

Tutorial Description

Hello and welcome to the Flight Tutorial.

This is the third in a series of tutorials designed to teach players the fundamentals of airplane operations in CMANO. In this tutorial, the following topics will be covered:

- Intercepting an airborne target.
- Shooting down an airborne target.

Created by Andrea D., a.k.a. SirAndrew

Briefing

Welcome to the Simple Air Intercept Tutorial.

In this scenario you will be guided through the following topics::

- Intercepting an airborne target.
- Shooting down an airborne target.

In this scenario pop-ups will appear with important messages. You can find them in the document that comes with the tutorial or you can open the message history in a second window by pressing Ctrl+Shift+M and scrolling to the appropriate message.

Message 1

Good morning!

Today you will impersonate the commander of the Ramat David Air Base in Northern Israel and you will learn how to intercept and engage an airborne target.

You have 6 F-16I Sufa, 2 Gulfstream G550 AEW Nahshon, 2 707 Saknayee tankers and 2 Hermes 900 Star UAV under your command.

Message 2

An Iranian-built Shahed-129 UAV is flying from Syria to Israel. We don't want them to collect intelligence over our State, so the intruder must be destroyed.

To accomplish this goal, you will need to use the knowledge gained in the two previous tutorials.

To intercept an enemy airplane, you can chose to assign some airplanes to an AAW Mission over an area that will be crossed by the bogey, or manually direct the fighters to the enemy plane.

The choice is yours.

Message 3

Now that your airplanes are in the air, how can you destroy the target?
The best way to engage an airborne target is using an Air-to-Air Missile.
There are various types of AAMs, so here is a short guide:

Missiles 101

Rear-Aspect and Stern-Chase: A missile that can engage a target aircraft only when it is flying away from the attacker. This makes engagement with cannons or infrared homing missiles easier because of the minimal lateral target movement relative to the attacker and the fact that the hot engine exhaust are pointing directly at the attacker, making the infra-red seeker's task of tracking the target much easier. These are usually old short-range missiles.

All-Aspect: A missile able to track a target no matter which way the target faces relative to the missile. An All-Aspect missile can be launched against a target in a tail-chase engagement, in a head-on engagement, in a side-on engagement, from above, from below, etc. These are usually newer medium/long-range missiles

Off-Boresight: Helmet Mounted Display Systems allow the pilot to aim weapons at targets that are off-boresight from the line of sight of the aircraft.

The missile can be launched to a point beyond its seeker limits to then start an autonomous target search. Using cues from the aircraft radar, a helmet-mounted sight, or off-board targeting data, the missile can thus undertake engagements in a 360° radius around the launch aircraft.

Active Homing: Active homing uses a radar system on the missile to provide a guidance signal. Typically, electronics in the missile keep the radar pointed directly at the target, and the missile then looks at this "angle" of its own centerline to guide itself.

Passive Homing: Infrared homing is a passive system that homes in on the heat generated by the target. Typically used in the anti-aircraft role to track the heat of jet engines, this means of guidance is sometimes also referred to as "heat seeking".

Semi-Active Radar Homing: Semi-active homing systems combine a passive radar receiver on the missile with a separate targeting radar that "illuminates" the target. Since the missile is typically being launched after the target was detected using a powerful radar system, it makes sense to use that same radar system to track the target, thereby avoiding problems with resolution or power, and reducing the weight of the missile. Semi-active radar homing (SARH) is by far the most common "all weather" guidance solution for anti-aircraft systems, both ground- and air-launched.

It has the disadvantage for air-launched systems that the launch aircraft must keep moving towards the target in order to maintain radar and guidance lock. This has the potential to bring the aircraft within range of shorter-ranged IR-guided (infrared-guided) missile systems

Mid-course guidance: These missiles can be guided during the flight, before the terminal guidance. This means that during the flight the missile will get updates on the target position and will react accordingly.

Terminal guidance: Refers to any guidance system that is primarily or solely active during the "terminal phase", just before the weapon impacts its target.

Now we can open the DB and search the weapons of the F-16I Sufa.

These airplanes today have the Python 5 Light 004 loadout, so they have 4x Python 5, 5x 20mm Vulcan Burst and 12x Chaff and 10x Flare Salvo.

The Chaff and the Flares are defensive systems used to defeat incoming missiles (Chaff are used against radar-guided missiles while Flares are used against heat seeking missiles), so the only offensive weapons are the Python 5 and the Vulcan.

The Vulcan is a Gatling cannon and the Python 5 is a short/medium range missile. Looking in the DB, we can see the description.

Range: 0,2-15nm (short/medium range)

Air PoH: 95% (a very lethal weapon, rarely misses)

Guidance: All-Aspect, High Off-Boresight mid-course plus Passive-Infrared (IR) terminal guidance.

Key "CTRL + SHIFT + F9" to bring up the Side Doctrine, EMCON and WRA window (or you can select your airplanes and key "CTRL + F9" to bring up the Unit Doctrine, EMCON and WRA).

In the WRA page you can set the parameters of the various weapons.

The Python 5 has a high PoH, so by default only 1 missile is allocated per target. If you are engaging a high-value target, you can change that and allocate more than 1 weapon.

The Firing Range is another important parameter. By default the missiles will be fired at the maximum range. This is useful if your enemy can shoot back, but at maximum range the PoH will decrease and you may miss your target. As the UAV is unarmed, you can reduce the range to 2, 5 or 10 nm.

Now you are finally ready to engage the enemy UAV.

You can do that by pressing "F1" and clicking on the target. In this way, the F-16I will attack the target automatically.

Or you can key "SHIFT + F1" and then clicking on the target to conduct a manual attack.

Message 4

Well done! The Shahed-129 has been destroyed!

You can try again this scenario and try to shoot down the UAV with the other weapon of the F-16I or try the 4th tutorial.

How will you behave with a more elusive target?