

Tutorial Description

Hello and welcome to the History of Air-to-Air Combat.

This is a tutorial designed to teach players how air-to-air combat evolved through the years, from world war 2 gunfights to beyond-visual-range missile engagements.

In this tutorial, the following topics will be covered:

- Dogfight between propeller-driven fighters.
- Dogfight between propeller-driven fighters and the first jet-powered airplanes.
- Dogfight between first generation jet fighters.
- Dogfight between second generation jet fighters and first Air-to-Air missiles.
- Dogfight between third generation jet fighters with evolved Air-to-Air missiles
- Dogfight between fourth generation jet fighters and first long-range Air-to-Air missiles.
- Dogfight between improved fourth generation jet fighters and beyond-visual-range engagements.

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Note: Due to Database restrictions, the tutorial can't cover future engagements with stealth fighters and BVR engagements with fire-and-forget missiles. However these topics are covered by the Flight Tutorials!

Briefing

Welcome to the History of Air-to-Air Combat Tutorial.

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

- Dogfight between propeller-driven fighters.
- Dogfight between propeller-driven fighters and the first jet-powered airplanes.
- Dogfight between first generation jet fighters.
- Dogfight between second generation jet fighters and first Air-to-Air missiles.
- Dogfight between third generation jet fighters with evolved Air-to-Air missiles
- Dogfight between fourth generation jet fighters and first long-range Air-to-Air missiles.
- Dogfight between improved fourth generation jet fighters and beyond-visual-range engagements.

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.

Note: To successfully complete this scenario, you will need to use the knowledge gained in the Flight Tutorials.

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Message 1

Hello!

Today you will explore air-to-air combat through history!

Let's start from World War II. In 1942 air-to-air combat was in the form of extremely close range gunfights with cannons and machine guns. Most aces engaged enemy airplanes at a few hundred yards or even closer!

At Malta you have 4 Spitfire F Mk Vc armed with four .303in Browning machine guns and two 20mm Hispano Mk5 cannons each and 2 P-38 Lightning twin-engined fighter armed with four 12.7mm Browning machine guns and one 20mm Hispano Mk5 cannon.

The Spitfire was the finest propeller-driven fighter produced by Britain, while the P-38 was a slower but tougher escort fighter (famous for having shoot down Admiral Yamamoto in the Pacific and for having been flown by Charles Lindbergh and Antoine de Saint-Exupéry).

A few german Bf109 are coming towards us and you must shoot them down. Switch on the ground radar and launch your fighters.

The german planes are armed only with two 12.7mm machine guns and one 20mm cannon, but are nimble and fast, so be careful!

Message 2

Well done! Now go to **Belgium**!

In 1944 the first-ever jet fighters, the German Me262 and the British Gloster Meteor entered service.

Though they never met in combat (the Me262 was used against Allied bombers over Germany, while the Meteor defended Britain from V1s), let's see what could have happened in an hypothetical engagement.

In 1944 propeller-driven airplanes were also reaching the peak of development, and some very impressive models were reaching the front lines. In some aspects, they were even superior to the first jets (for example, they were more agile and had a lower fuel consumption)!

At Brussels you have 4 Meteor F Mk4 armed with four 20mm Hispano Mk5 cannons, 2 F-51D Mustang armed with six 12.7mm Browning machine guns and 2 P-47D Thunderbolt armed with eight 12.7mm Browning machine guns.

The Thunderbolt was a very fast, yet extremely tough fighter, that could take a lot of punishment and continue flying (and was consequentially often used in the air-to-ground CAS role).

The Mustang instead was very agile and fast and probably was the best American fighter of the war.

The Meteor is even faster, but is very fuel-thirsty and thus is better suited for hit-and-run tactics.

The Germans are sending some Bf109 and Me262 (represented, due to DB limitations, by russian MiG-9) towards our positions, switch on the radar and launch your forces!

Message 3

It's time to move to **Korea!**

During the Korean War the Jet airplane came of age, and the first confirmed jet vs jet dogfights happened. The first generation F-86 Sabre and MiG-15 Fagot were the symbols of this conflict.

At Seoul you have 2 F-86E Sabre armed with six 12.7mm Browning machine guns, 4 F-86F Sabre armed with six 12.7mm Browning machine guns and two AIM-9B Sidewinder missiles each and 2 F-86D Sabre armed with two AIM-9B Sidewinder missiles and 24 Mk4 Mighty Mouse rockets each.

The AIM-9B Sidewinder is a Stern-chase IR missile, so can be shot only in a tail engagement. The first missiles weren't very reliable, but still to have a fire-and-forget weapon was a great leap forward. The Mighty Mouse instead were unguided missiles fired in a volley during head-on engagements and were designed to attack enemy bombers but can still be dangerous even to fighters.

The Communists are sending some Fagots to attack our positions.

Armed with two 23mm and one 37mm cannons, they can be very dangerous and pack a lot of punch.

The MiG could climb faster and had a better armament, but the Sabre was faster and was better in a dive, so engagements were always balanced and often decided by the training (with the many American and Russian veterans of World War II clearly advantaged).

To stop the MiGs, switch on the ground radar and intercept the enemy planes!

Note: The AIM-9B was one the first Air-to-Air Missiles in history and entered service in 1956. The first combat use was on September 24, 1958 over Taiwan, in an engagement between Chinese and Taiwanese forces. So, even if it was not used in Korea, it was used only a few years later and by the same F-86 Sabres. Therefore I decided to include it in this engagement.

Message 4

Now go to **Vietnam!**

Vietnam saw the use of many American second and third generation fighters pitted against Soviet-built second and third generation fighters.

Covering every plane used in this was is impossible in a tutorial, so only a few iconic fighters are included.

Second generation fighters (F-8, MiG-17 and MiG-19) are supersonic planes armed with the first Air-to-Air missiles and equipped with on-board radars, while third generation fighters (F-4 and MiG-21) are faster multirole planes armed with long-range missiles and equipped with better avionics.

At Da Nang you have 4 second generation F-8J Crusader armed with four 20mm Mk12 cannons and four AIM-9C Sidewinder or AIM-9G Sidewinder missiles each and 4 third generation F-4D Phantom II armed with a mix of AIM-7D Sparrow III missiles, AIM-4D Falcon missiles, AIM-9B Sidewinder missiles and SUU-23A 20mm Gun Pod.

The AIM-7D Sparrow III is a SARH medium-range (2-14nm) missile, while the AIM-4D Falcon is a short range Stern Chase IR missile.

Both are still not very reliable, but further extend the range at which American fighters can engage enemy planes.

The AIM-9C is the first All-Aspect version of the AIM-9 family and with a range of 8nm is way deadlier than previous missiles.

The AIM-9G has the same range of the AIM-9C, but is instead a Rear Aspect missile.

The Communists are planning to attack our positions with at least 6 planes and we must stop them!

While the MiG-17 still has some guns (three 23mm and one 37mm cannons), the MiG-19 and the MiG-21 are only armed with missiles (SARH AA-1 Alkali and Stern Chase AA-2 Atoll).

The decision to arm fighters only with missiles was reached by both the USA and the Soviet Union at the same time, in the belief that missiles made gunfights a thing of the past (the F-8 Crusader was indeed nicknamed "The Last Gunfighter").

The air battles over Vietnam quickly proved this theory wrong (missiles still had a low PoH and due to various factors, many engagements still happened at close range) and following planes were all armed with cannons.

Note: The AA-2 Atoll was retro-engineered from a captured dud AIM-9B, so if you know the weaknesses of the American missiles, you can plan how to best defeat the Soviet copy!

Note: The AA-1 and early versions of AIM-9 and AA-2 missiles can't engage low flying airplanes. This can be exploited when trying to escape from enemy fighters armed with these missiles, but enemy planes can use this tactic too!

Message 5

Well done! Now move to **Iran!**

During the Iran-Iraq War, many third generation fighters were employed alongside few fourth generation planes.

Fourth generation fighters (like the F-14) are multirole supersonic planes with advanced avionics and aerodynamics, equipped with HUDs, fly-by-wire and advanced radars and armed with medium and long-range missiles.

At Tehran you have 2 fourth generation F-14A Tomcat armed with one 20mm M61A1 Vulcan cannon and four AIM-54A Phoenix very long-range missiles each and 2 third generation F-4E Phantom II armed with one 20mm M61A1 Vulcan cannon, four AIM-7E2 Sparrow III missiles and four AIM-9N Sidewinder missiles each.

The AIM-54A Phoenix is a Time-Shared Semi-Active (TSARH) mid-course plus Active Radar Homing (ARH) terminal guidance very long range missile (4-100nm) and has a fire-and-forget capability (even if it's more accurate if you keep the target aircraft illuminated with the F-14 radar!).

The AIM-54A has a PoH of 80%, so it's better suited for engaging bombers and other not-maneuverable high-value targets, but can still be very deadly even for fighters (as the Iraqis painfully learned during the war).

The AIM-7E2 Sparrow III is a SARH medium-range (2-24nm) missile, while the AIM-9N is a Rear Aspect IR short-range missile.

We have good intelligence that the Iraqis are planning to strike our base and we must stop their airplanes before they can hit us.

We expect them to use third generation fighters like the MiG-23 (armed with one 23mm Gsh-23L cannon, two AA-7 Apex C SARH medium range missiles and four AA-8 Aphid short range missiles) or the Mirage F1 (armed with a twin 30mm DEFA cannon, one R.530 SARH short/medium range missile and two R.550 Magic short range missiles).

Note: The AA-7 Apex C has a range of 24nm and a PoH of 70% (while the AIM-7E2 has a range of 24nm and a PoH of 55%), so it's better to engage the MiG-23 with the Tomcats.

If you are planning to engage them with the Phantoms, maybe you can disable the Automatic Evasion (CTRL + SHIFT + F9 for Side Doctrine, or CTRL + F9 for Unit Doctrine) to avoid losing guidance of the missiles, but remember that by disabling it you are an easier target!

Note: During the war the Iranians used the F-14 as an AEW plane, due to its powerful radar.

You can use your Tomcats as airborne radars, or you can simply switch on the ground radar!

Message 6

Good! Now it's time to go to **Saudi Arabia!**

During the Gulf War American "fourth plus" generation jet fighters (F-15, F-16, F-18, F-14 and the stealth F-117) engaged Iraqis in Soviet-built third (MiG-21, MiG-23 and Mirage F1) and fourth (MiG-25 and MiG-29) generation jet fighters.

Despite strict ROE (to prevent friendly-fire incidents) that reduced the engagement range, many Iraqi airplanes were destroyed at long range.

Fourth plus generation fighters (like the F-15 that you will use in this operation) are multirole supersonic planes with advanced avionics and aerodynamics and even stealth technology, equipped with AESA radars and advanced datalinks for network-centric warfare and are armed with long-range missiles.

At Riyadh you have 2 fourth generation F-15A Eagle (should have been F-15C, but due to Database limitations the F-15A are present) armed with one 20mm M61A1 Vulcan cannon, four AIM-7F Sparrow III long range missiles and four AIM-9J Sidewinder missiles each.

The AIM-7F Sparrow III is a SARH long-range missile.

It's an improved version of the AIM-7 Sparrow family, with a 55nm range and a PoH of 70%.

The AIM-9J is a Rear Aspect IR short-range missile, but with an improved range of 10nm.

The Iraqis are sending 4 airplanes to attack our forces and we must stop them immediately!

You will be facing MiG-23 Floggers (armed with one 23mm Gsh-23L cannon, one AA-7 Apex C SARH medium range missile, one AA-7 Apex D All-Aspect IR guided medium range missile and four AA-8 Aphid short range missiles) and MiG-25 Foxbats (armed with one AA-6 Acrid C SARH long range missile, one AA-6 Acrid D All-Aspect long range missile and four AA-8 Aphid short range missiles).

Note: The AA-6 Acrid has a range of 45nm and a PoH of 70%, so it's better to engage the MiG-25 at long range. You have a little range advantage, so you can reduce the firing distance by a few miles through the Side Doctrine window.

Note: During the Gulf War, the USA employed a large number of E-3 Sentry AWACS planes to provide radar coverage and targeting directions.

One of these airplanes is at Riyadh and, while the radars on your F-15C Eagles is powerful, it's strongly advised to launch it and then switch on its radar!

Note: During the Gulf War, the only American missiles to score kills were the AIM-9 Sidewinder and the AIM-7 Sparrow. AIM-120 AMRAAMs scored kills over Yugoslavia a few years later, but early models were used without success in the Gulf War. The first AIM-120 kill actually came on December 27th, 1992 over Iraq, while American planes were enforcing the No-Fly Zone.

However, due to DataBase restrictions, such engagements can't be reproduced in the current scenario.

Note: On January 26th, 1991 four American F-15C Eagle, callsign Citgo, engaged four Iraqi MiG-23 in a "textbook" beyond visual range combat.

One MiG-23 returned to base early for problems, but then the four F-15C, guided by an AWACS, fired 4 AIM-7 Sparrow missiles at long range and destroyed all three MiGs within seconds of each other.

Message 7

Congratulations!

You have successfully completed this tutorial and learned a bit of history about Air-to-Air combat!