honeywell Mk 20 Rockeye II Cluster Bomb
ROC
Effective against: VEHICLES



Despite the addition of a laser seeker on the newest versions, The Rockeye is not considered a precision munition. The Rockeye relies on the "scatter effect" of up to 150 armor-piercing and high-explosive bomblets to destroy its target. Anything within its lethal radius (about 500 feet) is certain to be damaged, and stands a fair chance of being totally destroyed. The Rockeye is most effective against lightly armored vehicles (BRDM-3s, ACRVs, mobile SAM launchers, and grounded aircraft), but a lucky hit can kill a tank.

Matra Durandal Anti-Runway Penetration Bomb
DUR
Effective against: AIRSTRIPS



The Durandal is a very specialized weapon that is devastatingly effective against certain types of ground targets. It consists of a large HE (High Explosive) warhead encased in a steel jacket attached to a rocket engine. After launch, the ordnance releases a drag chute and falls until it is pointing straight down. Then the rocket motor fires, driving the Durandal deep into the target where it detonates. This explosion causes a huge "heave effect" which can shatter reinforced concrete and make a runway unusable with a single hit.

AIM 9L Sidewinder
SID
Effective against: AIRCRAFT

The AIM 9L Sidewinder is an air-to-air heat-seeking missile with all-aspect tracking capability. This enables the missile to lock onto an enemy plane even if it's nose-to-nose with the A-10. The effective range for a Sidewinder is approximately five miles.

VEHICLE DESCRIPTIONS

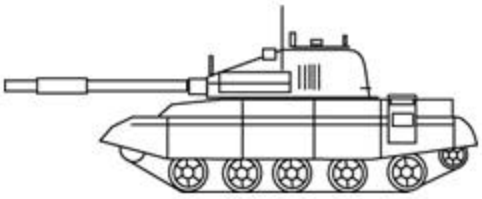
Hostile Units

T-72, T-80 Main Battle Tank
Primary armament: 125mm cannon
Top speed: 60km/h
Threat to the A-10: none

The T-80 is a threat to anything on the ground. Its powerful 125mm cannon can take out other tanks, tank destroyers, SAM launchers, and buildings. The Avenger and Mavericks are the best way to attack it, although a Rockeye will sometimes destroy it. The A-10 Tank Killer was designed to take out tanks like the T-80.

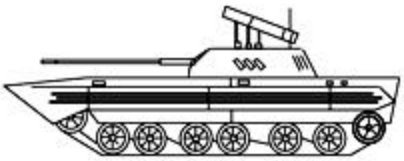
T-55, T-62 Main Battle Tank
Primary armament: 105mm cannon
Top speed: 50 km/h
Threat to the A-10: none

The T-55 and T-62 are the inferior predecessors of the T-72. These aging tanks are hopelessly vulnerable to the A-10. Engage them with the Avenger, a Rockeye, or a Maverick.



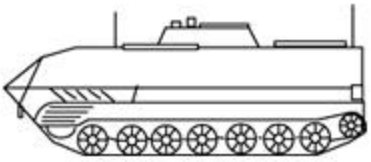
BMP Infantry Fighting Vehicle
Primary armament: 30mm cannon
Top speed: 63 km/h
Threat to the A-10: none

The BMP is a lightly armored, tracked vehicle. It is designed to carry troops on the battlefield. Its small cannon allows it to engage lightly armored vehicles like trucks, but it's no match for a tank. Engage it with the Avenger, a Rockeye, or a Maverick.



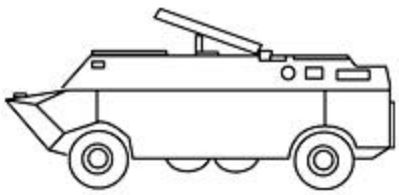
ACRV-2 Command Vehicle
Primary armament: none
Top speed: 58 km/h
Threat to the A-10: none

The ACRV-2 is lightly armored, tracked vehicle designed to serve as a mobile command post. It is virtually unarmed. Engage it with the Avenger, a Maverick, or a Rockeye.



BRDM-3 Tank Destroyer
Primary armament: anti-tank missile
Top speed: 90 km/h
Threat to the A-10: none

The BRDM-3 presents a great threat to any friendly tanks. Its weapon range is greater than that of the M-1A1 Abrams. Engage it with the Avenger, a Maverick, or a Rockeye.



SA-6 Gainful SA-11 Gadfly SAM Launchers
Primary armament: surface-to-air radar-guided missiles
Top speed: 58 km/h
Threat to the A-10: great

The SA-6 and SA-11 are mobile surface-to-air missile launchers. The missiles track the A-10 with a radar guidance system. The system can sometimes be fooled by dropping chaff, which distracts the missile away from the A-10. The missiles do great damage to the A-10. The SA-11 has a much greater range than the SA-6. Engaging a SAM launcher with the A-10 is dangerous, but can be done with the Avenger, a Maverick, or a Rockeye.

SA-9 Gaskin SA-13 Gopher SAM Launchers
Primary armament: surface-to-air infrared-homing missiles
Top speed: 90 km/h
Threat to the A-10: great

The SA-9 and SA-13 are mobile surface-to-air missile launchers. The missiles home-in on the A-10 with an infrared heat-seeking system. They can sometimes be distracted by dropping a flare. These systems have a smaller range than their radar-guided counterparts (the SA-6 and SA-11). Engaging a SAM launcher with the A-10 is dangerous, but can be done with the Avenger, a Maverick, or a Rockeye.

G-5 Howitzer
Primary armament: 155mm cannon
Threat to the A-10: none

The G-5, built in South Africa, boasts an extremely accurate 155mm cannon with a range of up to 24 miles -- much greater than any of its allied counterparts.

Mobile Scud Launcher
Primary armament: Scud missiles
Top speed: 90 km/h
Threat to the A-10: none

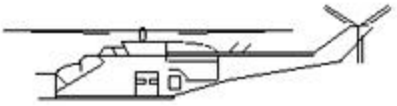
The Soviet-built Scud missile has been modified by the Iraqis to provide a much greater range. Its inaccuracy makes it more a terrorist than a military threat.

ZSU-23-4 Shilka AA Gun
Primary armament: four 23mm guns
Top speed: 44 km/h
Threat to the A-10: great

The ZSU-23-4 is a devastating low-level anti-aircraft system. It's equipped with fire-control and target-acquisition radar to aim the four 23mm guns.

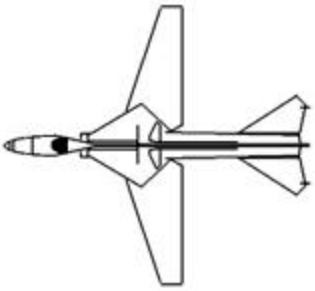
Mi-24 Hind Assault Helicopter
Primary armament: 23mm cannon
Top speed: 170 knots
Threat to the A-10: none

The Hind is a fast assault helicopter. It presents a great danger to your friendly ground forces. It is particularly effective against the M-1A1 Abrams. It can be engaged with a Sidewinder, and skilled A-10 pilots can shoot it down with the Avenger.



MiG-27 Flogger Strike Fighter
Primary armament: A variety of weapons mounted under the fuselage, including anti-aircraft missiles and bombs.
Top speed: 980 knots
Threat to the A-10: great

The Flogger can engage anything on the battlefield or in the air. Its air-to-air missiles pose a serious threat to the A-10. It can be engaged with a Sidewinder, and a lucky Avenger shot could damage it.



Zil-157 Truck
Primary armament: none
Top speed: 90 km/h
Threat to the A-10: none

The Zil-157 is the standard Soviet truck. It is used to transport troops, supplies, ammunition, and equipment.

VEHICLE DESCRIPTIONS

Friendlies

M-1A1 Abrams Main Battle Tank
Primary armament: 120mm cannon
Top speed: 70 km/h

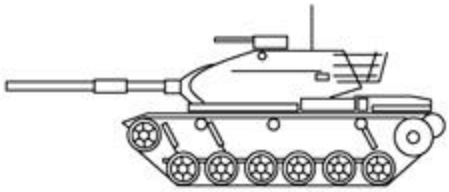
The M-1A1 Abrams is effective against most ground targets. The A-10 should provide close air support for the M-1A1, especially when there are tank destroyers or Hind helicopters in the area.

M2 Bradley Infantry Fighting Vehicle
Primary armament: 25mm chaingun
Top speed: 65 km/h

The M2 is the U.S. counterpart of the BMP-2. It can engage lightly armored targets, but should avoid one-on-one confrontations with tanks.

M-60 Main Battle Tank
Primary armament: 105mm cannon
Top speed: 48 km/h

This vintage U.S. Main Battle Tank was retrofitted with reactive armor for the Gulf crisis. Now primarily used by the Marine Corps, it also equips Saudi and Egyptian units.



M48 Chaparral SAM Launcher
Primary armament: surface-to-air infrared-homing missiles
Top speed: 60 km/h

The M48 is the standard air defense weapon system of the U.S. It can take out Hind helicopters and MiG-27 Floggers. When the A-10 is threatened by a MiG, ducking beneath the "umbrella" of an M48 is a smart move.

Bridges, Buildings, Supply Dumps, Bases, etc.
Structures such as these can be engaged with the Paveway LGB. However, before dropping an LGB on one, make sure that the mission objectives call for it to be destroyed. Taking out a bridge which U.S. forces plan on crossing is not a smart tactic.

Airstrips
Airstrips controlled by the enemy can be destroyed with the Durandal.

Farms
Farms are considered neutral civilian targets, and should not be attacked.

Defensive Weapons Systems

ALQ-119 ECM Jamming Pod: This pod hangs on the outside pylon of the A-10. It has jammers which can temporarily confuse the radar-acquisition on ADA systems. This gives the A-10 pilot a little extra time before hostile radar systems can lock on to the A-10. Jammed ADA systems are indicated by a blinking dot on the RWR.

Flare: This is a small heat-emitting decoy that the A-10 pilot can release. It will sometimes fool an incoming infrared-homing SAM or air-to-air missile into tracking it instead of the A-10. It's useful against the SA-9, SA-13, and MiG-27 Flogger.

Chaff: This is a cartridge which releases a cloud of small tin-foil strips. The cloud will reflect enemy radar and blind it for a few seconds. This sometimes gives the A-10 enough time to escape incoming radar-guided ADA systems (such as the SA-6, SA-11 and ZSU-23-4).

FLIGHT INSTRUCTIONS

The Takeoff
In most of the missions you will start off on the runway. Taking off is simple: give the A-10 full throttle, and pull back on the stick. When you have enough speed, you'll lift off. Once safely off the ground, press the G key to raise the landing gear. With less than full throttle, you may run out of runway. Even this is rarely fatal. Recently, an A-10 of the 81st Tactical Fighter Wing missed its takeoff and crashed

into a beet field. The A-10 sustained very little damage.

Landing
It is not necessary to land the A-10. You may quit anytime by pressing ESC. This will end the mission and return you to base safely. If you want to experience landing, line up about 4000 meters from the runway, flying parallel to and toward the runway. Use the rudder to make small adjustments to your heading to get lined up exactly and press G to lower the landing gear. Bring your throttle down to 3. Come to an altitude of about 100 feet and guide the A-10 in. Once you set down, bring your throttle down to 1.

Taxiing
If you land and the mission isn't over, you will want to takeoff again. To do this, you will need to turn the A-10 around so you have enough runway. To taxi, use a little throttle. You can guide the A-10 on the ground with the rudder or aileron controls.

Flight
Aircraft are guided by control surfaces on the wings and tail, and by the amount of thrust generated by the engines. Ailerons on the wings control the roll of the A-10 and, indirectly, the heading. The tail controls the pitch and the rudder controls the heading.

Climbing and Diving
To gain altitude, go into a climb. Just pull back on the stick until the A-10 is oriented upward (positive pitch). Continue climbing until you reach the altitude you want. A dive is just the opposite: push forward on the stick to lose altitude.

Turning
There are several ways to execute a turn. The simplest way to turn is to move the stick left (or right). This will bank the A-10 slightly and will begin a turn. The more you bank, the more the A-10 will turn. When you've almost reached the heading you want, level off.

A faster turn can be executed by moving the stick to the left (or right), then pulling it back. This is the fastest way to change heading. However, it's very easy to overshoot the heading you want, and unless the A-10 was rolled exactly 90 degrees, you also change your pitch.

Small adjustments to the heading can be made with the rudder. Using the rudder is the slowest way to turn, but it doesn't affect the pitch and it's the most precise. Usually you'll want to start a turn by moving the stick left (or right), get close to the heading you want, level off the A-10, and then make the final adjustments to heading with the rudder.

Speed and Stalls
Speed is controlled by the throttle. Full throttle, full speed. A stall happens when the plane is moving through the air too slowly. Lift is lost and the control surfaces don't work properly. The A-10 will nose down until the airspeed is greater than the stall speed. To avoid stalls, keep the throttle at 4 or higher. Don't stall at low altitude unless you enjoy crashing.

COMBAT TACTICS

The A-10 is a special kind of aircraft -- a combat aircraft armed to the teeth.

Finding the Target
Find the target you want on the Strategic Map, and then select it. The selected target will be highlighted on the map by a black square. The information display on the right will give you the bearing and distance of the target from your current position. Return to the front cockpit view **(F1)**. The

destination indicator above the compass tape on the HUD will guide you to the target. Change your heading until the destination indicator (a small triangle) is centered on the tape. You are now heading directly toward the target. Stay low and go full throttle to reach the target. When you get near the target, it should appear on the TID screen.

Attack Tactics
When you're about 7000 meters from the target, slow down to attack speed -- a throttle setting of 4 or 5. This will give you enough time to line up on the target.

Select the proper weapon type to use against the target
Against Tanks: Select a **MAV**erick, **ROC**keye cluster bomb or use the Avenger 30mm cannon.
Against Other Vehicles: Select **MAV**erick, **ROC**keye cluster bomb (especially if there are several vehicles close together) or use the Avenger cannon.
Against Bridges, Bunkers, Buildings, or Installations: Select **LGB**.
Against Airstrips: Select **DUR**andal.
Against Aircraft: Select **SID**ewinder.

An Avenger Attack Run
The Avenger is an unguided weapon mounted inside the A-10, so you must maneuver the plane to aim it. To set up a run, stay low (about 150 feet) and come in at slow speed. Line up on the target (use the rudder to get lined up exactly). Stay lined up, and, at about 3000m, pitch the plane so that the cross hairs are exactly over the target. Fire!

If there are several targets before you, use the rudder to spread the Avenger fire across them. Often you can eliminate an entire tank platoon in seconds!

Another useful tactic to score a hit is "Walking" the fire across the target. When the cross hairs are below the target, begin firing. Pull the impact point of the shells across the target by pulling back on the stick.

If you miss some of the targets on the first run, make a second pass. Fly past the targets at full throttle for about seven seconds. Throttle back down to a slower speed, and wheel the A-10 about with either a quick turn or a loop and half-roll. Line up again and finish off the targets!

Other Weapons
The other weapons are easier to score a hit with. Keep the target in the HUD. Sequence through all the targets on the HUD until the one you want is displayed in the TID and is selected on the HUD. Make sure the proper weapon type is selected. When the target is within range, "LOCKED" will appear on the HUD next to the weapon type. To see the full force of the attack, switch to one of the cinematic views (**F8** or **F9**).

The LGB and Rockeye are guided bombs, whereas the Maverick and Sidewinder are missiles. With the LGB and Rockeye, the lock-on range is shorter.

Avenger vs. Maverick
Both weapons have the same purpose: to kill tanks. You'll have to decide which to use on each attack run. The Maverick is easier to use. Select the target you want on the TID, wait for "LOCKED," and fire. The guidance system will ensure the Maverick hits the target. The Maverick has a greater range than the Avenger cannon. However, you have fewer Mavericks than Avenger bursts.

If you pop up over a hill and there's a SAM launcher staring at you, it's better to take it out with the Avenger. Avenger shells are faster than a Maverick, and in quick draws like this the Avenger comes out on top. Trying to quick-draw on a SAM with a Maverick is risky at best.

Finally, the Avenger is the most cost-effective way to kill tanks. An Avenger burst costs a fraction of what a Maverick missile is worth.

Dogfights
Although the A-10 was not designed for dogfighting, A-10 pilots do not consider MiGs an unconquerable threat. At high altitudes, the A-10 is at a distinct disadvantage, but at low altitudes a MiG has a hard time maneuvering.

When you spot a MiG, keep him in front of you. If you have a Sidewinder, fire it as soon as you achieve lock-on. At close range, you can try to hit the MiG with an Avenger burst, but this is very difficult. If you're out of Sidewinders, mister, you're in trouble. Your best chance is to stay low, drop flares when necessary, and run toward the "umbrella" of a friendly SAM launcher. If the MiG follows you into the "umbrella," there's a good chance it will be shot down.

The A-10 can clean up against Hind helicopters. The Hind was not designed for air-to-air combat. You can use Sidewinders against a Hind, or use the Avenger. The Hind is much slower than a MiG, and, with practice, a good pilot can take out a Hind quickly with the Avenger.

Defensive Tactics Against ADA
Stay low. The lower you fly, the greater the chance that the terrain will hide you from SAM launchers. Use the Strategic Map to stay outside the range of SAM launchers. Monitor the RWR to see what SAM threats are out there.

When a SAM is coming at you, there are some tactics to try. If there's a hill nearby, duck behind it. If the SAM is radar-guided (indicated by the far right light above the blinking RWR), drop some chaff to distract it. If it has infrared homing (indicated by the far left light above the blinking RWR), drop a flare or two. As a last resort, attempt to out-turn the SAM. This is very difficult. If you find yourself in a quick draw with a SAM launcher, you can try and take it out with the Avenger before it launches.

Against a ZSU, you have to rely on the fact that your weapons have a greater range than the ZSU. Once you are locked on to the target, fire and get out of there fast! If you accidentally fly within the range of a ZSU, you're in trouble. They are lethal weapons and it's very difficult to evade their fire.

MISSION PLAN
In the Briefing, your commander will let you know what your mission objectives and priorities are. Once you're in the A-10, review the Strategic Map. It will familiarize you with the battle. Make a Flight Plan. However, due to the dynamic nature of land battles, you'll probably have to alter your Flight Plan several times. You will be receiving new orders and distress calls over the radio during the mission. Stay alert and stay flexible. Always keep your objectives in mind.

A-10 Pilot Interview

What tactics are employed when a SAM is launched at the A-10?
" In the first place, stay low to avoid SAM operators from acquiring the A-10. Once a SAM is launched, make a 3-D breakaway from the SAM. Additionally, flares can be dropped to decoy IR seeking missiles, and chaff is used on radar-guided missiles."

What tactics are used when an enemy fighter, say a MiG, is spotted?
"Keep him in front of you. Don't let him on your tail. You can engage the fighter with Sidewinders. Two Sidewinders can be loaded on either outside pylon. The gun, although not very effective in shooting down aircraft, is very effective in making the enemy fighter take a defensive stance."

In actual combat, how low would you fly?

"Between 100 and 400 feet."

What's the role of the A-10?
"Close air support. We call it CAS. We support ground troops in close proximity, which is defined as operating within 1000 yards of friendly forces."

What's the difference between the role of the A-10, and the role of an attack helicopter?
"The roles are identical. Both aircraft provide close air support. However, the capabilities of an attack helicopter are different."

In what way?
"Hiding, for example. A helicopter hides by hovering low behind some trees, or by actually landing in an open field. The A-10, since it must keep moving, would hide by flying low behind a ridgeline or hill. Helicopters are not as survivable as the A-10. One or two hits on a helicopter will generally cripple it, whereas the A-10 was designed to take hits. In Vietnam, aircraft were hit quite a bit, so survivability was an important factor. Also, the A-10 can carry much more ordnance. Helicopters carry about 2,000 lbs. The A-10 can carry 17,000 lbs."

The F-16 is a ground-attack aircraft. What's the difference between the A-10's role and the F-16's role?
"The F-16 is a fast aircraft. It is used for deep interdiction strikes into enemy territory -- taking out a bridge behind enemy lines, for example. It can get in, strike, and get out. The A-10 can fly much slower than the F-16. This is essential for close air support. A-10 pilots can operate in a dynamic environment, where targets are moving rapidly and are well camouflaged. An A-10 pilot can spot a ground unit, identify it, wheel about, and destroy it. An F-16 wouldn't even know it's there.

What would a typical mission consist of?
"In an actual war, say in Central Europe, an A-10 pilot would go out and fly low to a contact point. At the contact point, the pilot would talk to a ground commander, who might say ' Four enemy tanks were spotted in the open, moving south bound at *xx* coordinates, and traveling at a speed of *y*. You're cleared to go ahead and engage them.' The contact would also let the pilot know what SAM threats are in the area, and what friendlies he should expect to see."

What's it like to fire the gun?
"The gun is very loud. It shakes the entire aircraft. You never get used to it."

Credits

A-10 Tank Killer
Version 1.0
Directed and Designed by:
Damon Slye

Version 1.5
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Lloyd Madden

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David McClurg
Nathan Dwyer
Darek Lukaszuk

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