

# FALCON™

*OPERATION: COUNTERSTRIKE™*



FALCON MISSION DISK™

*Spectrum HoloByte™*

# ***Spectrum HoloByte***<sup>TM</sup>

division of SPHERE, INC.  
2061 Challenger Drive  
Alameda, CA 94501  
(415)522-3584

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FALCON concept and design by Gilman Louie and Mark Johnson  
Amiga® and Atari® ST™ version programmed by Chris Orton, Colin  
Bell, and Russell Payne

Program graphics by Martin Kenwright

3-D program graphics by Martin Kenwright and Dave Whiteside

Program title screen by Jody Sather

Sound effects by Russell Payne and Andy Fisher

Project managed by Rod Hyde

Manual text by Rod Hyde, Lee Paddon, and Marisa Ong

Manual cover and illustrations by Matt Carlstrom

Special thanks to Jim Mackonochie, John Harris, Kevin Seghetti, Brian  
L. Davies, and all the testers


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# 1

## Introduction

From the first version of FALCON released in 1987, our intention at Spectrum HoloByte was to produce the most accurate flight simulator around. When you fly FALCON you get a taste of what it's like to sit in the "office" of one of the world's superlative modern fighter jets. However, with success comes another set of problems. Everyone told us the game was superb but suggested changes or new features to the game. To add value to the game, we originally set out simply to supply a disk with additional missions. While this seemed a good idea to start with, things soon got out of hand. As we responded to the best suggestions, it rapidly became obvious that what we were producing was virtually an entirely new game. Although FALCON is still recognizable, we hope that the improvements we've made will provide its fans with many hours of new flying challenges.

### Hardware Requirements

Amiga version requires:

- 512k RAM minimum  
1 megabyte RAM recommended
- KickStart 1.2 or higher

Atari ST version requires:

- Color monitor
- 512k RAM minimum  
1 megabyte RAM recommended

The Black Box feature, communications feature, and certain sound and graphic enhancements (chaffs and flares) are only available with 1 megabyte RAM. A joystick is optional for both versions.

### Loading

Before you start playing, you should make a backup copy of your original FALCON Disk 2. First, write-protect your original disk by sliding the locking tab toward the edge of the disk. You can make a copy of the Amiga Disk 2 by simply dragging the

original Disk 2 icon on top of your backup disk. (You can also make a backup of the Amiga FALCON Mission Disk 1.) Use a copy utility to backup the Atari ST Disk 2 to a single-sided 400k disk. Keep two separate Disk 2's for the original FALCON and the Mission Disk. That way you won't accidentally overwrite your pilot's record in one campaign with the wrong mission.

The new Mission Disk replaces FALCON Disk 1. Boot from the Mission Disk (codenamed *Operation: Counterstrike*). Then follow the screen prompts, inserting FALCON Disk 2 when requested.

If you're on an Amiga, you can also load the Mission Disk from the WorkBench by double-clicking on the icon labelled "Falcon\_Mission." Just type `FalconMission` if you prefer to run from CLI. Also, please note that if you only have 512k RAM on your Amiga, you will need to disconnect your second drive if attached.

If you have an Amiga with 1 megabyte RAM minimum, you can install the Mission Disk to your hard drive. Double-click on the "HD-Install" icon at the WorkBench to install the game automatically. This will automatically create a new directory on `dh0:` called "FalconMission." If you wish to install the game to a different partition, you will need to run the install program from CLI. Just type `FALCONMISSION1:INSTALL partition:.` (Don't forget the colon at the end for the partition name.) If you wish to install to a directory on your hard drive, type `FALCONMISSION1:INSTALL partition:directory/.` (Don't forget the forward slash at the end for the directory name.) As an example, type `FALCONMISSION1:INSTALL DH1:GAMES/` if you want to install the Mission Disk to `dh1:` in a directory called "Games."

## 2 Missions

The key difference between these new missions and those found in the original FALCON program is the overall mission framework.

### ***Operation: Counterstrike***

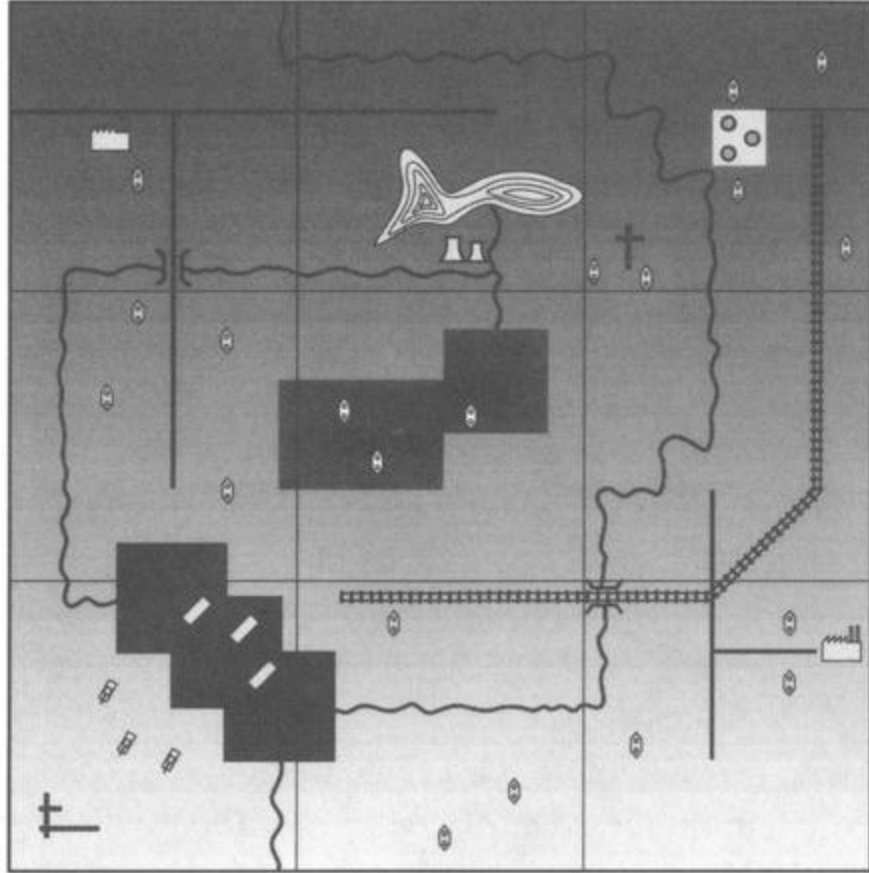
**Objective:** Total defeat of the enemy forces by destroying all the enemy industrial and ground assets. Such major damage to its manufacturing industry will force the enemy to negotiate peace terms and halt its aggressive intentions towards the country whose freedom you are protecting. The objective is not to invade and subjugate the hostile territory but to destroy the enemy's offensive potential and force him to recognize that further hostile acts would be fruitless. The fate of the nation is in your hands.

To complete this objective, your Falcon fighter is based at a forward airfield on the edge of enemy territory. This airfield, while adequately defended against air attack, is very vulnerable to enemy ground forces. You must prevent the enemy forces from overrunning the base, but at the same time attack the enemy industrial installations and eventually destroy all such installations. Beware: if enemy ground forces reach the airfield, you will be taken prisoner and possibly executed for "war crimes."

While every enemy target destroyed will contribute towards success in *Operation: Counterstrike*, points are awarded for destroying specific targets depending on which mission has been selected, just as in the original FALCON. The following pages list the twelve missions you will undertake and the hazards you will likely face. The map on the next page will aid you in locating the mission targets. Note: Home base has a waypoint of 0 (zero).

# Operation: Counterstrike

## Mission Map



**Mountain**



**Factory**



**Home Base**



**River**



**Oil Refinery**



**Tank**



**Road**



**Power Station**



**Armory**



**Swamp**



**Landing Craft**



**SAM Site**



**Railway**



**Bridge**



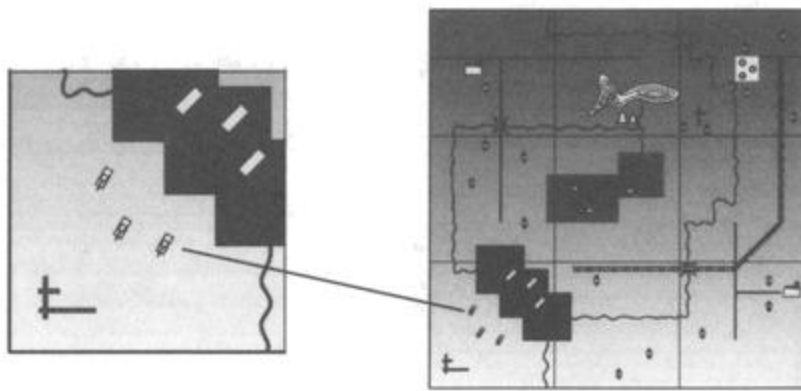
**Enemy Base**



# 1 Rolling Thunder



Waypoint: D1  
Objective: Destroy at least three tanks  
Effective weapons: AGM-65B Maverick  
Mk 84 2000lb Bomb



The tanks move southwest from the south side of the lake, just northeast of you, towards your home airbase. The T-80 tanks are immune to your 20mm cannon, so be careful to preserve your ordnance. It is essential to destroy all the tanks in one mission in order to allow you to get on with the vital strategic missions that remain. Operation: Counterstrike depends on always being able to return to your own airfield.

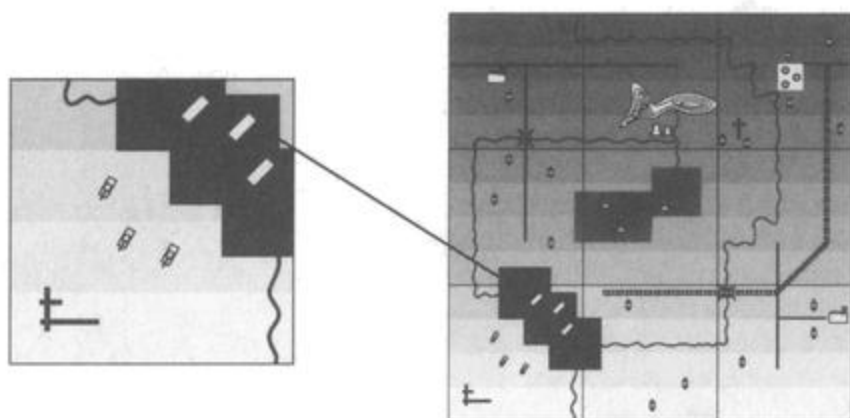
As the tanks near your airfield, you will not be distracted by enemy fighters. The MiG-29s will be driven away by your air defense umbrella.

You will be warned by ground control when the tanks are approaching dangerously close to your airbase. The F-16 map display does not indicate whether there are any active enemy tanks. However, once you get airborne, you'll soon discover the T-80s' locations by the pyrotechnics of the land battle as they fight their way forward.

## 2 Water Sports



- Waypoint: D2
- Objective: Destroy at least three landing craft
- Effective weapons: AGM-65B Maverick  
Mk 84 2000lb Bomb  
20mm Cannon



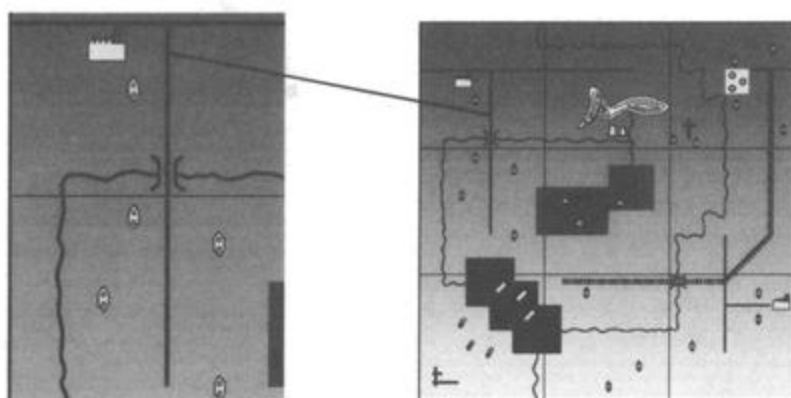
This mission easily combines with **Rolling Thunder**; the landing craft should be the next target once the immediate threat to your airfield has been eliminated by taking out the tanks. Here the cannon comes into its own with strafing runs over the lake. The landing craft move southwest from one side of the lake to the other. Once each landing craft reaches the southwest shore, it unloads a tank. The landing craft is stationary while the T-80 is disembarking and therefore far easier to pinpoint and attack. But, on the other hand, the landing craft has already delivered its cargo and done its job. If you sink the landing craft on the lake, you get rid of tank and landing craft in one shot.

Ground control will inform you when the landing craft reach the lake shore.

### 3 Truck Interdiction



Waypoint: D3  
Objective: Destroy the truck convoy  
Effective weapons: AGM-65B Maverick  
Mk 84 2000lb Bomb  
20mm Cannon



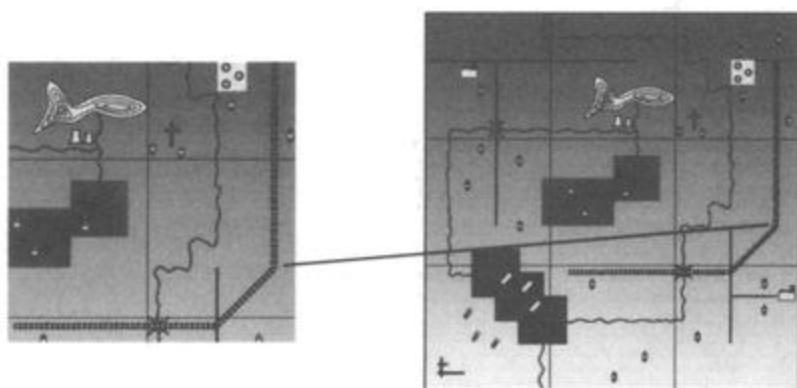
The truck convoy supplies the enemy's attempts to attack the airfield. Knocking out the convoy will provide some respite from the onslaught of landing craft and tanks. The convoy starts out from the road in northern enemy territory. The trucks travel west and then turn due south over a river bridge and offload their supplies where the road ends near the lake.

Once you've found them, the trucks should be a piece of cake... but it's very easy to botch a simple mission like this by concentrating too hard on looking for the trucks and falling to a SAM or a MiG because you weren't paying attention. Cut down relative motion by attacking from straight behind the convoy. Ground control will inform you when the trucks reach the bridge, which will at least narrow down your search area. Once the truck convoy reaches its destination, the ground forces are resupplied and another convoy starts out from its starting point on the map.

## 4 Train Interdiction



Waypoint: D4, D5  
Objective: Destroy train  
Effective weapons: AGM-65B Maverick  
Mk 84 2000lb  
20mm Cannon



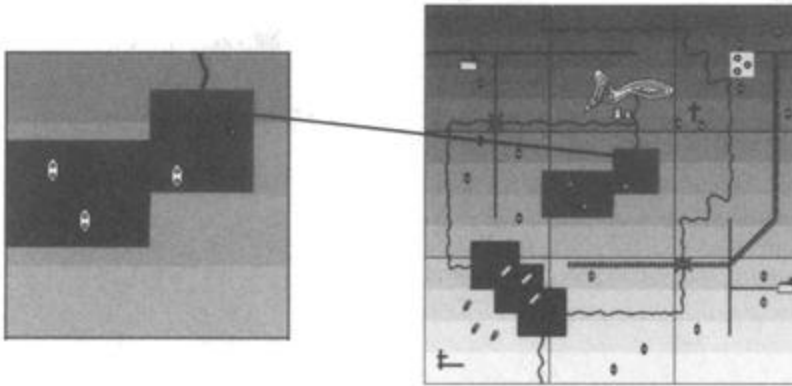
Train busting is as old as ground attack. But from Sopwith Pups to F-16s, the problem is the same: first find and then destroy a fast-moving target. What's worse, this train is a pretty tough beast and won't be bothered if you knock a few holes in its track. Taking out the first car won't bring the rest of the train to a halt: you have to blow up each car of the train individually. On the other hand, most of the track is mercifully free of SAM sites so you only have to worry about MiGs.

Like the truck convoy, stopping the train slows down enemy efforts to resupply its front line troops. This, in turn, takes the pressure off your airbase and allows you to continue your longer-range missions. Ground control will warn you when the train crosses the river bridge. Like the trucks, another train will depart as soon as one reaches its destination. Apart from the tanks themselves, these supply convoys are definitely near the top of your agenda. If too many of these trains get through, you are going to be fighting a losing battle against a never-ending stream of tanks and landing craft.

## 5 Wild Weasel



Waypoints:	Various
Objective:	Destroy at least four SAM sites
Effective weapons:	AGM-65B Maverick Mk 84 2000lb Bomb 20mm Cannon



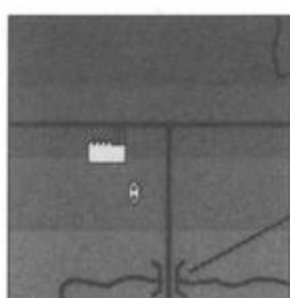
This mission is a useful prelude to virtually all the remaining missions since most of the strategic objectives are guarded by SAM sites. Carrying the ordnance to deal with SAM sites (including a jamming pod if you can get one) means that it is usually not practical to take out SAM sites and your strategic target with the same weapon load. Therefore, for a clear run at the target take out the SAM sites beforehand and then come back before they are repaired.

At Colonel level, be prepared for the SAM sites to launch SA-6 Gainfuls despite jamming. With this missile's 80kg semi-active radar homing warhead, the SA-6 can still do serious damage even if jamming throws it off a bit. You need to destroy them before they lock on you. The only way to foil an SA-6 is to fly low, but then you'll have to watch out for the SA-7s.

## 6 Serpent's Jaw



Waypoint: D7  
Objective: Destroy road bridge  
Effective weapons: AGM-65B Maverick  
Mk 84 2000lb Bomb



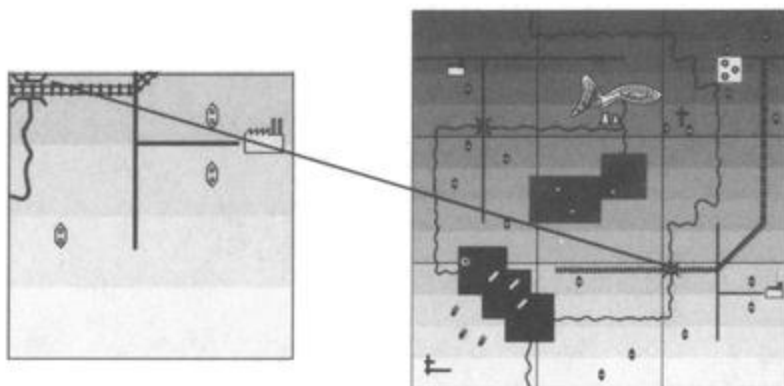
Why waste time trying to find the truck convoy? A much simpler solution to the problem is to take out the road bridge that the convoy has to cross. Unfortunately, SAM sites line both sides of the road leading to the bridge. One possible course of action is to drive hard due west and then pull round to take the bridge from behind. The Maverick is probably the weapon of choice here. With a fat, juicy target like this bridge, it should be possible to take it out without sacrificing too much height or speed, thus reducing your vulnerability to MiGs and SAMs.

Once this bridge is demolished, the trucks simply mill about in the vicinity of the bridge and become sitting ducks for future missions.

## 7 Serpent'sTail



Waypoint: D8  
Objective: Destroy the rail bridge  
Effective weapon: Mk 84 2000lb bomb



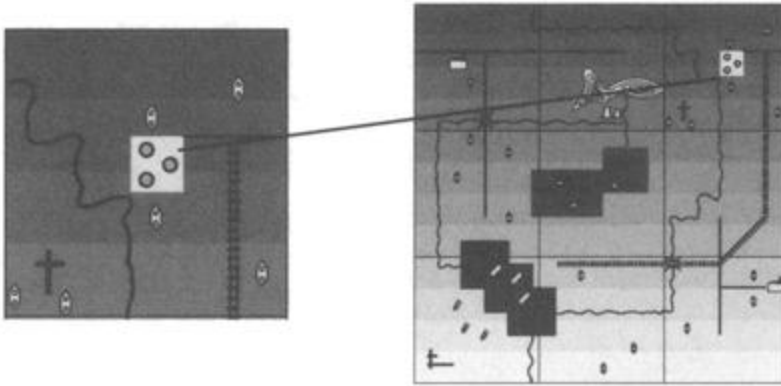
This big, solidly constructed rail bridge has been a real dilemma for High Command for some time. High-level strategic bombing has failed to shift the bridge, and light attack with A-10s and AV-8B Jump Jets have just bounced off it. What's required is a couple of well-placed 2000 pounders around the main span. Once again, this is a much more permanent way of stopping the flow of supplies than taking out the train. The enemy can always get another train, but the rail bridge will take some time to repair.

A high-precision dive bomb run is probably the optimum attack technique. Fortunately, no SAM sites are adjacent to the rail bridge so you should be able to get a clear run at the target. A heavy warload, however, is going to make you a sitting duck for any MiGs. Fly there fast on full burner, drop your load, and then look around for bandits.

## 8 POL Mission



- Waypoint:** D9
- Objective:** Destroy all three fuel tanks at the oil refinery
- Effective weapons:** AGM-65B Maverick  
Mk 84 2000lb Bomb



“POL” stands for “Petroleum, Oil, and Lubricants,” and it’s one of the riskiest missions of the entire campaign. Since these three fuel tanks are not arranged in a line, you will probably need two passes at the oil refinery. Naturally enough, there are no less than four SAM sites in the vicinity—two very close indeed. The oil refinery is the target deepest in enemy territory so you will have to fight your way in and out. There are also other SAM sites enroute so you have to choose your approach very carefully. Still keen to volunteer? Good luck!

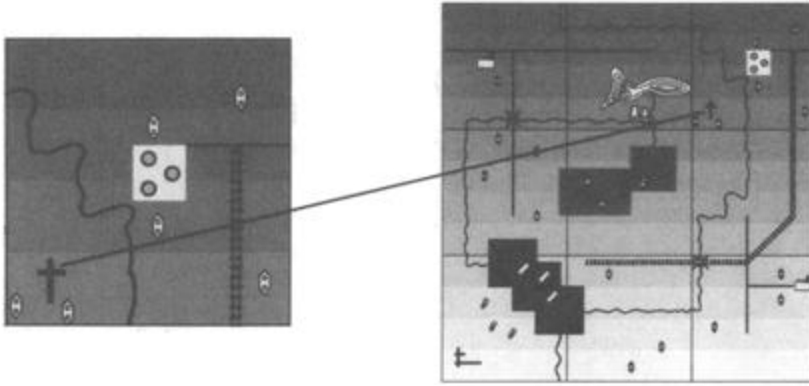
Fuel supplies, of course, are vital to every aspect of the enemy effort, from supplying fuel for fighters to keeping the tanks rolling. Taking out this oil refinery will really hinder the efforts of the enemy.



## 9 Wasp's Nest



Waypoint:	D10
Objective:	Destroy enemy landing strip
Effective weapon:	Durandal anti-runway bomb 20mm Cannon



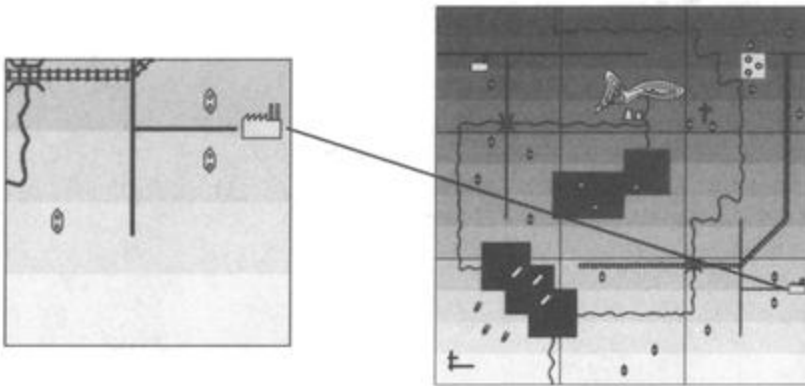
Dealing with MiG-29s once they get into the air can be a dangerous problem. The simplest solution is to prevent the MiGs from getting airborne. While destroying the enemy airfield will not directly achieve your ultimate objective, it will restrict enemy air activity and thereby make your overall goal a lot easier to achieve. The airstrip is only out of action when both runways have been cratered, although one Durandal at the intersection will do the job. Watch out for the SAM sites just to the south of the enemy airfield. It is definitely good advice to take the SAMs out first.

Intelligence believes this airfield to be the launch site for a new reconnaissance drone. If the drone makes it into your territory, it will be used not only to spot friendly troop positions but also to report back directly via down-link to the enemy headquarters. Since the size of the drone is too small for radar detection, you'll have to rely on a pair of sharp eyes for a visual sighting. Worse yet, since the drone doesn't give off enough heat for a Sidewinder's tracking system, you'll be forced to shoot it down with your 20mm cannon.

## Sledgehammer

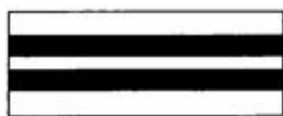


- Waypoint: D11
- Objective: Shut down the tank factory by destroying any two buildings
- Effective weapons: AGM-65B Maverick  
Mk 84 2000lb bomb



Your best plan of attack is to eliminate the two SAM sites west of the factory first. As soon as you've disposed of the twin SAM threats, the tank factory itself is next on your list of candidates for early destruction. As soon as this target has been destroyed, you have effectively ended the enemy threat to your airfield. The enemy will obviously seek to repair the factory as rapidly as possible, so it's worth a return trip every now and then.

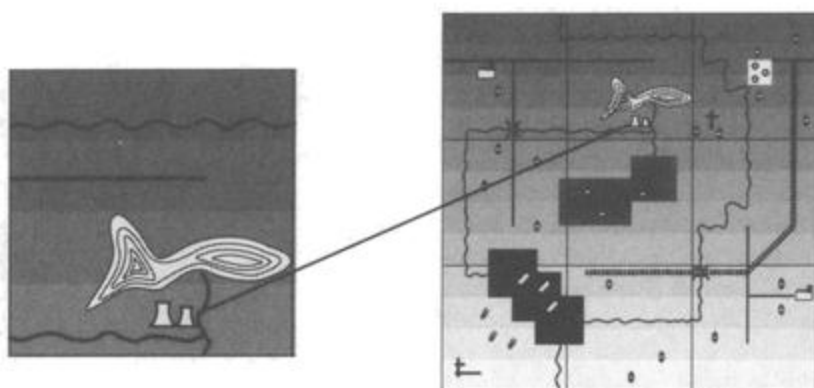
## 11 Thunderbolt



Waypoint: D12

Objective: Shutdown the power station by destroying any two of the cooling towers

Effective weapons: AGM-65B Maverick  
Mk 84 2000lb Bomb



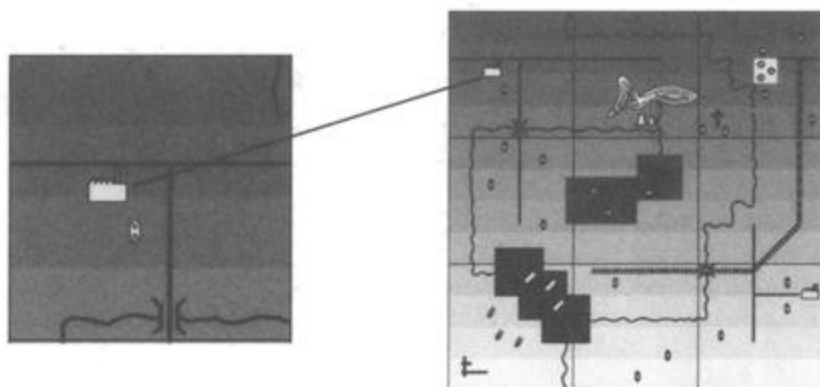
The power station is a reasonably easy target once you get to it. It's easy to locate just downstream from a river junction and near some mountains. Luckily, you don't have to worry about any of those irksome SAM sites nearby. As usual, though, there's a catch: getting to the target is another matter. You have to thread your way between the SAM sites in the swamp and those around the airfield.

Destroying the power station will halt all production throughout the enemy industrial region until the power is brought back on-line. Such a vital target is bound to be well-defended by enemy air assets so expect a bumpy ride.

## 12 Flaming Dart



- Waypoint:** D13
- Objective:** Shutdown the arsenal by destroying any two of the four buildings
- Effective weapons:** AGM-65B Maverick  
Mk 84 2000lb Bomb  
20mm Cannon



The simplest approach to this last mission is to fly due north at cruising altitude. Then, as soon as you reach the end of the road, immediately turn and begin your dive on the arsenal. With a little luck, you can bombard the target with your air-to-ground weapons and be gone before the enemy know what's hit them. The arsenal factory is a compact, small target area so the Mavericks definitely look like the best bet. Only go with the 2000 pounders if (1) the crew chief lets you down, (2) you like really big bomb craters, or (3) you're a plain masochist who likes dragging heavy weapon loads for miles over enemy territory.

Once again, destruction of the arsenal will halt the flow of material to the front and buy you valuable time.




## 3 Strategy

Initially the key to success is survival. On your first sortie, you should aim to destroy the tanks with Mavericks and then destroy the landing craft with any leftover Mavericks and the cannon. As soon as you deal with the landing craft and tanks, you should probably focus on one of the bridges. After that, you've got a bit of a breathing room from the immediate threat of losing the game and you can start to look at the strategic options.

The enemy tank stockpile is resupplied as soon as the landing craft reach the shore. So if you allow all three landing craft to beach, you can expect a steady stream of tanks to attack your airfield for the next few missions. Therefore, the first flight is absolutely vital to success or failure. Blow it and you are likely to be in for a very hard fight indeed. If you "buy the farm," the positions of all the enemy units are reset. If you want to continue from where you left off, you can choose a pilot with the same name. The scenario continues from where you left off, but the new pilot starts off from zero as far as points and medals go. If the scenario is going badly, you can start from scratch by choosing a different pilot at the Duty Roster.

An important point to bear in mind is how long the various targets stay destroyed once hit.

Target	Number of missions that the targets remain destroyed
 Bridges	5
 Factories	5
 SAM sites	3
 Trains	3
 Runways	2

	Trucks	2
	Landing craft	1
	Tanks	1













From this list, it can be seen that ultimate victory can be obtained by merely picking off one of the four key industrial sites each mission. But obviously should one mission fail, you could be faced with the factories repairing themselves just as quickly as you destroy them.

Don't forget that even if you do cause a total industrial shutdown, you could still lose if the enemy invades the airfield using the supplies that are in the pipeline. After the airfield has been overrun and you have been captured, the scenario is reset for you to have another try.

If you manage to achieve a complete enemy industrial shutdown when flying at First Lieutenant or Captain rank, you will receive a Distinguished Flying Cross. If you complete your campaign at Major, Lt. Colonel, or Colonel rank, you will receive the highest US military decoration, the Congressional Medal of Honor. At all ranks, you will also receive 1000 extra bonus points times the rank multiplier.

# 4

## Awards and Points

	<b>Mission</b>	<b>Merits</b>
	Rolling Thunder	1
	Water Sports	2
	Truck Interdiction	2
	Train Interdiction	3
	Wild Weasel	4
	Serpent's Jaw	6
	Serpent's Tail	10
	POL Mission	10
	Wasp's Nest	12
	Sledgehammer	12
	Thunderbolt	15
	Flaming Dart	15

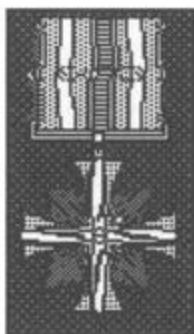
### Decorations and Medals

The Armed Forces recognizes acts of heroism by decorating its members with medals. If you display sufficient merit, you can be awarded one of five medals as a Falcon driver.



#### Purple Heart

The Purple Heart decorates any member of the Armed Forces who is injured in action. The first Purple Heart decoration issued was a simple silk or cloth purple heart trimmed with lace. Today's medal has a profile of George Washington in a field of purple.



### **Distinguished Flying Cross (DFC)**

The Distinguished Flying Cross is given to pilots in recognition of their outstanding achievement or heroism while flying. This medal was first awarded to Charles Lindbergh by President Coolidge for Lindbergh's historic crossing of the Atlantic in 1927.

To qualify for a Distinguished Flying Cross, you must:

1. Fly at First Lieutenant or Captain rank and cause total enemy industrial shutdown; or
2. Successfully complete a mission worth more than 3 points without an ALQ-131 jamming pod; or
3. Successfully complete a mission worth more than 3 points and destroy two MiGs.



### **Silver Star**

This medal was authorized in 1918 for the purpose of decorating Armed Forces members who performed acts of heroism and gallantry against an armed enemy. The Silver Star is awarded for those deeds not great enough to merit the Medal of Honor.

To qualify for a Silver Star, you must fly at Major, Lt. Colonel, or Colonel rank and:

1. Successfully complete a mission worth more more than 6 points and destroy two MiGs; or
2. Destroy four or more MiGs.



### **Air Force Cross (AFC)**

The Air Force Cross was established by Congress in 1960 and is awarded only to those individuals who have performed acts of heroism agaainst armed enemies in a hostile environment.

To qualify for an Air Force Cross, you must complete the requirements for a Silver Star at Lt. Colonel or Colonel rank.





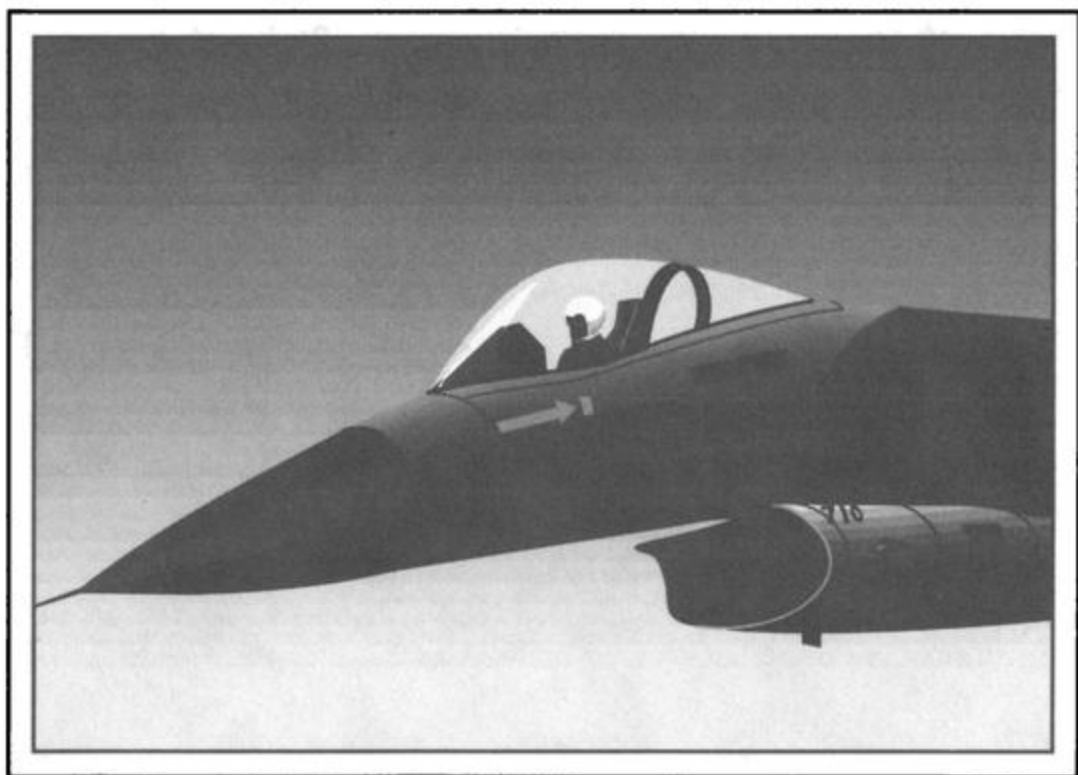
## **Medal of Honor**

The Medal of Honor, sometimes called the Congressional Medal of Honor, is the highest award in the nation and is presented by the President of the United States. The Medal of Honor is given to those members of the Armed Forces who perform acts of gallantry “above and beyond the call of duty” against overwhelming odds and against an armed and hostile enemy. The medal bears the head of Minerva, the Roman goddess of war.

To qualify for the Medal of Honor, you must fly at Major rank or higher and cause total enemy industrial shutdown.

## **Scoring**

Points scoring for MiG kills, bomb hits, rank multipliers, bonuses and medals remain the same as in the original FALCON game. The only change is that if you defeat the enemy by causing a total industrial shutdown, you will be awarded an additional 1000 points times your rank multiplier.



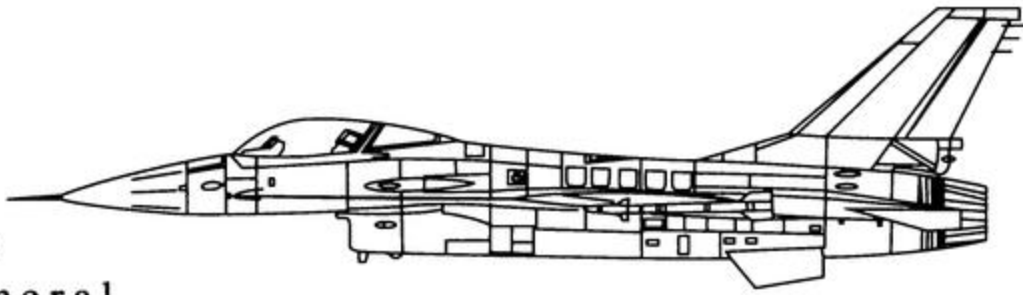
## 5 Enhancements

As you can see, the Mission Disk features a totally different scenario for FALCON drivers. In addition to the new landscape, targets, and missions, the Mission Disk also makes some improvements to the original program. Probably one of the most important changes is in the ease of landing. First, the landing parameters have been made more generous. You can now land off the center of the runway, for instance. You can even land a damaged plane (as long as the damage isn't too severe!). Even better, the MiGs will no longer follow and harrass you as you attempt to fly home. The enemy pilots are too wary of your airfield air defenses. To balance out the scenario, though, the enemy has upgraded their equipment from MiG-21s to the more advanced MiG-29s.

FALCON pilots demanded better flight controls, and we've delivered them in this version. Keyboard, joystick, and mouse controls have been rewritten for easier handling of your F-16. The aircraft will automatically level itself after a minor banking maneuver, although this can be toggled off by pressing [Z] if you prefer not to have the plane auto-level. In addition, the [D] key turns on the auto-view mode. If a MiG is nearby, the plane will automatically switch views within your cockpit for the best look at the enemy.

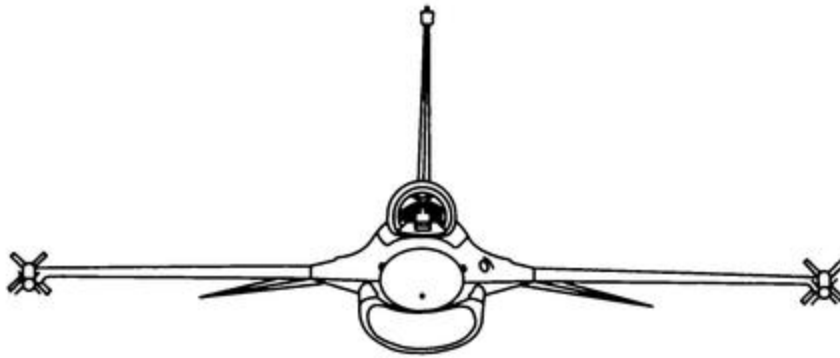
The radar and HUD have also been updated to reflect current F-16 avionics. The Maverick missiles, for example, now display a correct "zoomed" image on the pilot's head-down display. This magnified view of your ground target will greatly aid you in your attempt to demolish it.

# F-16A Fighting Falcon



## The General

Dynamics F-16 first became operational in January 1979. Since that time more than 2000 have been delivered from the production line, which has more in common with a car factory than the usually more pedestrian pace of aerospace. It is the US Air Force's front line Air Defense Fighter backing up the aging Fairchild A-10 in the ground attack (or mud mover) role. It has been exported to 16 countries with Japan planning a heavily modified version dubbed SX-3. Future development possibilities include an uprated "Agile Falcon" and an A-16 dedicated attack fighter.

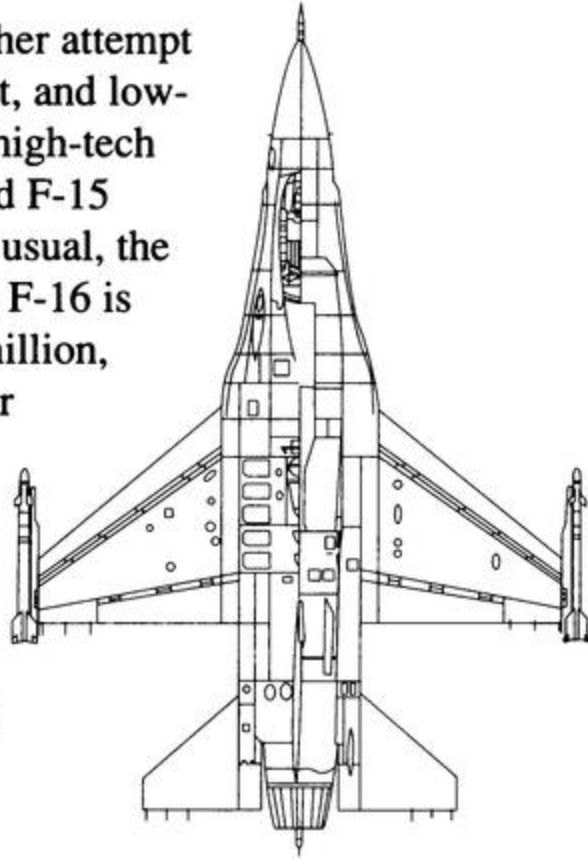


## Specifications

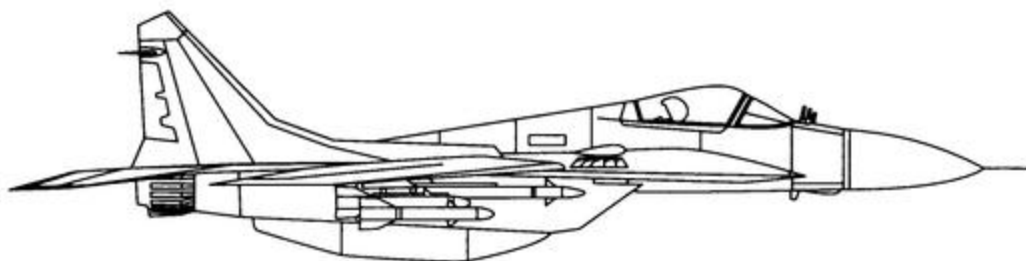
Engine:	Pratt & Whitney F100-PW-200 turbofan; 23,840 lb thrust on afterburner.
Length:	49 ft 4 in
Wingspan:	31 ft
Height:	16 ft 8 in
Weights:	Empty 14567 lb; Normal Take-Off 23,300 lb; Maximum Take-Off 35,400 lb.
Max Speed:	795 kt (Mach 1.2) at sea level; 1,172 kt (Mach 2.05) at 40,000 ft.

**Ceiling:** 55,000 ft  
**Sensors:** Hughes APG-66 coherent pulse doppler look down/shoot down radar.  
**Armament:** Two wingtip missiles rails, 3 wing hardpoints and one center line hardpoint, one 20mm cannon.

The F-16 grew out of yet another attempt to produce a small, lightweight, and low-cost dogfighter instead of the high-tech leviathans such as the F-14 and F-15 which were then in vogue. As usual, the initial plans grew a bit and the F-16 is not exactly small and at \$17 million, not exactly cheap. On the other hand, it is arguably the best day dogfighter of all time. It has excellent all-round visibility from the one-piece bubble canopy. Its fly-by-wire controls make it the most forgiving fighter to fly. Some of the recent spate of crashes in Germany, however, have been attributed to pilots "pushing the envelope" and inducing high speed stalls. It is the first operational "unstable" aircraft where the center of lift is in front of the center of gravity. On the positive side, this allows the tail plane to provide lift rather than downthrust. Also, on a stable aircraft, this stability provides some inertia and hence resistance to any maneuver the pilot wishes to make. Great for a commercial "coach with wings," this is a total disaster for a fighter. On the negative side, the aircraft can only be flown by the computer which can compensate for the unstable configuration with constant signals to the control surfaces. The pilot's control inputs go directly through this computer; he is not directly connected to the flaperons and tailerons. So if all the computers go down at the same time, it's time to punch out.



# MiG-29A Fulcrum



Codenamed “Fulcrum” by NATO, the MiG-29A first became operational with the Soviet Airforce in 1983. There are now believed to be over 500 in service in the USSR. India, Iraq, Yugoslavia and Syria have also taken deliveries with other countries such as East Germany and North Korea believed to have deliveries on the way.



## Specifications

Engines:	Two Tumansky R-33D turbofans; 18250 lb thrust each with afterburning.
Length:	56 ft 10 in
Wingspan:	37 ft 3 in
Height:	15 ft 6 in
Weight:	Empty 22,500 lb; Normal 33,000 lb; Maximum 39,000 lb.
Max Speed:	Mach 2.3 at 40,000 ft. Mach 1.1 at sea level. Take off 118 kt.
Ceiling:	56,000; sea level rate of climb 65,000 ft/min.
Range:	1133 n.m.
Armament:	Up to six AA-10 Alamo or AA-11 Archer missiles. One 30mm cannon.

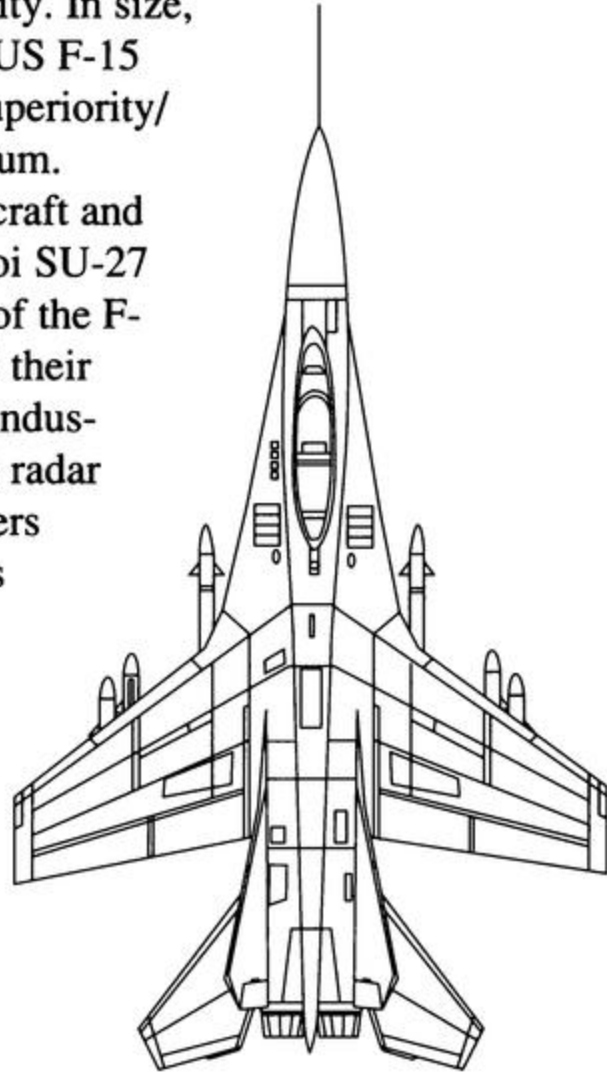
Sensors: NO-93 look down/shoot down coherent pulse-doppler radar (54 n.m. range). Infrared tracker, laser range finder and helmet mounted sight.

(All figures courtesy Mikoyan design bureau)

The MiG-29A represents a significant advance in Soviet air capability. In size, it is slightly smaller than the US F-15 which tackles the same air superiority/interception role as the Fulcrum.

Cynics point out that this aircraft and the similarly advanced Sukhoi SU-27 "Flanker" are simple copies of the F-15 and F-14 respectively and their advanced radars come from industrial espionage at the Hughes radar plant. Less jaundiced observers suggest that similar problems coupled to similar technology result in similar solutions.

The MiG-29A's landing gear is stressed to allow rough strip operation, and it has "doors" on the air intakes to prevent foreign object damage (fod) from such airfields. Air is sucked in through louvers on top of the wing while the doors are closed. It uses advanced materials such as composites. Western observers at the Farnborough Air Show did comment on the rather poor quality of finishing, suggesting that Soviet manufacturing techniques at least still have some way to catch up with the West. The aircraft is stressed to handle 9g positive loads. Perhaps its only failing as a close range dog-fighter is the relatively poor visibility from its canopy. The "rear view mirrors" fitted to the plane betray this shortcoming,



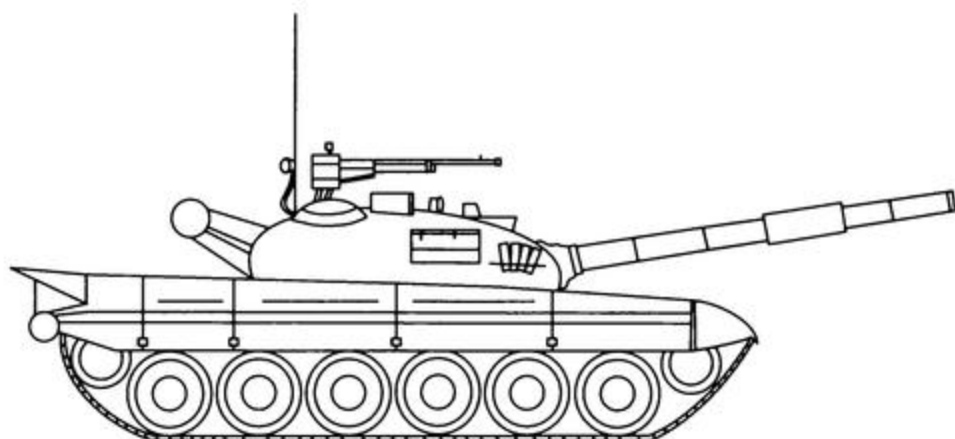
although even this modification is a great improvement on earlier designs.

The AA-10 Alamo missiles come in three versions. Alamo A uses semi-active radar guidance with a short burn rocket motor. Alamo B is similar to the A but with an infrared seeker. Alamo C is similar to A but with a longer burn rocket motor and hence weighs proportionately more. The AA-11 Archer has only recently entered service. Details of the performance of this missile are very scarce at the moment, but it is believed to be a close-range dogfight missile with an infrared homing head and a capability similar to the latest Sidewinders.

The aircraft also represents a departure in marketing philosophy. Gone are the days of "MiG diplomacy." If you want the Fulcrum, you'd better be willing to part with hard cash as the Russians believe the MiG-29A is comparable with anything the West has to offer at a similar price.



## T-80 Tank



The T-80 is the latest Soviet main battle tank and has not yet been exported out of the Soviet Union. Among other features, it boasts a thermal imaging system similar to that in the M-1 and a gun stabilizing system that allows it to shoot on the run with some accuracy.

### Specifications

Crew:	3
Armament:	One 125mm gun, one 7.62mm coaxial machine gun; one 12.7 mm AA (Anti-Aircraft) machine gun.
Armor:	Heavy
Dimensions:	Length including main armament is 32 ft 6 in (9.9 m); hull length 24 ft 3 in (7.4 m); width 11 ft 2 in (3.4 m) height 7 ft 3 in (2.2 m)
Combat Weight:	94,798 lb (43,000 kg) (47 tons)
Ground Pressure:	11.80 lb/sq. in. (0.83 kg/cm <sup>2</sup> )
Engine:	Gas turbine developing 985 hp (735 kW)
Performance:	Road speed 46.6 mph (75 km/h); range 248 miles (400 km); vertical obstacle 3 ft (0.9 m); trench 8 ft 10 in (2.7 m); gradient 60%







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2061 Challenger Drive  
Alameda, CA 94501  
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