

METAPILOT · SEASON 3 · BOOK 3

MetaPilot

The Instructor

The Digital Sky: Into the Supersonic World

F-16C VIPER



“Flying is not instinct.
It is science.”

GraceFlight

MetaPilot

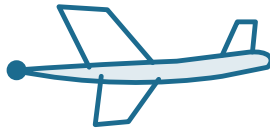
THE INSTRUCTOR

MetaPilot Season 3 · Book 3

MetaPilot 3

The Instructor

The Digital Sky: Into the Supersonic World



GGsF

MetaPilot 3: The Instructor (MetaPilot Season 3)

The Digital Sky: Into the Supersonic World

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The characters and events in this book are fictional, and the story is based on a virtual flight-simulation experience featuring a modern fighter aircraft. The combat and bombing scenes in this book are simulations, and the training content is for experience and learning and does not replace real flight training.

Numbers such as speeds and altitudes in the text are reference values set for this book's training course and are separate from the operating limits of real aircraft. No specific app or product names are used in the text. Aircraft, weapon, and equipment names are trademarks or designations of their respective owners. For the actual names and guides of the subtitle and flight-record

evaluation features provided by the Academy, see Appendix F; for app information, see Appendix D of Book 1, The Guide.

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How to Read This Book

Kaya learned the sky in a Cessna in Book 1 and lived through a battlefield in propeller fighters in Book 2. Now she climbs into a modern fighter that crosses **twice the speed of sound**: the **F-16C Viper**. This is a sky ruled by systems, not by feel.

The story flows through **16 lessons**, with three **evaluations** and three **Intermissions**. The Academy's flight-record evaluation does the grading in numbers; the instructor writes just one line.

- **Part One: The Viper's Cradle** (Lessons 1–5) — 300 buttons, star - tup, takeoff, FBW and 9 G, the HUD, landing → Part One Evalu - ation, “The Viper's First Solo.”
- **Part Two: The Invisible War** (Lessons 6–11) — radar and the RWR, the Sidewinder, PC café Top Gun, the AMRAAM, missile evasion, aerial refueling → Part Two Evaluation, “Two on Two.”
- **Part Three: Hunter of the Ground** (Lessons 12–16) — dumb bombs, CCRP, the targeting pod, the Maverick, Wild Weasel → Final Evaluation, “The Viper's Fang,” and graduation.

Every lesson ends with an **at-a-glance** box that sums up the pro - cedures and essentials, and the **comment section** of Kaya's channel adds laughs and information. Tricky moves carry a small ►①②③ mark in the text, and the **Videos** box at the end of each lesson shows that scene as a short clip (scan the QR or tap the title). Switch

locations are in the videos and in Appendix C. The full list is in Appendix G.

The appendices hold **weapons at a glance**, **F-16C key procedures**, the **HOTAS switch map**, the **radio brevity table**, **Kaya's one-line lessons and a glossary**, and the **Academy services** guide, plus the **video index**. When you can't follow the radio, open Appendix D.

All aboard. Sneeze after the alignment is done.

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Cast CAST



The reader's persona • heroine of Season 3

Kaya • Callsign Palette

MetaPilot trainee • illustrator • video creator

- From the Cessna through the BF-109, IL-2, and He 111, she climbs into the F-16C, 'a supercomputer with wings.' Now she flies by systems, not by feel.
- She redoes the INS alignment over one sneeze, goes "hick! hick!" at 9 G, opens the speed brake at "break right," and gets shot down.
- Handling the throttle with the fingertips that hold a brush earns her praise at aerial refueling — and, on graduation day, a callsign.

"Instructor, that was a compliment, right? I recorded it."



The main character of Book 3, The Instructor

SeaGAL

Chief Instructor of the MetaPilot Academy

- "Flying is not instinct. It is science." A by-the-book instructor who makes you confirm and read back every single startup step. Formal in the address, blunt one-on-one.
- He lets the flight record do the grading and writes only 'one line' (it comes out a line and a half every time). Deadpan jokes are his specialty. "Delete it."

- He strips off weapons and fuel and takes her into the sunset to teach “why we fly,” and uses the Thanh Hoa Bridge to teach “the weight of a button.”

“A flight leader is judged by her decisions, not her kills.”



The one who became ‘Boss’ in Book 3 · heroine of Book 4, *The Flight Gear Manual*

Tita

Owner of the TITAN PC café · aviation nerd · callsign TiTa

- Keeper of the F-16 cockpit behind the steel door. She tightens Kaya’s pedal springs again and plants the ten buttons of the stick and throttle in her fingers.
- Guest instructor for Lesson 8. Flares, speed brake, and cannon — she takes Kaya down in seconds and collects a bowl of ramen. Aloof at the counter, chatty behind the steel door.

“Hey, newbie. Snakes these days like fireworks more than tailpipes, you know?”



The hero of Book 2, The Tutor · the eye in the sky

Ray · Callsign Magic

MetaPilot tutor · AWACS controller

- As promised at the end of Book 2, he watches Kaya from the AWACS. For evaluations he promises to use only the words in the brevity table, but the comments slip out in civilian.
- “The radio is twenty words.” To a Kaya drowning in radio-speak panic, he hands subtitles and twenty words.

“Good.”

Flight

The supporting cast around Kaya

The Bora Bora classmates & the comment section

The three-ship formation from the Season 1 graduation flight, and the channel's subscribers

- No. 1, 2, and 4 from the graduation flight over Bora Bora. The interceptors and decoys of the Book 2 Part One Evaluation swap roles in the Book 3 Final Evaluation. “No parachute.”
- The subscribers in the comments laugh at the sneeze, hold their breath at 9 G, and count bowls of ramen instead of repair bills (Repair_Bill_Bot).

PROLOGUE

The Cockpit Behind the Steel Door

PROLOGUE · Welcome to the Supersonic

◆ 1. The First Call of the New Year

First week of the new year. My phone buzzed once.

[TITAN_PCbang]: “Bring your pedals. And the steel door.”

“...The steel door?”

When I opened the door of the TITAN PC café, the smell of ramen and a blast of LED light hit my eyes. Behind the counter, Tita gave me a nod with a screwdriver clamped in her teeth. Then she jerked her chin toward the back of the shop — toward the steel door I’d been through exactly once, back in Book 1.

“Instructor SeaGAL called. Said to get the cockpit ready. Go on in.”

The steel door creaked open. Treasure No. 1, the F-16 home cockpit, was right there. A narrow, reclined seat, switch panels wrapping around both sides, three big screens up front. The seat I’d only gawked at in Book 1 — today I was being told to sit in it.

“This... I’m allowed to use this?”

“Evaluations only. The rest of the time, you fly at home on your monitor. This thing is for training your fingers, not your eyes.”

◆ 2. A Plane You Fly with Your Fingers

Tita flipped my rudder pedals over and moved both springs one notch stiffer. The same notch she'd loosened at the end of Book 2.

"You're tightening them again?"

"Jets are easy on the feet. But this time you brake with your toes. If the springs are loose, you'll press the brakes and the rudder at the same time."

Then she stood my pink stick next to the cockpit and pointed at the throttle lever.

"Through Book 2 you flew with the stick, right? The F-16, you fly with your fingers. Five buttons on the stick, five on the throttle. Part One is over when you can press them without looking." ►^①

"Ten? The Cessna had two."

"The 109 had twelve. You gave up counting, didn't you?"

"...How did you know?"

"It's all in the comments."

Tita mapped the keys on my stick and throttle one at a time, calling each one by name. On the stick: TMS, CMS, trigger, pickle button, nosewheel steering. On the throttle: dogfight switch, radar cursor, speed brake, comms, refuel door. Not to memorize them, she said — just to keep touching them until my fingers remembered where they lived. ►^②

"Oh, and drop the 'Ms.' Call me Boss. All the regulars here do."

"...Boss Tita?"

"Yeah. Easier that way."

◆ 3. Three Things to Bring

When I got home, an Academy notice was waiting. The same sentence I'd seen at the end of Book 2.

[Season 3 · The Instructor — Aircraft: F-16C. Instructor: Chief Instructor SeaGAL. Bring: English, a thick manual, and a neck that can take 9 G.]

On my desk lay the manual Boss Tita had pressed into my hands. It was thick. Five times the Cessna manual, easy. It was in English. I turned the first page and closed it on the second.

“A neck that can take 9 G... where do you even buy one?”

I gripped my pink stick. Five buttons sat under my fingers. I closed my eyes and pressed them one at a time. TMS, CMS, trigger... I got the fourth one wrong. Again.

◆ 4. From Analog to Digital

I started the welcome video. The doors of a giant hangar swung open with a heavy groan. Inside, there was none of the propeller noise and oil smell of the Season 2 training ground — this was another dimension: cold metal and the heat of cutting-edge equipment.

Instructor SeaGAL stood on a platform in front of the trainees who had finished Season 2. Three familiar names were already in the voice channel. The Bora Bora classmates.

“Good to see you, trainees. And congratulations. You tamed that fussy wild horse, the BF-109, survived, and made it all the way here.”

He paused and looked each trainee in the eye, one by one.

“In Season 2, you learned ‘maneuvering’ and ‘gunnery instinct’ for combat. Here in Season 3, it’s different. This is a world ruled not by instinct but by ‘systems.’ Forget the propeller spinning you along at 300 km/h. From now on, you will tear through the sky at twice the speed of sound — Mach 2.0.”

◆ 5. Three Monsters, One Choice

Instructor SeaGAL pointed at the screen behind him. Three aircraft silhouettes came up.

“The supersonic training program here has plenty of attractive aircraft. Let me introduce three with strong personalities.”

A stubby, rugged-looking attack jet. “The Su-25T Frogfoot. ‘The flying tank.’ It soaks up enemy flak with its whole body and flattens everything on the ground.”

A helicopter. “The UH-1H Huey. The legendary utility helicopter that symbolizes the Vietnam War. A tricky beast that demands completely different physics and flying skills from a fixed-wing aircraft.”

And finally, a sleek, elegant fighter silhouette. “And the F-16C Viper. The world’s best-seller, and the textbook of the modern multi-role fighter.”

A murmur ran through the trainees. But Instructor SeaGAL’s next words were unexpected.

“However, out of these, we train on only one: the F-16C.”

The hangar went quiet.

“A modern fighter cannot be flown on stick-and-rudder skill alone. Radar, weapons systems, navigation gear, data links... you have to run dozens of computers at once. Skimming across all three air -

craft is a waste of time. Master one properly, and you can teach yourself the rest.”

He pointed at the real F-16C and went on.

“If Season 2’s BF-109 was the signature wild horse, the F-16C is ‘a supercomputer with wings.’ It is the pinnacle of electronic systems, responding perfectly to exactly what you put in. With this one air - craft you can learn everything about modern warfare — air-to-air combat, air-to-ground bombing, precision strike.”

◆ 6. The Last Gate on the Way to MetaPilot

“Of course, there’s no need to feel shortchanged. If you complete this brutal F-16C course and become a ‘MetaPilot,’ then I hope you’ll become tutors and instructors yourselves — study other air - craft like the Su-25T or the UH-1H, and build new training courses for those who come after you. That is the future MetaPilot is aiming for.”

The hangar lights poured down onto the F-16C’s canopy. Its smooth curves and sharp wings flashed in the glare.

“This course is harder than anything you’ve done so far — there’s no comparison. Hundreds of pages of manual and a maze of buttons will torment you. But I promise you this: the moment you light this thing’s afterburner and punch up through the clouds... you will never want to come back down.”

Instructor SeaGAL snapped a salute.

“Are you ready? The final flight on the way to MetaPilot — Season 3, F-16C training, begins now. All aboard!”

A short message popped up in the voice channel.

[BoraBora_No1]: Flight Lead, looking forward to flying with you again.

[BoraBora_No4]: I did not pack a parachute.

I opened the manual again. I went from the second page to the third. That was the beginning.

▶ Videos · Prologue			short clips
No.	Scene · when to watch	Code	QR
①	The ten buttons on the stick and throttle — where your fingers live on the HOTAS When you don't know which finger goes on which switch	3-001	
②	Mapping the F-16C stick, throttle, and pedal keys When you press a button and nothing happens	3-002	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

Part One



The Viper's Cradle

F-16C basic flight — from startup to landing

LESSON 1

Three Hundred Buttons

Cold Start

◆ 1. A Spaceship in the Dark

“Headphones on. Simulation loading... F-16C Viper training, begin!”

When I opened my eyes, pitch darkness wrapped around me. Not a night flight — the aircraft simply had no power yet. A narrow, reclined seat, switches and instrument panels on every side. If the BF-109 had been a classic prison, this was a spaceship walled in with countless buttons and switches.

“Welcome. This is the office you’ll be working in.”

Instructor SeaGAL’s voice came through the headphones. Unlike the address, he’d dropped the formal tone. This, he said, is how one-on-one training goes.

“Instructor... there are too many buttons? At a rough glance there have to be more than 300.”

Left console, right console, front instrument panel... I could barely breathe. I had to memorize all of this?

“Don’t panic. You don’t memorize the locations — you understand the ‘flow.’ Put battery power in, blow air in, light the engine. Then wake up the brain. Go.”

◆ 2. Get the Blood Flowing (Main Power)

Following the training video, I flipped the ‘Main Power’ switch at the back of the left console up through BATT to MAIN. ▶①

Zzzzzzing—

With a faint electronic hum, little lights began to come on all around the cockpit. Blood was starting to flow through the dead airframe.

“Next, the Jet Fuel Starter — the JFS. You can’t turn this thing’s big engine with battery power. You spin up a small auxiliary engine first.”

I pushed the ‘JFS START 2’ switch down.

Wheeeeeeng—!

A sharp metallic whine started up behind the aircraft. It sounded like a dentist’s drill, or maybe a giant turbine spooling up. The RPM gauge needle began to creep upward.

“RPM 20%. Now light the real heart.”

With my left hand I grabbed the throttle lever and nudged it into ‘IDLE.’

KWAAAAAH—!

A magnificent roar erupted from behind and the whole airframe shuddered. This wasn’t a mere vibration. It was a deep, powerful rumble that ran up my spine, like a giant beast waking from sleep and stretching.

◆ 3. Boot the Brain (Avionics & INS)

Once the engine note settled, the most important job remained: switching on the ‘supercomputer.’

“Front console, avionics power ON. Then the INS knob to ‘ALIGN.’”

When I flipped the switches, the two square screens up front (the MFDs) lit up, and green letters floated onto the clear glass in front of my eyes. The HUD — the head-up display. ▶②

“From this moment, this aircraft starts to become self-aware.”

“Self-aware? What do you mean, self-aware??”

“The INS — the inertial navigation system — is aligning. It’s working out where on Earth it is and whether it’s level. A few minutes until it gets its bearings. Don’t move the aircraft a single millimeter. The moment you move, this supercomputer loses its sense of direction and turns into an idiot.”

We waited, listening to the engine. The numbers on the screen ticked down like a countdown. In the BF-109, you just spun the prop and off you went; in a modern fighter, even the preparation was as solemn as a ritual.

That was when my nose started to tickle.

“...Achoo.”

“...”

“Instructor, a sneeze doesn’t count as a millimeter, right?”

“It counts. Again.”

◆ 4. Ready

Second alignment. This time I even watched my breathing.

“INS alignment complete. Knob to NAV.”

At last the HUD on the windscreen showed a crisp horizon line, altitude, and airspeed. The radar spun up, and the RWR — the radar warning receiver — began sniffing the airwaves around me.

I lowered the canopy. Whuuung — clack. The outside noise was cut off, and only my breathing, the whirl of the machine, and the instructor's voice remained.

"Well, Kaya? Feels a little different, doesn't it?"

I answered with the stick clenched tight in my hand.

"Uh... the BF-109 felt like a bunch of mechanical parts spinning and moving, but this thing feels... like a precision weapons system. Like it'll do anything if I just give the order."

"Exactly. It's not cozy, but that's the F-16C. Now let's take this viper out to the runway."

Lesson 1 at a Glance

- 1 Don't memorize button locations — understand the startup flow. Battery power → auxiliary engine (JFS) → engine ignition → avionics, in that order.
- 2 Move Main Power up through BATT to MAIN, then spin up the auxiliary engine with JFS START 2. When RPM reaches 20%, push the throttle to IDLE to light the engine.
- 3 Do not move the aircraft a single millimeter until INS alignment is complete. When it finishes, turn the INS knob to NAV. Check the videos for the detailed order and timing.

▶ Videos · Lesson 1			short clips
No.	Scene · when to watch	Code	QR
①	The cold-start flow — Main Power, JFS, IDLE When the startup order is confusing	3-003	
②	Avionics power and INS alignment When the HUD won't come on or the nav points at a mountain	3-004	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ **Kaya's channel · comments**

One Sneeze During Startup and You Start Over (F-16C Cold Start)
23K views · 780 likes

B

ButtonMasher
Wow... ten minutes just to start the engine. Just use the app's auto-start, Kaya. lol

S

SeaGAL_Fan
↑ The Instructor is watching.

G

GreaseMonkey
The JFS spooling up is such realistic ASMR... feels like standing next to an actual jet.

S

SimPilot_kr
Move during INS alignment and the whole map goes sideways lol. The #1 newbie mistake. "Huh? Why is my nav pointing at a mountain?"

V

Viper_Lover
That rush when the green HUD comes on... that's why we fly the Viper.

LESSON 2

A Kick in the Back

Taxi & Takeoff

◆ 1. On the Ground, It's a Car (NWS)

“Parking brake off. Press the nosewheel steering button on the stick — NWS. Taxi to the runway.”

I pressed the stick button Boss Tita had shown me. A small label appeared on the HUD. When I nudged the throttle, the aircraft rolled forward smoothly. In the BF-109, changing direction on the ground meant stomping brakes and kicking rudder and making a whole scene; this thing was different. ▶①

“Wow... why is the handling so smooth?”

“That’s thanks to NWS — nosewheel steering. Steer with the rudder pedals and the nosewheel turns like a car’s. On the ground, just think of it as a car. Brakes are the tips of the pedals, with your toes.”

I worked the rudder pedals with my feet and glided along the yellow taxiway line. No rattling vibration, no giant engine cowling blocking my view. Beyond the wide-open canopy, the runway stretched clearly into the distance. My toes figured out why Boss Tita had tightened the springs.

◆ 2. The Calm Before the Storm

Lined up on the runway. An endless strip of concrete stretched out in front of me. I pressed the NWS button again to turn it off. On takeoff, I'd been told, the nosewheel must not be a car.

"All right, Kaya. Time to see a jet's real power. Brakes on, engine to 90%."

With the brakes at the tips of the rudder pedals mashed down, I pushed the throttle.

KWOOOOOOH—!

The aircraft bucked like a beast dying to leap forward. The engine nozzle tightened and spat hot exhaust. Every reading on the panel sat in the normal range.

"Brakes off, max power! Light the afterburner!"

◆ 3. A Smack in the Back (Afterburner Takeoff)

I took a deep breath and pushed the throttle all the way forward. Past the 'click' — the detent — and deeper still. ▶②

KWAAAANG!!!

For an instant it felt like someone had smacked me in the back. No — like a giant's hand had shoved me deep into the seat.

"Ugh?!"

If the BF-109's acceleration had been a gradual 'vrrrooom,' the F-16C's afterburner was simply an explosion. A blood-red flame roared out of the engine and hurled the aircraft forward like a maniac.

The airspeed needle shot up. 50 knots... 100 knots... 150 knots (about 280 km/h)... in a matter of seconds.

“Now pull!”

◆ 4. An Arrow Shot into the Sky

I eased the stick back, and the nose lifted as lightly as a feather. There was none of the BF-109’s torque twisting me to one side. The aircraft punched straight down the runway centerline as if drawn with a ruler, and shot straight up into the sky.

“Gear up!”

With the sound of the landing gear folding away, the drag vanished and the acceleration piled on even harder.

“This... is a jet?”

In an instant the runway shrank to the size of a matchstick. The altimeter was already passing 5,000 feet. It felt less like flying an airplane and more like clinging to a giant rocket.

“Kaya, throttle back! Keep this up and you’ll go supersonic and break every window in town!”

Instructor SeaGAL’s voice snapped me out of it. I hurriedly cut the afterburner.

Pyeeewww—

The flame died, and the pressure shoving at my back disappeared. Only then did I let out the breath I’d been holding. My heart felt like it would burst.

“Whoa... this thing has... serious power?”

“Right? A propeller rides the wind to fly. A jet engine tears the sky open with brute force and climbs through.”

Above the clouds, a blue sky spread out so bright it hurt. My Season 3, which I’d worried so much about, had begun this lightly — with an explosive roar.

✈ Lesson 2 at a Glance

- 1 NWS (nosewheel steering): with the stick's NWS button on, the rudder pedals turn the nosewheel like a car's on the ground. Brakes are the tips of the pedals. Turn NWS off once lined up on the runway.
- 2 Hold the brakes and bring the engine up to 90%, then release the brakes and push the throttle past the detent to light the afterburner.
- 3 A jet has no propeller torque, so it runs straight down the centerline. Ease back at about 150 knots, gear up after liftoff. If you get too fast, cut the afterburner.

▶ Videos · Lesson 2			short clips
No.	Scene · when to watch	Code	QR
①	NWS taxiing and toe brakes When you can't steer on the ground	3-005	
②	Afterburner takeoff — 90%, brakes, de - tent When you don't know when to pull on takeoff	3-006	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ Kaya's channel · comments

I Got Smacked in the Back (F-16C Afterburner Takeoff)

31K views · 1.1K likes

A

Afterburner_Junkie

Wow... look at the flame on takeoff. That's the dream right there.

P

Prop_Lover

(BF-109 user) Isn't that cheating? We get cramps in our feet kicking rudder on takeoff and this thing just goes straight -_-

B

BoraBora_No4

↑ This is the guy who rode the parachute in the Book 2 Part One Evaluation. Agreed.

G

G-Force

Kaya's voice shaking lol. The first time you light the burner you really do go "ugh."

V

Viper_Driver

Zero to 150 knots on the runway in 10 seconds flat. Behold the majesty of a 1:1 thrust-to-weight ratio.

LESSON 3

It Moves the Way You Think

Fly-By-Wire · 9G · Mach 1

◆ 1. The Plane That Won't Crash

After takeoff I climbed to 15,000 feet, with the clouds spread white beneath me.

"Today's training is a performance test of the Viper. Kaya, remember flying the BF-109? What happened when you yanked the stick back at low speed?"

“Instant stall, spinning round and round, and down I went. In Lesson 5 I lost a whole thousand meters.”

“Good. Then pull the throttle to IDLE now, and when the speed drops below 200 knots, pull the stick all the way back.”

“What? At this speed? It’ll spin straight away and crash, won’t it?”

“Just pull. It’s training.”

I swallowed and pulled the throttle back to IDLE. The speed bled off. The aircraft felt like it was wobbling. I squeezed my eyes shut and yanked the stick back. In the BF-109, this would have been the moment the world flipped over.

◆ 2. The Invisible Hand (Fly-By-Wire)

...Huh?

Nothing happened. The aircraft just kept descending steadily with its nose raised, without flipping or spinning. No matter how much I wagged the stick, the airplane didn’t budge past its limit — it moved exactly as far as it could safely go, and not a bit more. ▶①

“What... is this? Why doesn’t it flip?”

“That is **fly-by-wire**. When you pull the stick, the computer reads it as the command ‘raise the nose.’ But at the same time it judges, ‘pull now and we crash,’ so it politely ignores part of your command and keeps the aircraft stable.”

“Wow... so the computer stops me from making mistakes?”

“Right. You don’t have to worry about flight dynamics. The flight control computer does that. All you think about is ‘where to go’ and ‘what to shoot.’ That’s what makes the Viper scary.”

“Now I feel cheated about getting thrown by the wild horse in Book 2.”

“Without that experience, you wouldn’t know how grateful to be.”

◆ 3. A Monster Called Gravity (9G Test)

“We’ve checked the computer’s performance. Now we test ‘human performance.’ The most dangerous enemy of a supersonic jet pilot is **G-force**.”

Instructor SeaGAL’s instructions came thick and fast.

“Hold 450 knots. Throttle to max and start a level turn. The target is **9 G — nine times gravity**.”

“N... nine G? Can a human survive that? The 9 G from the ‘bring’ list...”

“On my count. Three seconds. Tighten your legs and your gut! Hick! Hup!”

I pushed the throttle to max, rolled the stick over, and pulled hard. ▶②

KRRRRRRR—!

As the turn began, the edges of the screen darkened and my breathing turned heavy. It felt like an invisible elephant had sat down on my chest. No — like all the blood in my body was draining down into my toes.

“Nnnngh...!!”

My weight had gone up nine times. My 60 kg body had become 540 kg in an instant. My helmet was as heavy as a boulder and I couldn’t lift my head, and the G-suit wrapped around my thighs and calves swelled as if about to burst, fighting to keep the blood from pooling.

◆ 4. The View Down a Tunnel (G-LOC)

“Strain! Don’t exhale — chop the breath! Hick! Hick!”

Instructor SeaGAL’s voice sounded far away. My vision started going black from the edges inward. **Tunnel vision.**

‘No... if I pass out, I die...’

The blood going to my brain was running short. My field of view narrowed and narrowed until only a pinhole of light remained. I clenched my gut with everything I had and did the special breathing — the L-1 maneuver.

“Hup! Krrrhup! Hick! Hick!”

“Knock it off! Release the stick!”

The moment I let go of the stick, the pressure vanished. My narrowed vision opened back up, bright again. I slumped in the seat, gasping.

“Phew... it really... goes black.”

“You held on. You just hit 9.2 G. The aircraft is fine. And you?”

“...My neck.”

“That’s why it was on the list.”

Blackout — the thing only real fighter pilots are supposed to experience. The terror of the screen going dark and your vision blurring, felt vividly, with nothing but a monitor and an instructor’s count.

◆ 5. Through the Sound Barrier (Mach 1.0)

“Good work. Last thing — a present. Climb to 30,000 feet and run it at full power.”

Exhausted, I climbed. When I lit the afterburner in the thin air up high, the Mach number on the panel went 0.9... 0.95... and crossed 1.0. ▶③

KA-BOOM! (Outside, there must have been the thunder of a sonic boom.)

Inside the cockpit, though, it actually went quiet. The vibration disappeared, and the aircraft slid forward as smoothly as if gliding across ice. The airspeed indicator read Mach 1.2. The moment my airplane became faster than my own voice.

“Well? How’s the supersonic world?”

“Quiet. And... really fast.”

None of the BF-109’s wild-horse shaking. Only a cold intelligence and overwhelming speed. Only now did it sink in that I was riding a plane that had truly ‘broken the sound barrier.’

Lesson 3 at a Glance

- ① Fly-by-wire (FBW): the computer interprets your stick input and moves the aircraft only within safe limits. Even with the stick pulled all the way back at low speed, it won’t spin.
- ② 9 G training: a level turn at 450 knots on max power. Tighten your legs and gut and chop your breathing with the L-1 maneuver. Tunnel vision — your view narrowing — is the warning just before losing consciousness.
- ③ Past Mach 1.0 the vibration disappears and the cockpit actually goes quiet (this book’s training: afterburner at 30,000 feet).

▶ Videos · Lesson 3			short clips
No.	Scene · when to watch	Code	QR
①	Feeling fly-by-wire — full back stick at low speed When stalling scares you	3-007	
②	The 9 G turn and L-1 breathing When the screen goes dark	3-008	
③	Breaking Mach 1 When you're curious about supersonic flight	3-009	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ Kaya's channel · comments

9G Breathing “Hick! Hick!” — Not a Puppy (F-16C FBW)

9G · Going Supersonic) · 42K views · 1.5K likes

E

Elephant_Sit

Isn't a pirate-ship ride at the fair like 2 G? 9 G... the pressure must be insane. O_O

B

Blackout

Kaya's breathing just now lol. That “hick! hick!” is the real fighter-pilot breathing (L-1). Skip it and you black out (G-LOC) and cross the river Styx.

P

Puppy_ASMR

Please upload a 10-minute compilation of the hick-hick sounds.

F

FBW_Master

Going from the wild horse to FBW is a whole new world. “Huh? It doesn't flip?” Yank away lol

**SonicBoom**

The panel shake stopping when you go through Mach is a real detail.

LESSON 4

Follow the Green Ghosts

HUD Navigation

◆ 1. Throw Away the Paper Map

“All right, Viper performance test is done. Now we move to the next training area, ‘Steerpoint 2.’ Kaya, get out your map.”

Out of habit I looked down at the kneeboard on my thigh. But there was no crumpled paper map like in Book 2, Lesson 10. Watching me look around in a panic, Instructor SeaGAL let out a snort.

“Joke. The F-16 doesn’t need paper maps. The HUD spread across your windscreen — that green display on the glass — is your map and your compass.”

“I’m supposed to find my way with these complicated lines and numbers?”

“Yes. Once you’re used to it, nothing is more convenient. Now, look at the lower right of the HUD. See a number? That’s the number of your next destination, the ‘steerpoint.’ It says ‘2’ right now, doesn’t it?”

◆ 2. The Diamond Floating in the Sky (Steerpoint)

“See a small diamond ◇ floating in the HUD?”

“Yes, I see it! It’s just bobbing above the clouds?”

“That’s where we’re going. Just think of it as flying the aircraft into that diamond.” ▶①

Good grief. In Book 2 I’d gone cross-eyed searching the ground — “fly with the river on your right, then at the bridge where the rail - way crosses the river, turn left...” — and this thing simply pointed a friendly finger and said “over there.”

I rolled the stick and put the diamond in the center of the HUD. Even the distance remaining and the ETA were calculated in real time. It felt like using a cheat code.

“Instructor, Ray said rivers don’t break down.”

“He’s right. That’s why you keep the paper map in your bag. When the power dies, that’s your HUD.”

◆ 3. The Soul of the Airplane (Flight Path Marker)

“Hold on! Kaya, let me show you the most important symbol on the F-16. See the little circle with wings in the middle of the HUD? Looks like this: (-o-).”

“Yes, it moves with the nose?”

“That is the **FPM — the Flight Path Marker**. The cross above it, the gun cross, is where the airplane’s nose is pointing. The circle, the FPM, is where the airplane is actually flying.” ▶②

“Where the nose points and where it actually goes are different?”

“Yes. In a crosswind, for instance, the airplane crabs sideways as it flies. A pilot doesn’t look at the nose. He trusts only where the FPM

— ‘the soul of the airplane’ — is pointing. If that circle sits on a mountain, you are about to hit a mountain.”

Now it made sense. If the BF-109 was flown by instinctive ‘feel,’ the F-16 was flown scientifically, with the data checked by eye, every step of the way.

◆ 4. The Magic Minimap (HSD)

“Last, look down at the lower-right display.”

There, like a minimap in a game, were my position and route, and even the positions of friendly and enemy aircraft. The horizontal situation display, the HSD, he called it.

“Wow... isn’t this cheating? There’s no way to ever get lost.”

“Zone out because it’s easy and you’ll eat a missile. More threats means more information, and your judgment has to be just as fast. Now, the diamond’s getting close. Time to start thinking about landing, isn’t it?”

Reading what the friendly green ghosts (the HUD) told me, I turned the nose toward the runway. None of the BF-109’s analog romance — but the astonishing precision of a digital machine had taken its place.

✈ Lesson 4 at a Glance

- 1 The number at the lower right of the HUD is the next steer - point number, and the diamond (◇) in the HUD is the point to fly to. Distance remaining and ETA are calculated for you.
- 2 The FPM (Flight Path Marker) shows where the aircraft is ac - tually flying. It can differ from where the nose points (the gun cross), so trust the FPM — ‘the soul of the airplane.’
- 3 The lower-right display (HSD) is a minimap showing position, route, friendlies, and enemies. Don’t get so lost in the data that you stop looking out front.

▶ Videos · Lesson 4			short clips
No.	Scene · when to watch	Code	QR
①	Following the steerpoint diamond When you don’t know where to go	3-010	
②	The FPM and the gun cross — the soul of the airplane When the nose and your actual path disagree	3-011	
On a phone, tap the bold title . If the QR won’t scan, enter the code at metapilots.kr/v .			

▶ Kaya’s channel · comments

I Threw Away the Paper Map (HUD Navigation)
The Soul of the Airplane, the FPM) · 28K views · 920 likes

N

Navi_Kim
Going from the BF-109 to the F-16 is such a relief for the eyes. Just fol - low the diamond and home appears lol

F

FPM_Ghost

Beginner tip: on landing, just park the FPM (the circle) on the runway threshold and it's practically an auto-land. The FPM is a god.

M

MiniMap

Hi, I'm the one who flew into a mountain with my head down looking at the HSD... Eyes out front, folks. T_T

R

Ray [Official Tutor]

Thank you for the "rivers don't break down" quote. I hear the Instructor said I was right, so I'm keeping the recording.

LESSON 5

Kiss the Runway

Landing

◆ 1. A Bullet That Won't Stop

"Runway in sight ahead. The tower has cleared us to land."

Far ahead I could see the gray runway. All I had to do was go down — but there was a problem. I was too fast. Even with the throttle all the way back, the aircraft held 300 knots (about 550 km/h), as if it were sliding across slick ice.

"Instructor, the speed won't come down! At this rate I think I'll overshoot the runway?"

“That’s because the F-16 is too aerodynamically slippery. No drag, so it flies like a bullet. When that happens, you make drag on purpose. Open the **speed brake** switch on the throttle!”

With the little finger of my left hand, I pulled the speed brake switch on the throttle. ▶①

Kwoooooong—!

The panels on either side of the tail opened up like a clamshell and a huge wall of drag appeared. The speed fell away with a feeling like someone grabbing me from behind.

“Gear down!”

I lowered the landing gear.

◆ 2. Put Your Soul in the Green Basket (AOA)

“All right, from here on, angle of attack is what matters.”

“Sorry? What angle?”

“For a jet, **angle of attack** — **AOA** — is life or death on landing. See the bracket shaped like a sideways ‘U’ on the left side of the HUD?”

“Yes, I see it.”

“That is the ‘**AOA bracket**.’ Viper landing training is this: put the ‘soul of the airplane’ you just learned — the FPM circle — inside that bracket.” ▶②

In the BF-109 I’d raised and lowered the nose by feel; the F-16 landing had a clear standard. Raise the nose and the FPM drops; lower the nose and the FPM rises. I made tiny throttle adjustments and flew with the FPM centered in the bracket.

“That’s it! When the orange doughnut (O) lights up on the AOA indicator at the front left of the canopy, that means a perfect landing

angle — ‘On Speed.’ Speed, by this book’s training standard, is around 150 knots.”

◆ 3. Kiss the Runway

The runway came up in front of me.

“Pin the FPM on the runway threshold. Don’t take your eyes off it.”

I laid the FPM circle over the piano-key paint at the near end of the runway. The aircraft descended without a tremor, as if sitting on rails. None of the BF-109’s rattling or sliding sideways.

“Ground coming up! Throttle idle! Ease back — flare!”

I pulled the stick back gently.

Thump.

The jolt of the main gear touching came up through my seat. But it wasn’t over.

◆ 4. Riding a Wheelie (Aerobraking)

“Don’t lower the nosewheel! Keep the nose up! Hold 13 degrees of pitch!”

In the BF-109 you’d have dropped the tail right away, but the supersonic F-16 was different. With only the main gear on the ground, I ran down the runway with the nose held high. It felt like doing a **wheelie** on a motorcycle. ▶③

“You’re using the whole body of the aircraft as a brake. Like an air brake — you slow down with air resistance!”

When the speed fell below 100 knots, the nose grew heavy on its own and came down.

Tup.

The nosewheel touched. Only then did I press the wheel brakes at the tips of the pedals and bring the aircraft to a stop. There was no hint of the tail trying to swing around like in Book 2. Even so, I kept my feet on the pedals.

“Full stop.”

The relief of a safe landing drained the tension out of my whole body. Not a landing where you wrestle a wild horse down by force — a precise landing by calculated data.

“Nice landing. A very soft kiss, Kaya.”

“Instructor, that was a compliment, right? I recorded it.”

“Delete it.”

Lesson 5 at a Glance

- 1 If the aircraft is too slippery to slow down, make drag on purpose with the speed brake on the throttle. Then gear down.
- 2 The landing standard is angle of attack (AOA). Put the FPM inside the sideways-‘U’ AOA bracket on the left of the HUD and pin it on the runway threshold. When the orange doughnut lights, you’re at the right angle (On Speed), at about 150 knots (this book’s training standard).
- 3 Once the main gear touches, hold the nose at about 13 degrees and run it out (aerobraking) to slow down. Below 100 knots, lower the nosewheel and press the wheel brakes.

▶ Videos · Lesson 5			short clips
No.	Scene · when to watch	Code	QR
①	Speed brake and gear down When the speed won't come off	3-012	
②	Putting the FPM in the AOA bracket — the doughnut When you don't know the landing angle	3-013	
③	Aerobraking — nose at 13 degrees When you don't know when to lower the nose - wheel after landing	3-014	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ **Kaya's channel · comments**

I Do a Motorcycle Wheelie After Landing (F-16C AOA Landing
Aerobraking) · 33K views · 1.2K likes

D

Donut_Lover

That satisfaction when the AOA doughnut (O) pops on... that's the F-16 for you.

A

AirBrake

Newbie classic: slam the nosewheel down the second you land. That's how you blow the suspension lol. Aerobraking is a must!

P

Precision

Once you get the concept of putting the FPM on the runway threshold, landing becomes easy. After BF-109 landings, this is pure comfort.

S

Speed

But wait, a landing speed of 150 knots (270 km/h) means you're com - ing down onto the ground at bullet-train speed? O_O

R

Recorder

"I recorded it." "Delete it." This channel's Instructor is the best character.

INTERMISSION

A Walk Above the Clouds

Free Flight

◆ 1. Disarmed

“All right, today’s training is...”

At Instructor SeaGAL’s voice, my body tensed on reflex. What was next? Missiles, finally?

“Nothing.”

“...Sorry?”

“No training today. All the weapons are off. Just a full tank of fuel. Follow me.”

On the runway stood two F-16s side by side, their sleek bodies bare — not a single missile. What hung from the wingtips wasn’t a weapon but a smoke system, trailing white vapor.

◆ 2. Magic Hour

The moment we lifted off, the time of day must have changed, because the whole sky began to flood with purple and orange. Sunset — the ‘magic hour’ pilots are said to love most.

“Hold 20,000 feet. Break formation and fly free.”

I relaxed and eased the throttle forward. Red sunlight slanted across the clouds spread like a cotton quilt beneath me. The canopy

glass glittered gold, and the lights on the busy panel began to glow softly, like a Christmas tree.

“Oh...”

A gasp escaped before I could stop it. This wasn't the gray sky I'd scanned with eyes blazing, hunting for enemies. It wasn't the grim landing practice where I'd chased the AOA for dear life, terrified of making a mistake. It was just a voyage across a sea so beautiful and peaceful it brought tears to my eyes.

◆ 3. Why We Fly

“Kaya, stop looking at the panel. Look outside.”

SeaGAL's aircraft slid up smoothly beside me. The red sunset was reflected in his helmet visor.

“Do you know why fighter pilots endure the hard training? Patriotism? Honor? Sure, that's part of it. But...”

He rolled his aircraft onto its back — inverted — and went on. “It's for the view you're looking at right now. The view only God gets to see. Living in a world above the sky that no one else on Earth can see. That is why we fly.”

I followed him and rolled inverted. Above my upside-down head a sea of clouds flowed past, and the cities on the ground were switching on their lights one by one, like fireflies. I didn't feel like a slave tied to the earth. I felt like the owner of the sky.

◆ 4. Smoke On

“Well, shall we paint something on the canvas? Smoke on!”

Tssssh—

Thick white smoke poured from the wingtips of both our aircraft. We chased each other's tails round and round, and shot high into the sky to draw a giant heart.

A supercomputer? Didn't need one. All it took was watching my wingman's wings beside me, feeling the wind, and dancing together.

The engine didn't sound like noise — it sounded like a grand soundtrack. I even forgot I was sitting in front of a monitor. I wasn't in my six-pyeong room. I was flying somewhere over the blue Pacific, just like in a dream.

◆ 5. Recharging for Tomorrow

By the time the sun was fully down and the sky was studded with stars, we were back at base. As I landed and opened the canopy, I could have sworn cold night air rushed in.

"Well? Head feel a little clearer?"

Helmet off, SeaGAL did something rare: he smiled.

"Yes. I think I'm in love with jets."

I grinned and gave him a thumbs-up.

"Good. Don't forget that feeling. The air-to-air combat you learn from next week will be complicated enough to make your head explode. To protect this beautiful sky, you need to know the Viper's weapons too. But before that, one evaluation."

"...An evaluation? I just got healed?"

"That's why."

Fine. Let's do it. If it meant I could fly this magnificent sky, I could read another hundred pages of manual.

► Kaya's channel · comments

A Day Without Training (Sunset Flight

Smoke On) · 56K views · 2.3K likes

S

Sunset_Rider

Wow... are these graphics for real? Was the sim always this pretty? I never noticed, always staring at the ground dodging missiles...

B

Bob_Ross

Kaya, your smoke painting is art. "Happy little clouds."

W

Wingman

Today's video is pure healing T_T Came for fighter training, leaving emotionally recharged.

C

Coffee_Break

Seriously feeling the urge to fly... I'm doing a healing flight after work today.

T

TITAN_PCbang

Evaluation the day after healing. Yep, that's the Instructor's style. —T

PART ONE EVALUATION

The Viper's First Solo

Solo Check

■ Part One evaluation plan · Solo navigation and landing

Aircraft	F-16C × 1 (no weapons)
Location	The cockpit behind Tita's steel door
Task	Cold start → takeoff → pass Steerpoints 1, 2, 3 → re - turn → AOA landing and aerobraking → full stop
Scoring	Flight-record evaluation (Academy system) item scores + one line from the instructor
Pass mark	80 points. Moving during INS alignment or landing nosewheel-first is disqualification
Examiner	Chief Instructor SeaGAL

◆ 1. The Record Does the Grading

On evaluation day, I sat in the cockpit behind Boss Tita's steel door. The buttons under my fingers were in the same places as on the pink stick I'd been using at home. Boss Tita had matched the key mapping exactly.

"From today, I don't do the grading."

"...Sorry?"

“Your flight record does. The Academy system logs every input you make and turns it into numbers. Touchdown speed, AOA hold rate, rudder inputs, G exceedances. All I look at is what you ‘decided.’” ▶①

“Then... what do you do, Instructor?”

“I watch. Begin.”

◆ 2. By the Flow

Main power. JFS. 20%. IDLE. Avionics. INS align. This time, instead of sneezing, I held my breath. NAV. Canopy. NWS. Runway. NWS off. Brakes. 90%. Release. Afterburner. 150. Pull. Gear up.

Diamond 1. Diamond 2. Diamond 3 was inside a cloud. I went in on the HUD alone. Through.

Return. Speed brake. Gear down. FPM in the bracket. Doughnut. 150. Threshold. Idle. Flare. Thump. Nose 13 degrees. 100 knots. Tup. Brakes. Stop.

“Engine cut.”

◆ 3. The Report

A table came up on the screen. Numbers poured down in a column.

[Evaluation result · Flight record: Movement during INS alignment 0 · Takeoff rotation 152 knots · Steerpoints 3/3 · Approach AOA hold rate 91% · Touchdown speed 148 knots · Aerobraking held 12 s · G exceedances 0 · Total 94 points · Pass]

“94 points... who gave me that?”

“You did. I write one line.”

Instructor SeaGAL’s one line appeared underneath.

“Did not lower her head at Diamond 3 inside the cloud. Trusted the HUD — pass. Keeping her feet on the pedals after touchdown is a habit from Book 2. A good habit.”

“Instructor, that’s two lines.”

“...A line and a half.”

► Kaya's channel · comments

A Machine Does the Grading (Part One Evaluation)

Solo Flight, 94 Points) · 39K views · 1.4K likes

- D**

Data_Nerd
The flight record even pulls out your AOA hold rate. I want my landings graded like this.
- B**

BoraBora_No1
Me: 87. Touchdown speed 162. The Instructor's one line: “Fast.” That's it.
- R**

Recorder
“A line and a half” lololol. The Instructor writes one extra line every single time.
- R**

Ray [Official Tutor]
One line of praise for 94 points? I'll write ten on his behalf. 1. Did not sneeze. 2. ...

✈️ **Part One Evaluation at a Glance**

- 1 The solo flight sequence: cold-start flow → NWS taxi → after - burner takeoff → steerpoint navigation → speed brake and gear → AOA landing → aerobraking → full stop.
- 2 The flight-record evaluation turns your inputs into numbers (touchdown speed, AOA hold rate, rudder inputs, G ex - ceedances). The instructor evaluates your decisions.
- 3 Inside a cloud, don't lower your head — trust the HUD.

▶ **Videos · Part One Evaluation**

short clips

No.	Scene · when to watch	Code	QR
①	How to read the flight-record report When you want to know why your score is what it is	3-015	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

Phase 1 · Basic Flight Complete

Part Two



The Invisible War

Air-to-air combat — radar, missiles, evasion, refueling

LESSON 6

The Eye of God

Radar · RWR · IFF

◆ 1. Flying Blind

“All right. From here on, don’t trust your eyes.”

The moment Instructor SeaGAL said it, the simulation changed completely. The clear sky was swallowed by thick cloud in an instant, and visibility dropped until I couldn’t see past my own nose.

“I can’t see anything? How am I supposed to fight if I don’t know where the enemy is?”

“That’s why they call modern fighter combat a ‘battle of systems.’ The human eye struggles to spot an enemy 5 km out, but this thing can find a fly at 80 km. Look at the left display, the MFD. That is your ‘third eye.’”

◆ 2. A Flashlight in the Dark (FCR Radar)

I pressed a button on the left screen and switched on the Fire Control Radar, the FCR. A green bar — the B-sweep — began sweeping busily left and right in a fan shape.

“Radar is like shining a flashlight in pitch darkness. Like a bat in a cave, it sends out a pulse and catches what bounces back from an aircraft out there in the void.”

“Ah... oh! A little square came up on the screen!”

“That’s called a ‘contact.’ It means the radar caught something. Move the **radar cursor on the throttle** onto that square and press **TMS Up on the stick**. The left hand points, the right hand clicks.” ▶①

Click. Numbers appeared on what had been a plain square. Altitude 25,000 feet, speed 400 knots.

“So the unidentified aircraft the radar caught is at 25,000 feet, flying at 400 knots, right?”

“Right. It shows you information about distant targets you could never see or know with your eyes. You’ve just become a god who sees through the clouds to an enemy’s altitude and speed. Strictly speaking, that’s the power of science and technology.”

◆ 3. Someone Is Watching Me (RWR)

That was when it happened. A bone-chilling electronic tone suddenly sounded in my headphones.

Deedle-eet! Deedle-eet!

On the round display to the left of the HUD — the RWR — the number ‘29’ appeared with a yellow light. ▶②

“Whoa! Instructor, what is that sound? Is something broken?”

“No, that’s the radar warning receiver — the RWR. Just as you hunt the enemy with radar, the enemy is hunting you with radar.”

A chill ran down my spine. I couldn’t see a thing, and somewhere out there in the dark, an enemy (a MiG-29) was looking for me. The terror of it.

“Don’t freeze. That sound is a kind of ‘spider-sense.’ It tells you where the enemy is looking for you from. See the number at 12 o’clock? That means the enemy is straight ahead.”

◆ 4. Friend or Foe (IFF)

“But Instructor, how do I know whether that aircraft on the radar is friendly or enemy? If I fire blindly and it’s a friendly, that’s a disaster.”

“Good question. That’s what the IFF — identification friend or foe — is for. Press and hold TMS Left on the stick.”

When I pressed the button, a moment later a green circle appeared on the square symbol on the radar screen. ▶③

“A green circle is a friendly. And if there’s no response? That means ‘**unknown**’ — not enemy. Unidentified. Declaring something a bandit is the AWACS’s job, or the rules of engagement. Shoot a missile at something you don’t know, and it might be a friendly transport.”

“So if there’s no response... I wait?”

“You don’t shoot until it’s confirmed. Modern air combat isn’t a fistfight where you look each other in the face. It’s about who gets the first look, who **confirms** first, and who gets the first shot.”

I swallowed hard. More than all of Season 2’s flashy maneuvers and gunnery, it hit me, bone-deep, that one dot on this green screen held my life in its hands.

✈ Lesson 6 at a Glance

- 1 Put the throttle cursor on a contact on the radar (FCR) and press TMS Up on the stick to display its altitude and speed. The left hand points, the right hand clicks.
- 2 The RWR is the warning receiver that sounds when an enemy detects and tracks you. It's a 'spider-sense' that reports threats by number and direction.
- 3 IFF: press and hold TMS Left and friendlies show as a green circle. No response means 'unknown.' Don't shoot until it's confirmed as an enemy.

▶ Videos · Lesson 6

short clips

No.	Scene · when to watch	Code	QR
①	Radar cursor (throttle) and TMS Up (stick) When you can't designate a radar contact	3-016	
②	Reading the RWR — numbers and directions When you don't know what the warning tone means	3-017	
③	IFF — hold TMS Left When you don't know if it's a friendly	3-018	

On a phone, tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

▶ Kaya's channel · comments

Finding a Fly in the Clouds (Radar

RWR · IFF) · 29K views · 960 likes

R

Radar_Gosu

Newbie classic: a dot pops up on the radar and they get excited and chase it. Don't lol (team-kill warning)

S

Spooky_Sound

The first time you hear the RWR it's pure horror. Especially the missile-launch sound... that's trauma right there.

S

Spider_Man

The RWR really is spider-sense. That "deedle-eet!" makes my hair stand straight up.

I

IFF_Lesson

"No response doesn't mean enemy, it means unknown" — this is so important. Hands up if you've shot a friendly in multiplayer. (Me.)

LESSON 7

The Rattlesnake's Song

AIM-9 Sidewinder

◆ 1. The Movie Top Gun

"Kaya, do you know the most common question from beginners fresh from a fighter movie?"

"How do I fire the missiles?" Would be my guess."

"Right. Starting today, missile training."

◆ 2. Safety Off (Master Arm On)

“Now, there’s a target drone 10 miles ahead. Confirmed on radar? IFF?”

“Confirmed. Training target, showing hostile.”

“Combat starts with taking the safety off. Flip the ‘MASTER ARM’ switch on the left panel.”

Click.

An ‘ARM’ warning light came on in the panel. From here on, pressing the fire button sends a real missile. My palms started to sweat.

“Next, the **dogfight switch on the throttle — DGFT** — forward. The aircraft switches instantly into ‘dogfight mode.’ Left hand. Stop groping the stick.” ▶①

“...How did you know?”

“Everyone does it.”

◆ 3. The Cry of a Hungry Snake (The Growl)

When I pushed the switch, the HUD changed to combat mode. And through the headphones came an unpleasant sound.

Grrrrrrr...

“What... is this sound now? It’s creepy?”

“That’s the missile crying. The Sidewinder on the wingtip has woken up and it’s crying ‘I’m hungry.’ This thing lives on heat.”

“It eats heat?”

I turned my head to look at the AIM-9 hanging from the wingtip.

“Yes. It’s a heat-seeking missile that chases the hot exhaust pouring out of the enemy’s engine. That’s why you get on the enemy’s tail. The rear end, where the exhaust comes out, is the hottest part.”

◆ 4. Lock-on (Good Tone)

I maneuvered carefully behind the target drone. I put it inside the reticle in the center of the HUD. As the range closed, the missile’s seeker picked up the drone’s engine heat.

Grrrrr... beep beep! BEEEEEEEEEP!!

The low growl suddenly turned into a shriek. ▶②

“Now! The snake has bitten its prey! Pilots call this a ‘good tone.’”

“It’s so loud!”

“Don’t lose it! Fire now or the enemy gets away. Press the fire button on the stick!”

◆ 5. Two Foxes! (Fox Two)

I pressed the fire button hard.

“Fox Two!”

Shwaaaaang—!

From the left wingtip, the Sidewinder leapt off trailing a white tail of smoke. It wriggled toward the target like a living snake.

This was combat on a different level from the BF-109’s gunnery in Season 2. In the blink of an eye, the AIM-9 was sucked into the drone’s tail.

◆ 6. Splash

KA-BOOM!

A small flash burst in the distant sky. The target drone trailed black smoke and dropped limply beneath the clouds.

“Splash one! Well done, Kaya. Congratulations on your first kill.”

“Wow... that was instant. All I did was arm the weapons, select the missile, listen for the sound, and press the button...”

“That’s what makes modern warfare frightening. But don’t get complacent. This was easy, but if the enemy comes at you head-on, the missile can miss. There’s no such thing as 100% hits. The enemy maneuvers to survive too.”

“Sidewinder... so that’s the rattlesnake, the one that rattles its tail.”

I nodded and flipped the master arm switch off. The snake’s sharp cry was still ringing in my ears.

Lesson 7 at a Glance

- 1 Take the safety off with MASTER ARM ON, and switch to dog - fight mode with the DGFT switch on the throttle. Check IFF before you shoot.
- 2 The Sidewinder (AIM-9) is a heat-seeking missile. It goes for the enemy’s tail, where the engine exhaust is hottest.
- 3 When the low growl turns into a shriek (good tone), you’re locked on. The firing call is “Fox Two.” When you’re done, MASTER ARM OFF.

▶ Videos · Lesson 7			short clips
No.	Scene · when to watch	Code	QR
①	Master Arm and DGFT on the throttle When you can't switch to dogfight mode	3-019	
②	Sidewinder good tone and Fox Two When you don't know when the missile has locked	3-020	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ **Kaya's channel · comments**

The Rattlesnake Sang (First Sidewinder
Fox Two) · 36K views · 1.3K likes

S

Snake_Eater
That grrrrr... then BEEEEEP! moment — isn't it the best? I want it as ASMR.

F

Fox_Hunter
Military term: "Fox 2" is what a pilot calls out when firing a heat-seeking missile.

H

Heat_Seeker
The Sidewinder is the real deal. Fire it toward the sun and it goes chasing the sun? lol. You gotta aim it right.

L

Left_Hand
"Stop groping the stick" lol. I was also the one feeling around the stick for DGFT. It's on the throttle, folks.

LESSON 8

PC Café Top Gun

Flare & Overshoot — Tita's Special Lesson

◆ 1. Where the Sparrows Flock

“Ugh, my head...”

I tossed off my headphones and headed for the TITAN PC café. When I opened the door, the familiar smell of ramen and the clatter of mechanical keyboards greeted me. At the counter, Boss Tita was staring a hole into her monitor.

“Oh? Kaya. Was wondering where you'd gone.”

Boss Tita was the flight guide who had helped me set up my gear back in Season 1, and she's the owner of this place, the TITAN PC café. But her real calling was less running a PC café and more being an 'aviation nerd' who flies the F-16 in the cockpit behind the steel door. Aloof at the counter, chatty behind the door.

◆ 2. By-the-Book Instructor vs. Veteran Boss

“Boss, I'm learning the F-16 these days. With Instructor SeaGAL... and wow, the man is so by-the-book.”

I grumbled as I pulled a drink out of the fridge.

“It’s always ‘confirm it,’ ‘read it back,’ ‘follow the procedure’... I’m suffocating. An hour just to start the engine, I’m telling you! I sneezed and had to start over from the top.”

Boss Tita snickered at my griping.

“The F-16 is a computer with wings, right? SeaGAL’s teaching you properly. Learn it the sloppy way and you’ll melt down later.”

“It’s still way too stiff. There’s no romance. None.”

“So, how far have you gotten?”

“Takeoffs and landings are done, and today I learned to fire the Sidewinder, the AIM-9. The missile wails so loud I thought I’d go deaf.”

◆ 3. A Provocation, Pre-Planned

“Oh? The Sidewinder? So you can do a bit of a ‘viper’ impression now, huh?”

Boss Tita’s eyes filled with mischief. She jerked her chin toward the steel door.

“Hey, no customers right now. Let’s go a round today. Gotta use what you learned. You take the cockpit behind the door, I’ll take the boss’s chair.”

“What? Against you, Boss? You’ve got over three thousand flight hours. You want to club a baby seal?”

“Nah, it’s been ages since I held a stick. I’ll go guns only, no missiles. You take missiles. Loser buys ramen. Deal?”

At the words ‘ramen bet,’ my competitive streak flared. And the Sidewinder I’d learned today was so simple to use that it seemed worth a shot.

“You’re on. Get a taste of today’s lesson — extra-spicy ‘Fox Two!’ Have your wallet ready.”

◆ 4. Review: The Missile Firing Procedure

We met in the same virtual sky.

The moment the simulation finished loading, I reflexively ran through the procedure I’d learned that day.

‘Okay. Getting on the tail, I learned in Book 2, so stay calm. For the missile, just do exactly what the Instructor said.’

[Checklist review]

1. Master Arm ON: flip the weapons switch on the left panel. (Safety off — done.)

2. Dogfight mode: DGFT switch on the throttle, forward. (Left hand!)

3. Volume up: turn up the missile seeker tone.

Grrrrrrrrr...

The cry of a hungry snake came through the headphones. Preparations complete.

◆ 5. Get on the Tail

“Kaya, 12 o’clock! Here I come!”

Boss Tita’s F-16 flashed over my head in an instant. The speed was incredible. I yanked the stick around and chased after her.

‘Slow down. Just get on the tail. Grab the engine heat and it’s over. Book 2, Lesson 5 — the inside of the circle.’

I dug desperately into the inside of Tita’s turn.

“Oh... Kaya? Sharp maneuvering. Tutor Ray taught you well.”

As the turn tightened, Boss Tita poured on speed and tried to open the distance. At last, she slid into the reticle in the center of the HUD. As the range closed, the missile tone began to change.

Grrrrr... beep! BEEEEEEEEEEP!!!

“Got you! Good tone!”

A beautiful shriek filled my ears. I heard SeaGAL's voice like a hallucination. ‘Kaya, now!’

With a triumphant grin, I mashed the fire button.

“Gotcha! Fox Two!”

Trailing white smoke, my hungry rattlesnake streaked toward Tita's F-16 like an arrow.

◆ 6. Fireworks (Flares)

Range: one mile. Anyone could see this was a hit.

“Game over! Delicious ramen, courtesy of the Boss—”

That was the moment. A shower of dazzling fireballs came pouring out of Boss Tita's fighter.

Pang! Pang! Pa-pa-pang!

“Huh? What is that?”

They were **‘flares’** — the white-hot decoys Boss Tita had dropped. My hungry heat-seeker was seduced by magnesium fireworks burning hotter than any fighter engine. My missile dove straight into the cluster of fire Boss Tita had tossed into thin air. ▶①

KA-BOOM!

The hollow sound of a wasted explosion.

“Hey, newbie. Snakes these days like fireworks more than tailpipes, you know?”

◆ 7. Slamming the Brakes (Speed Brake)

“It’s not over yet!”

The missile had missed, but I was still on Boss Tita’s tail. I shoved the throttle to max and closed in tight. I meant to get inside gun range and finish it.

“Here’s a taste of ace gunnery—”

Just then, the panels on either side of Tita’s F-16’s tail snapped open. Speed brake. Like a supercar slamming on its brakes, Boss Tita’s jet decelerated so hard it seemed to stop dead in midair. ▶②

“Whoa!”

Closing fast, I couldn’t slow down. In an instant, my fighter shot past Boss Tita’s.

“Overshoot! Hooked you, Kaya!”

◆ 8. The Reversal

“Check your six~ Hello?”

Boss Tita’s laughter hit my headphones. As if she’d been waiting for it, she twisted her jet through a spiraling maneuver and slid in behind me.

The situation flipped in one second. The hunter of a moment ago was now the prey.

“Boss! Wait! That’s cheating!”

“There’s no cheating on a battlefield. Now, present your tailpipe.”

My RWR screamed like mad. But this time it wasn’t the missile tone.

Brrrrrrrrt!

The 20mm cannon on the left side of Boss Tita's nose spat fire. A spine-chilling sound, like a chainsaw cutting steel. Red streams of tracer poured past the canopy like rain.

"Aaah! Save me!"

Ba-ba-bam!

My right wing tore off, and the screen went black.

◆ 9. Tuition: One Bowl of Ramen

"Aaagh..."

I slumped back in the cockpit behind the steel door and pulled off my headphones. Cold sweat ran down my back. On the last screen, the F-16 with callsign TiTa was grinning in victory.

"Well? How does it feel to be shot down by guns with missiles on your wings?"

Boss Tita snickered, sipping the broth from her cup of ramen.

"Wow... you're seriously good. Flares, then slamming the brakes... I thought that stuff only happened in movies."

"I got lucky. And flares aren't a cure-all either. The other guy isn't an idiot. Evasive maneuvers are the last desperate struggle to stay alive. In the final moment, what you can trust is quick judgment and flying skill. Today was a lesson. Tuition is ramen."

I admitted defeat and pulled out my wallet.

"Fine. Ramen's on me. But Boss, how do you catch an enemy who dodges missiles and squirms around like that?"

"Best way is to shoot them down from where they can't see you."

"Where they can't see you?"

"Yeah. Learn that from SeaGAL. I'm the sloppy one."

✈ Lesson 8 at a Glance

- 1 Missile firing checklist: ① Master Arm ON ② DGFT on the throttle (dogfight mode) ③ Turn up the missile seeker tone.
- 2 Flares: a heat-seeking missile is fooled by magnesium flames hotter than an engine. Dropped with the CMS on the stick.
- 3 When the other aircraft decelerates hard with the speed brake, the pursuer flies past — an overshoot — and the roles flip in an instant. When the missile misses, a 20mm cannon is waiting. Basic fighter maneuvers (BFM) are the essential skill for when you have no missiles.

▶ Videos · Lesson 8

short clips

No.	Scene · when to watch	Code	QR
①	Flares — dropping them with the CMS When a heat-seeker is coming at you	3-021	
②	Forcing an overshoot with the speed brake When someone is on your tail	3-022	

On a phone, tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

▶ Kaya's channel · comments

I Bought the Boss Ramen (PC Café Top Gun

Flares · Overshoot) · 62K views · 2.6K likes

R Ramen_Bet

A ramen bet with the Boss? Couldn't resist lol. Nice to see Tita again.

F

Fishing_Master

Wow... flares, speed brake open, then a barrel roll. Tita is a certified veteran. O_O

T

Top_Gun

"I'll hit the brakes, he'll fly right by." This is straight-up Maverick lol

G

Gun_Kill

Getting gunned down in the missile age is the ultimate humiliation lol.
Morale: shattered.

R

Repair_Bill_Bot

[Automatic Estimate System] Season 3's first invoice: 1 bowl of ramen.
For reference, 1 missed Sidewinder = approx. 90,000 bowls of ramen.
Billed in dollars.

S

Seagal_Fan

A mysterious loss for Instructor SeaGAL... "No romance?!" I can see the glare from here.

LESSON 9

The Medium-Range Missile

AIM-120 AMRAAM

◆ **1. Three Foxes! (Fox Three)**

"Trainee Kaya, radio check!"

Instructor SeaGAL's voice through the headphones had no fat on it. The savory smell of ramen at the PC café a few days ago and Boss Tita's mischievous laughter were nowhere to be found.

"Yes! Instructor. Loud and clear."

"Good. Following the short-range missile last time, today we train on the medium-range air-to-air missile, the AIM-120 AMRAAM. Did you do a little homework at the PC café?"

That stung. How much did this man actually know?

"Ah... yes. I just picked up the 'fire and forget' concept. And... I bought a bowl of ramen."

"So I heard. I'm told Tita called herself 'sloppy' with her own mouth. A humble person. 'Fire and forget...' That's a phrase gamers like. A pilot never forgets the situation until the moment the missile hits. You have to be able to picture the fight in your head."

◆ 2. The Radar's Eye (FCR)

"Master Arm ON. Select air-to-air mode."

I flipped the switches with practiced ease. A big circular reticle appeared on the HUD.

"Look at the left display, the MFD. That's your thousand-mile eye."

On the black screen was a green fan shaped like a protractor, and a single white dot was slowly descending from the top.

"Thirty miles ahead, 20,000 feet, there's a bandit. Invisible to the eye. Only the radar can see it. Move the cursor and **lock** the target."

I moved the radar cursor on the throttle onto the white dot. Then, with my right thumb, I clicked TMS Up once.

"Designated!"

“Good. You’re now ‘looking at’ an unidentified target. Check IFF, then press once more and bite down on the target for good.” ▶①

Click.

When I pressed again, the white dot turned into a red triangle and locked solid on the screen. A square **target box** appeared on the HUD in the windscreen too. And detailed information about the target came up.

◆ 3. The Launch Zone (DLZ)

“Lock complete. Can I shoot now?”

My finger itched to press the fire button right then and there.

“Wait. Look at the right side of the HUD. See a bar on a ladder-like scale?”

“Yes, I see it.”

“That’s the **DLZ — the Dynamic Launch Zone**. It shows the range at which the missile can hit. The little mark beside the ladder is the current range to the target. You shoot when it comes inside the effective-range bar.” ▶②

Boss Tita had just said “If a box shows up, shoot!” — but Instructor SeaGAL was different. Meticulous as a math teacher. A moment later, as the bandit closed, the range mark came inside the effective-range bar. The word **‘SHOOT’** blinked in the center of the HUD.

“Shoot cue is up!”

“Fire!”

◆ 4. Fox Three!

I pressed and held the weapons release button on the stick — the pickle button.

“Fox Three!”

Shhhhhhweee—!

White smoke burst from under the right wing. The hefty AM - RAAM lit its tail and tore off past the speed of sound. If the Sidewinder leaves with a ‘shwoosh,’ the AMRAAM leaves with a ‘SHWOOOM!’ — a long, powerful punch.

In an instant the missile became a dot far away and vanished from sight.

“Now comes the important part. The AMRAAM has its own radar. Until it switches that radar on for itself — Pitbull — you have to keep illuminating the enemy with your radar. Don’t turn your nose.”
“Ugh... why is everything so complicated?”

“The radar on the F-16 is high-performance, but the missile’s is small. You guide it until it’s close enough to track the target on its own. Think about it a moment and it makes sense.”

A timer appeared at the lower right of the HUD. ‘A 15.’ The time remaining until the missile went active on its own.

◆ 5. Pitbull

Fifteen seconds felt like fifteen minutes. The bandit kept coming at me. If he had fired too, I was a sitting duck right now.

05... 04... 03...

The instant the timer hit zero, the HUD symbol changed to ‘T.’  ^③
“Pitbull! Missile active!”

At last the missile had bitten its target.

“Good. The missile’s seeker has opened its eyes. It chases the prey on its own now. You’re free to break off.”

I let out a huge breath and rolled the jet to the left.

◆ 6. Know Your Enemy, Know Yourself

A moment later, the red triangle locked on the radar screen turned into an ‘X,’ blinked, and disappeared.

“Splash. Target destroyed, confirmed.”

Instructor SeaGAL’s dry voice. From a distance where nothing could be seen, with no idea what had actually happened out there, I had shot down an enemy with a few button presses. It demanded knowledge of the weapon, yet it was so clean it felt hollow — and that made it more chilling.

“Well done, Kaya. This is modern air combat. No need to lock eyes, no need to sweat getting on someone’s tail.”

“Yes... it’s over much faster than I expected.”

“Don’t forget. If you can do that, so can the enemy.”

Instructor SeaGAL’s voice dropped low again.

“That was a drone, so it just sat there. What if the enemy were a fighter? The moment you fired, he’d have fired a missile at you too. Then what would you do?”

“Uh... run away?”

“Run blindly and you die. If you want to live, you have to know your enemy.”

✈ Lesson 9 at a Glance

- 1 Put the throttle’s radar cursor on the target, TMS Up on the stick once (look), check IFF, once more (lock). A red triangle and the HUD target box appear.
- 2 When the range mark in the DLZ (launch zone) comes inside the effective-range bar and SHOOT (the shoot cue) blinks, fire. The call is “Fox Three.”
- 3 The AMRAAM (AIM-120) needs you to keep illuminating the target until it switches on its own radar (Pitbull). When the timer changes from ‘A’ to ‘T,’ break off.

▶ Videos · Lesson 9

short clips

No.	Scene · when to watch	Code	QR
①	AMRAAM lock — TMS Up twice and IFF When locking a medium-range target	3-023	
②	Reading the DLZ and the shoot cue When you don't know when to fire	3-024	
③	Holding until Pitbull — from A to T When you don't know how soon you can turn after firing	3-025	

On a phone, tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

▶ Kaya’s channel · comments

15 Seconds Felt Like 15 Minutes (AMRAAM

Fox Three · Pitbull) · 34K views · 1.2K likes

F

Fox_Lover

Wow... “Fox Three!” Great delivery!

P

Prime_Delivery

Is that AMRAAM delivery speed for real? Order placed (lock-on) and 30 seconds later: shoot-down delivered lol

B

BrainPilot

Boss Tita said “fire and forget,” but like Instructor SeaGAL says, guiding it all the way is the real skill. Great detail.

G

Ghost

Must be pure terror from the enemy’s side. You can’t even see anything and suddenly a missile comes out of nowhere and nails you...

R

Repair_Bill_Bot

[Automatic Estimate System] 1 AMRAAM = approx. 300,000 bowls of ramen. It hit, so no charge. A generous system.

LESSON 10

Missile Evasion

BVR Defense & Notching

◆ 1. The Alarm of Death

“Today we train evasive maneuvers against enemy missiles. Twenty miles ahead, a bandit has picked you up.”

Instructor SeaGAL had barely finished when a warning tone sounded inside the cockpit.

Deet- deet- deet-

A new symbol appeared on the RWR. The enemy was detecting me. Cold sweat broke out. When I was aiming at the enemy earlier, the enemy had been hunting me just like this.

“Uh... Instructor? The sound is getting faster?”

“Yes. Because he’s locked you. The enemy radar that was scanning a wide area has started tracking you, and only you.”

Suddenly the warning tone changed to a shrill siren.

Wee-eeng! Wee-eeng! Wee-eeng!

“Missile launch! He fired!” ▶①

My heart dropped. I knew it was a simulation, and still every hair on my body stood on end. An invisible spear of death was flying at me at Mach 4.

◆ 2. Which Way Do I Run?

“Yikes! I have to run!”

On reflex I pulled the stick and swung the nose around. I was going to turn 180 degrees, show it my tail, and run.

“Stop! Turn tail and you die!”

Instructor SeaGAL’s voice rose.

“What? I have to run! There’s a missile coming!”

“The missile is several times faster than you. Run, and it catches up in no time and plants itself in your back. Unless it’s very far away, you can’t outrun it.”

“Then what do I do? Just take it?”

“You evade with the **beam maneuver**. Put the missile off your wing — at 3 or 9 o’clock. In simple terms, you evade at a right angle, 90 degrees, to the missile!”

◆ 3. The Invisibility Cloak (The Doppler Notch)

I rolled the stick hard left. I turned the aircraft until the missile symbol on the RWR sat off my right side. ▶②

“This is called ‘**beaming.**’”

“If I fly sideways, the missile can’t follow?”

“Haha! No. It follows, but its eyes go blurry. Ever heard of the Doppler effect?”

Instructor SeaGAL said it with a laugh. Physics theory, at a time like this. But I listened hard, to stay alive.

“A missile’s radar recognizes ‘things approaching or receding’ as targets. Mountains and buildings don’t move, so it filters them out.”

“I don’t quite follow?”

“If you fly with the missile off your side, then from the enemy radar’s point of view you are neither approaching nor receding, so your motion is almost ‘**zero.**’”

A light bulb went on in my head.

“Ah! So the radar mistakes me... for a stationary object?”

“Correct. The enemy missile’s radar dismisses you — ‘that’s not an airplane, just a floating cloud or a mountain’ — and ignores you. This blind spot in the radar is called ‘**notching.**’ By analogy, you’re putting on an invisibility cloak.”

“It really is a battle of electronics...”

◆ 4. Throwing Tinfoil (Chaff)

“Kaya, you lured the short-range heat-seeker with flares, but a radar-guided missile you jam with **chaff.**”

“Yes!”

I remembered the fireworks Boss Tita had thrown at the TITAN PC café. I pushed the CMS — countermeasures — switch on the stick with my thumb. ▶③

Fsst! Fsst!

Thousands of fine glass fibers and aluminum strips scattered behind the aircraft like a cloud.

“Drop chaff and the missile mistakes the bigger, shinier lump of tinfoil for you.”

A tense moment. I held my breath and listened to the RWR.

Wee-eeng... wee-ee... stop.

Like magic, the warning went silent.

◆ 5. The Victory of Geometry

“Missile spoofed. It flew on through empty air.”

I let out a sigh of relief and leveled the jet. The heat made me turn the desk fan toward my face. A habit Ray had left me with.

“Wow... this is seriously hard. Fly sideways and you get treated like an invisible man.”

“Beyond visual range — BVR combat — isn’t a contest of strength. It’s a contest of electronics and geometry.”

Instructor SeaGAL added coolly:

“But remember. The newest radars are smart enough to see through the notch. Never trust anything blindly. Keep your knowledge current and your energy up, and respond to the enemy.”

✈ Lesson 10 at a Glance

- 1 When the RWR tone speeds up, you're locked; when it turns into a siren, it's a missile launch.
- 2 Turn tail and you die. Evade with the beam maneuver, putting the missile at 3 or 9 o'clock — a right angle, 90 degrees. Because of the Doppler effect, the enemy radar mistakes you for 'zero-motion' background (notching).
- 3 Radar-guided missiles are jammed with chaff (CMS on the stick). The newest radars can see through the notch, so don't trust it blindly — keep your energy up and respond.

▶ Videos · Lesson 10			short clips
No.	Scene · when to watch	Code	QR
①	Hearing the RWR missile warning When the tone turns into a siren	3-026	
②	The beam maneuver — missile at 9 o'clock When a missile is inbound	3-027	
③	Chaff — CMS When spoofing a radar-guided missile	3-028	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ Kaya's channel · comments

I Put On an Invisibility Cloak (Beaming
Notching · Chaff) · 44K views · 1.6K likes

P PTSD_On

Broke out in a cold sweat just from the RWR tone in the video;; that “wee-eeng!” sound, I’ll never get used to it T_T

S Science_Teacher

“Using the Doppler effect to hide in the background.” Came for a gaming stream, left with a physics lesson.

I Iron_Wall

Fantastic explanation of notching. Showing the enemy your side and holding your nerve is not easy — impressive!

C Chaff_Fairy

The thrill of shaking a missile while popping chaff is unreal... this is ‘the art of the evasive maneuver.’

R Ray [Official Tutor]

I saw the hand turning the fan. That’s my student.

LESSON 11

A Kiss at 30,000 Feet

Aerial Refueling

◆ 1. After Air-to-Air Training

“Combat training complete. Master Arm OFF. Radar OFF.”

On Instructor SeaGAL’s order, I switched off the weapons and the radar. The RWR tones that had been hammering my ears and the

cluttered symbols on the MFD all disappeared. Only the rush of the wind and the engine's low hum remained.

"Phew... now I can breathe. I thought my head was going to burst."

"Now we return to base. Your head's cooled off enough, so Trainee Kaya, look at 10 o'clock."

Between the clouds, a huge shadow appeared. An aircraft as big as an airliner was swimming lazily through the sky. An aerial tanker.

"Wow... it's huge. Like a whale."

"We're going to feed on the fuel in that whale's belly. Flying at 600 km/h, 30,000 feet up."

◆ 2. The Gas Station in the Sky

"When you're ready, request fuel on the radio. Then the refuel door switch. It's beside the throttle."

Instructor SeaGAL, who had finished refueling first, called it in. I pressed the comms switch and said what he'd taught me. A short reply came back from the tanker. Radio-speak. The only word I caught was 'Cleared,' but that was the word that mattered.

I worked the throttle and approached the rear of the tanker. The giant aircraft filled my view. As I got close, the wake from the tanker's engines started rattling my F-16.

"The Viper is bouncing around! It feels like driving on a dirt road!"

"Don't panic. It's wake turbulence off the tanker's tail. Push boldly through it and set up in the pre-contact position." ►①

I could see the 'boom,' a long pole like a fuel nozzle, and behind it a clear window, where the 'boom operator' was lying on his stomach, looking at me.

“Whoa, there’s a person in there! I think we made eye contact.”

“Yes. That man is going to put a straw in your mouth. All you have to do is open wide and drink politely.”

◆ 3. The Baby Bird’s Dance (PIO)

“Refuel door open.”

Clack.

I heard the refueling door open behind my back. Now I had to get closer, within reach of the tanker’s boom. But that was the problem.

“Huh? Huh-huh?”

The moment I tried to edge forward, the jet started bouncing. It shot up; startled, I pushed down, and it dropped like a stone. My aircraft staggered like a drunk. The same rubber band I’d bounced back and forth on in Book 2, Lesson 7, formation flying.

“Slowly! Don’t strangle the stick.”

“I’m trying to hold still but it keeps moving!”

“Don’t try to match it by eye. Feel the flow and match that. And watch the **director lights** on the tanker’s belly.”

Under the tanker was a set of blinking red and yellow lights. A guide showing my position up-down and fore-aft. ▶②

◆ 4. Like Holding a Brush

I took a deep breath. This isn’t a hard maneuver to dodge a missile. It’s a drawing — a very thin line.

‘Not even 0.1 mm of error... like brushing paper with the tip of a brush...’

I didn't push and pull the throttle; I touched it, barely, with my fingertips. Adjusting the thrust by the tiniest amounts, I crept forward bit by bit, by the barest fractions.

The giant boom came down over my head. The boom operator was steering it toward my receptacle.

"A little more... a little more forward..."

Like a first kiss, the tension was so thick I couldn't breathe.

◆ 5. Contact

Thunk.

With a solid jolt, the jet felt as if it had become one with the tanker.

"Contact. Refueling commenced."

Instructor SeaGAL's calm voice. The RDY (ready) light on the panel went out, and a green AR (refueling) light came on.

"Success! Fuel's coming in!"

"Good. Now don't move. Freeze, just like that. Don't even breathe."

"Like during INS alignment?"

"More than that."

I focused every nerve on flying at exactly the tanker's speed. Right above my head was the great whale's belly, and the clouds streamed past behind. It was the fastest, most dangerous gas station in the world.

While the fuel flowed in, for the first time I took in a peaceful sky with no missiles and no alarms.

◆ 6. A Perfect Finish

"Refueling complete. Disconnect."

I pressed the disconnect button.

Tup.

The boom came away from my back. A fine white spray of fuel drifted off like mist. I eased the throttle back and slid gently down and out from under the tanker. I closed the refuel door.

“Well done. More work than firing a missile, isn’t it?”

“Whew... I feel like my whole body is about to cramp. But this... is strangely addictive? It’s kind of... healing.”

“That was delicate work. Maybe it’s because you’re an artist who paints — your fingertips are alive.”

“Instructor, that was a compliment, right? I didn’t record it this time.”

“...Record it. There won’t be another.”

A rare compliment from Instructor SeaGAL, and my shoulders squared with pride. Feeling the fullness of a well-fed Viper, I re-joined the formation.

Refueling at 30,000 feet was a sweet rest, like swimming through the sea alongside a whale.

✈ Lesson 11 at a Glance

- 1 Request fuel on the radio (the word to listen for is ‘Cleared’), open the refuel door switch, and push through the wake turbulence behind the tanker to the pre-contact position.
- 2 Don’t force it by eye; watch the director lights on the tanker’s belly and the flow. Throttle with your fingertips, by the tiniest amounts.
- 3 After contact, fly at the tanker’s speed, frozen; when refueling is done, disconnect to break off, then close the refuel door.

▶ Videos · Lesson 11			short clips
No.	Scene · when to watch	Code	QR
①	The refueling request and opening the refuel door When you don't know what to do behind the tanker	3-029	
②	Making contact by the director lights When the jet keeps bouncing	3-030	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ Kaya’s channel · comments

Scarier Than a First Kiss (Aerial Refueling at 30,000 Feet)

51K views · 2.1K likes

F

Full_Tank

Honestly, aerial refueling is 100 times harder than air combat. Agreed?

V

Van_Gogh

Wow... the description is so beautiful. Now I get what “flying like a brushstroke across the sky” means.

S

Shaking_Hand

Held my breath the entire time, mmph! My own palms are soaked lol

R

Recorder

“Record it. There won’t be another.” This time the Instructor authorized the recording himself lololol

L

Love_Hurt

“Scariest than a first kiss”... somebody’s romance cells are alive and well lol. The visuals are healing.

INTERMISSION

Is That Even English?

The Language Barrier

◆ 1. After the Confidence, the ‘Radio Panic’

Having finished air-to-air training successfully (even if I nearly threw up), I was full of confidence.

“I’m an F-16 pilot now. I can fire an AMRAAM and I can refuel!”

I left Instructor SeaGAL’s wing for a while and, on my own, fired up a campaign mission famous among the Academy trainees. I was going to enjoy a movie-like story and show off my skills.

“All right, finally, the real thing. Off to save world peace?”

I solemnly loaded the formation mission and sat down in the cockpit. A moment later, an urgent radio call came through the headphones.

“Bravo 1, pop-up threat! Break right immediately! SAM launch, 2 o’clock! Abort mission, I say again, abort!”

“Uh...? What? Pop-up? Sam who? Brake?”

I panicked, my eyes darting around. He said brake, so I opened the speed brake. The speed dropped away.

That instant,

KA-BLAM!

Before the alarm even sounded, my jet was blown to pieces.

[MISSION FAILED : Failure to comply]

“Hey! I have to know what you said before I can dodge or not dodge!”

◆ 2. The Pilot’s Enemy Was ‘English’

Feeling cheated, I tore off my headphones. What good was better flying? The mission briefing was in English, the tower calls were in English, even the subtitles were in tiny, dense military English — and none of it was the English I speak. Now I understood why ‘English’ was first on the list of things to bring.

And it wasn’t just me. Plenty of newcomers buy expensive gear and then, blocked by this ‘language barrier,’ quit before they ever have fun. They can fly, in a basic way, but they can’t understand the ‘situation’ or the ‘story,’ so there’s no way to get immersed.

That was when my phone buzzed.

[Ray]: “Kaya, I just saw you get shot down. ‘Break right’ means turn hard to the right. It doesn’t mean hit the brakes.”

“...You were watching?”

[Ray]: “The AWACS sees everything. Voice channel for a sec.”

◆ 3. Subtitles Are Training Wheels

Ray’s voice was exactly the same as in Book 2. Praise first.

“First of all, reacting before the missile warning was quick. Just the wrong direction. Kaya, try turning on **subtitles** in the Academy settings. It puts the mission’s radio-speak into plain English. The radio calls too.”

I dug through the settings and turned on subtitles. Same mission, same urgent voice. But this time, plain words appeared at the bottom of the screen.

“Bravo 1, pop-up threat! Break right immediately!”

[Subtitle] Bravo 1, surprise threat spotted! Hard turn to the right, now!

“SAM launch, 2 o’clock! Abort mission!”

[Subtitle] Surface-to-air missile fired from 2 o’clock! Stop the mission!

“Aha! A missile was coming, so he was telling me to dive right!”

The moment I saw the subtitle, I rolled hard right. A surface-to-air missile streaked past trailing white smoke, missing my left wing by a hair.

I lived. And I understood. Why I was here, where the enemies were hiding, what my team wanted from me. With plain-English subtitles, the combat flight that had been a blob of graphics became a movie.

◆ 4. The Radio Is Twenty Words

“But, Ray. While I’m reading the subtitles, who’s flying the plane?”

“Good question. That’s why subtitles are training wheels. The ones you put on a bike to learn and then take off. This is the real thing.”

A table came up on the screen. Twenty-odd words.

“The radio isn’t sentences — it’s words. Break, Bandit, Fox, Splash, Pop-up, Abort, Bingo, Magnum... With these twenty, you’ll understand 90% of the radio on a battlefield. The subtitles cover the other 10%.” ▶①

“Twenty? What about the thick manual?”

“That’s Instructor SeaGAL’s department. I’m the twenty-words department. During the evaluation I’ll speak from the AWACS using only these words. Learn them.”

I saved the table. I decided to put it in the appendix too. There must be others like me.

◆ 5. The MetaPilot Journey

After the flight, I fell into thought. I remembered when I first set foot in this world. When I was about to give up because no stick fit my hand, Boss Tita put a stick she’d made herself into it. When I was about to give up because I couldn’t land, Ray said, “It doesn’t have to be perfect.”

And today, when I was about to give up because I didn’t understand the English, the Academy handed me subtitles and Ray handed me twenty words, and the sky opened again.

So that anyone can live the dream of being a pilot, they were clearing the stones from the virtual runway, one by one. The stick in Book 1, the electric fan in Book 2, today’s subtitles and twenty words — all of them were those stones.

I started the next mission. Subtitles on, twenty words memorized out loud. Nothing to fear now. My cockpit was fitted with the ultimate avionics: ‘plain English’ and ‘twenty words.’

✈️ **Intermission at a Glance**

- 1 If you can't follow the radio, turn on the Academy subtitles. Subtitles are training wheels. The plane is still flying while you read.
- 2 The radio isn't sentences — it's words. The twenty words in the appendix's radio brevity table (Break, Bandit, Fox, Splash, Pop-up, Abort, Bingo, Magnum...) cover most of the radio on a battlefield.
- 3 Break right = hard turn to the right. Not the speed brake.

▶ **Videos · Intermission**

short clips

No.	Scene · when to watch	Code	QR
①	Turning on Academy subtitles and the twenty radio words When you can't follow the radio	3-031	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ **Kaya's channel · comments**

I Hit the Brakes and Got Shot Down (Radio-Speak

Subtitles · Twenty Words) · 75K views · 3.2K likes

- R** **Radio_Phobia**
I've been stuck in the tutorial for a year because of the radio-speak T_T
Going to turn on subtitles.
- S** **Sim_Dad**
I wanted my kid to try this but the radio chatter was the problem. Now we can fly together! Thank you.

B

Brake_Light

Break right = hard right turn. I also opened the speed brake. Comrade.

T

Twenty_Words

They say the twenty-word table is in the appendix. Guess I'm buying the book.

R

Ray [Official Tutor]

During the evaluation I speak in the twenty words only. Compliments in civilian.

PART TWO EVALUATION

Two on Two

Two on Two

■ Part Two evaluation plan · Air-to-air engagement

Aircraft	F-16C × 2 (Kaya, No. 1 · a Bora Bora classmate, No. 2)
Weapons	AIM-120 × 2, AIM-9 × 2, cannon
Enemy	2 fighters (flown by instructors), approaching from beyond 30 miles
Support	AWACS — Tutor Ray. Radio calls use only the words in the brevity table
Task	Confirm IFF → fire AMRAAM inside the DLZ → hold until Pitbull → evade enemy missiles (beam, chaff) → return to the tanker after the engagement
Scoring	Flight-record evaluation + instructor review. Firing on an unidentified target is disqualification
Examiner	Chief Instructor SeaGAL (flying enemy No. 1)

◆ 1. The Eye in the Sky

“Radio check.”

“Viper 1, loud and clear.”

“Viper 2, loud and clear.” A Bora Bora classmate. The same No. 2 who’d pounced on the bombers beside me in the Book 2 Part One Evaluation.

And a third voice.

“Magic, radio check. Kaya — I mean, Viper 1. I hear you fine. Words only today. Promise.”

It was Ray. AWACS callsign ‘Magic.’ The seat he’d meant at the end of Book 2 when he said, “See you from above.”

“Magic, Viper. Loud and clear.”

“...Compliments are allowed in civilian, so just one. Your voice is steady. Beginning.”

◆ 2. Bandit, Twelve O’Clock, Thirty Miles

“Viper, Magic. **Bandit**, 12 o’clock, 30 miles, two-ship. **Hot.**”

Words. Enemy aircraft, straight ahead, 30 miles, two of them, coming toward us. I understood. Three of the twenty.

“Viper 1, copy. Viper 2, radar on, IFF.”

“2, copy.”

Two dots on the left screen. Cursor. TMS Up. IFF — no response. Magic had declared them bandits, so they weren’t unknowns. TMS Up once more. Red triangle.

“Viper 1, **Locked**. 2, take the trailer.”

“2, Locked.”

DLZ. Range mark inside the bar. SHOOT.

“**Fox Three!**”

“2, Fox Three!”

A 15. Hold the nose. 14, 13... The bandits kept coming. The RWR sped up. They had fired too.

◆ 3. Beam

“Viper, Magic. **Missile**, 12 o’clock!”

“1, copy. Holding until Pitbull...”

A 3, 2, 1. T.

“**Pitbull!** Viper 1, beaming right!”

I rolled right and put the enemy at 9 o’clock. Chaff. Fsst. The RWR went quiet.

“2, beam left! Chaff!”

“2, copy!”

A moment later, Magic’s voice.

“Viper, Magic. **Splash** one. One bandit remaining. 1 o’clock, 10 miles.”

“...Mine on the trailer missed.” No. 2’s voice.

“That’s okay. I’ve got the last one. Viper 2, cover.”

The remaining bandit flew by the textbook. Too much by the textbook. I pushed DGFT forward. Grrrrr. I dug toward his tail. He popped flares. A familiar burst of fire. Where had I seen that before?

“Good tone... Fox Two!”

Even after the flares, he kept flying straight. The rattlesnake bit the second heat.

“Viper, Magic. **Splash** two. Sky’s clean. And... Kaya, waiting one beat after the flares was a nice touch. Oh — words only. **Good.**”

◆ 4. To the Tanker

“Viper 1, **Bingo.**” Fuel.

“Magic, copy. Tanker 3 o’clock, 20 miles. Want me to turn on the subtitles?”

“No. All I need to hear is Cleared.”

Boom. Contact. Freeze. No. 2 refueled behind me. The three of us came home to base side by side.

[Evaluation result · Flight record: IFF checks 2/2 · Launches inside the DLZ 2/2 · Held until Pitbull 2/2 · Beam angle 88° · Chaff used 2 · Tanker contact 1 success · Total 96 points · Pass]

Instructor SeaGAL’s one line.

“Speaking as the pilot of enemy No. 1. Waiting after the flares — pass. Where you’d seen that flare pattern before, think about in the epilogue.”

“Instructor, what does that—”

“End of line.”

► Kaya’s channel · comments

Ray Uses Only Words from the AWACS (Part Two Evaluation)

Two on Two, Full Video) · 88K views · 3.9K likes

M Magic_Fan

Ray complimenting with one word: “Good.” lol He held it in and it burst out anyway.

B BoraBora_No2

No. 2 here, the one whose shot at the trailer missed. The Instructor’s one line: “Turned the nose before Pitbull.” Guilty T_T

F Flare_Pattern

That bandit’s flare pattern... it’s exactly like the one at the PC café in Lesson 8? No way?

T

Twenty_Words

Bandit, Hot, Locked, Fox Three, Missile, Pitbull, Splash, Bingo. You really can do it all with twenty.

Part Two Evaluation at a Glance

- 1 Once the AWACS declares a bandit, you can engage even with no IFF response. Before the declaration, you don't shoot.
- 2 Engagement order: lock → DLZ → Fox Three → hold until Pit - bull → beam and chaff → remaining enemy up close (DGFT, Fox Two) → at Bingo, refuel.
- 3 Don't fire right away at an enemy who has popped flares — wait one beat. When the flares burn out, there's only one heat source again.

Phase 2 · Air-to-Air Complete

Part Three



Hunter of the Ground

Air-to-ground combat — bombs, guidance, suppressing air defenses

LESSON 12

The Art of the Dumb Bomb

CCIP Bombing

◆ 1. From Eagle to Hawk

“Starting today, air-to-ground training. Forget air combat for a while. From now on you are a hunter stalking targets on the ground.”

With Instructor SeaGAL’s declaration, the scenery on the screen changed. Under a clear sky without a single cloud lay a desolate desert training range.

“Today’s weapon is the Mk-82. A 500-pound (about 227 kg) general-purpose bomb.”

I checked under the wings: dull-looking dark-green lumps of iron hung in clusters. A dumb, heavy presence, nothing like the spear-sleek AMRAAM.

“This is called a ‘dumb bomb.’”

“Dumb? The F-16 is a supercomputer and its weapon is an idiot?”

“Because this bomb is a conventional weapon with no electronics. No guidance, so when you release it, it just falls. But don’t worry. The airplane is smart. Remember dialing numbers into the Lotfe bombsight in Book 2? This time the airplane does that dozens of times a second.”

◆ 2. The Clothesline of Death (CCIP)

“Master Arm ON. This time, select air-to-ground mode — A-G.”

When I pressed the switch, the HUD changed completely. The cluttered radar information disappeared, and a single vertical line appeared, stretching from the top of the display to the bottom. At the end of that line hung a small circle — the pipper. ▶^①

“What is this? It looks like a clothesline.”

“That is CCIP. The F-16’s computer calculates your current speed, altitude, and wind, and shows you in real time: ‘Drop the bomb now and it lands there.’”

“Wow... in Book 2’s prop planes I was solving math problems, and this one just hands me the answer?”

“Right. All you do is line the clothesline — the bomb fall line — up on the target, and press the button when the target comes into the pipper.”

◆ 3. Dive!

“Training begins! Target: the tank column ahead. Entry altitude 8,000 feet, dive angle 30 degrees.”

I could see model tanks huddled together in the middle of the desert. I aimed the bomb fall line (the clothesline) on the HUD toward the tanks.

“Begin dive!”

I dropped the nose 30 degrees and plunged toward the ground where the tanks sat. As the altitude fell, the airspeed numbers climbed fast. 400 knots, 450 knots... the ground rushed up at a terrifying rate. The tree from Book 2, Lesson 6, flashed through my

mind. This time, the break-away altitude was on the HUD as a number.

I moved the stick in tiny increments and put the vertical line dead center on the tanks. And the little circle at the end of the line crept slowly toward the target.

‘Just a little more... a little more...’

I held my breath and poured every nerve into the pipper.

◆ 4. Pickle!

At last the pipper wrapped perfectly around the tank.

“Now! Pickle!”

“Bombs away!”

I pressed the pickle button on the stick hard. ▶②

Thunk! Thunk!

A heavy jolt came through both wings. As the heavy lumps of iron fell away, the airplane suddenly felt lighter and seemed to leap upward.

“Break! Pull the stick!”

I immediately pulled the stick into my belly and climbed hard. For an instant, 4 G crushed me down into the seat.

“Nnnngh!”

Groaning, I turned my head to check on the tanks.

◆ 5. The End of the Iron Lumps

KA-BOOOM!!

A moment later, with a huge blast, a giant column of fire shot up from the middle of the desert. Dust rose like a mushroom cloud and swallowed the model tanks.

“Direct hit. Very accurate.”

Instructor SeaGAL’s satisfied voice.

“Wow... awesome! That melts the stress right off?”

If a missile is the satisfaction of ‘flying off and nailing it,’ a bomb is the satisfaction of ‘smashing it to bits.’ They call it a dumb bomb, but married to the F-16’s smart brain, it became a sniper as good as any smart bomb.

“That is the power of CCIP. Line up on the ground target, descend, and press the button when it enters the pipper. And the lesson from Book 2, Lesson 6, still holds here.”

“The ground is not a bed.”

“Right. You don’t shoot below the break-away altitude. Your flight record counts everything.”

◆ 6. Ending: The Stress-Relief Room

On the way back to the runway, I felt a swell of pride looking at my F-16’s suddenly empty wings.

“Everyone, if you’re stressed out... hmm, take it out on the model tanks in the desert. I’ll load up a full set of dumb bombs and fly you out there. Nowhere people live, though.”

I gave the camera a thumbs-up.

“And of course, clearing your throat and shouting ‘Bombs away!’ when you press the button is mandatory. Why? Um... it’s how you share your combat situation so your teammates know what’s going on.”

✈ Lesson 12 at a Glance

- 1 The Mk-82 (500 lb) is a dumb bomb with no guidance, but the airplane’s computer gives you the answer. Master Arm ON, air-to-ground (A-G) mode.
- 2 CCIP: the computer calculates speed, altitude, and wind and shows a bomb fall line (the clothesline) and a pipper. Line the fall line up on the target and pickle when the target enters the pipper. The call is “Bombs Away.”
- 3 This book’s training: entry at 8,000 feet, 30-degree dive, pull up and break away right after release (about 4 G). Don’t shoot below the break-away altitude.

▶ Videos · Lesson 12			short clips
No.	Scene · when to watch	Code	QR
①	Air-to-ground mode and the CCIP clothesline When you can't see the pipper	3-032	
②	Dive, pickle, break away When you don't know the release timing	3-033	
On a phone, tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

▶ Kaya’s channel · comments

The Dumb Bomb Got Smart (CCIP Bombing Bombs Away) · 41K views · 1.5K likes

B

Bomb_Rick
When I heard “bombs” I thought it was food, but it’s a release call? lol Cool.

B

Boomer

The impact feel is insane... so satisfying when the dust goes up.

S

Stress_Zero

Got chewed out by my manager today, leaving here with vicarious satisfaction. Long live the model tanks!

S

Smart_Plane

Hi, I'm the one who got yelled at — "CCIP does all the math, how do you still miss?"

S

Sniper

Book 2, Lesson 6 person here. "The ground is not a bed" shows up here too. Flying or stocks, same rule.

LESSON 13

Bombing by Faith and Hope

CCRP Bombing

◆ **1. The Target You Can't See**

"Today we use the Mk-84." Instructor SeaGAL's voice came through. "A 2,000-pound (about 900 kg) high-explosive bomb. And this time, it's not the dive attack from last time..."

"Then what? How do we smash things today?"

"Fly level, and hit a target you can't see. The bombing mode is CCRP — Continuously Computed Release Point."

“Now, there’s thick cloud over the target, so you can’t see it with the naked eye. And the enemy flak is too nasty to go down low.”

“If I can’t see it, how do I throw a bomb at it?”

“That’s where the electronics help you. You mark the ‘coordinates’ in advance. Give the F-16 the address — ‘deliver it here’ — and the computer calculates the rest.”

I worked the MFD, put the cursor on the target point on the map, and ‘designated’ it. A long vertical line appeared on the HUD. ▶^①

“That vertical line is the ASL — the Azimuth Steering Line. Like last time, all you do is line your airplane up on that line and fly straight.”

◆ 2. The Unbearable Wait

I held the jet level and entered the bomb run. Instead of charging at the ground like with CCIP, I flew calmly and level at high altitude, and it felt strange. The Lotfe bombsight from Book 2, Lesson 13, came to mind. Back then, too, the bombsight had led the airplane.

“Hold speed. Hold altitude. Don’t wobble left or right.”

Just then, a countdown timer appeared at the top of the HUD. Time remaining to the target.

“Ten seconds. From now on, hold the pickle button down.”

“What? It’s still far away? If I press it now, it drops!”

“CCRP is different. Pressing doesn’t release it right away. You’re just giving ‘consent’ ahead of time. Hold the button and wait, and the computer releases automatically at exactly the right moment.”

Half doubting, I pressed and held the pickle button. My finger tensed. The bombs hadn’t fallen yet.

◆ 3. Faith, Hope, and Love

5... 4... 3...

The airplane cut through the air and nothing happened. Was this really okay? I couldn't even see the target?

"Don't doubt. Hold the line!"

Then the release cue, a horizontal bar, began sliding slowly down from the top of the HUD. Like sand running through an hour - glass. ▶②

2... 1... 0.

Clack! Thunk — thunk!

I hadn't let go of anything, yet a heavy jolt ran through the air - frame. The giant Mk-84s hanging under the wings unlocked them - selves and dropped away into the void.

"Release!"

◆ 4. The Salute

"Bombs away! Now you may break off."

I rolled the jet left and craned my neck to look back. The path I'd flown — the middle of the desert, impossibly far below.

A moment later.

KA-KA-BOOM!!!

Nothing like the Mk-82. A flash lit up beneath the clouds, and with an enormous blast an immense pillar of dust rose into the sky. Dead on the target point. I hadn't aimed it, and I hadn't timed it. I had simply trusted the F-16 and flown straight.

"Wow... for real? The computer dropped them on its own?"

“This is modern warfare. You enter the coordinates you want, and CCRP does the release math.”

◆ 5. Ending: Releasing Hope

“Mission complete! First level bombing — a huge success!”

I flashed a V sign at the camera.

“Everyone, CCRP is ‘faith.’ You don’t shoot when you want to shoot. You hold on and wait until the most perfect moment comes.”

I wagged my empty wings and turned toward base.

“Let’s live our lives like CCRP. Mark your goal clearly, and one day, at the most perfect moment, bang! — it goes off. Don’t rush. Keep going!”

✈ Lesson 13 at a Glance

- 1 CCRP: bomb a target hidden by cloud by designating its coordinates. The Mk-84 is a 2,000-pound-class high-explosive bomb.
- 2 Line the airplane up on the azimuth steering line (ASL), fly level holding speed and altitude, and from about 10 seconds on the countdown, hold the pickle button down (consent to release).
- 3 The computer drops the bombs automatically at the most perfect moment. Don’t doubt — hold the line.

▶ Videos · Lesson 13			short clips
No.	Scene · when to watch	Code	QR
①	CCRP coordinates and the steering line When targeting something you can't see	3-034	
②	Consent to release — hold the button and wait When you press the button and nothing drops	3-035	

On a phone, tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

▶ Kaya's channel · comments

I Was Just Holding the Button (CCRP Level Bombing)

37K views · 1.4K likes

-
- K Keep_Going**
Whoa, what... "Mark your goal and one day it goes off." Leaving here moved T_T
- F Fireworks**
Watching the Mk-84 go off, it's like all my bad luck got blown away lol.
Impact: perfect!
- A Auto_Pilot**
If CCIP is 'hands-on satisfaction,' CCRP is 'brain satisfaction.' Smart.
- L Lotfe_Vet**
Exactly the same principle as syncing the Lotfe bombsight in Book 2, Lesson 13. Germany 80 years ago, a computer today.

LESSON 14

The Eye of God

Targeting Pod & GBU-12

◆ 1. A Black-and-White TV Screen

“In Season 2’s prop fighters you found ground targets with your own eyes, right? Modern air-to-ground bombing uses a ‘third eye’ more accurate than a pilot’s.”

Following Instructor SeaGAL’s instruction, I switched on the right display. Static crackled across it, and then a black-and-white picture appeared.

“This is that famous piece of electronics, the targeting pod — the TGP. It carries a high-performance infrared camera and a laser designator.”

I moved the throttle cursor and pointed the camera at the ground. When I pressed the zoom button, the landscape impossibly far below leapt up as if it were right in front of my nose. ▶①

“Whoa! Amazing! I can even see people walking around down there?”

From kilometers up, it was sharp enough that I could almost read license plates. It felt like being a god looking down on the human world. This was ‘the eye of God.’

◆ 2. The Surgical Scalpel, the GBU-12

“Today’s bomb is the GBU-12 Paveway. A laser-guided bomb.”

“Laser? Like in Star Wars, a weapon that shoots a laser beam and blows things up?”

“No. The laser is the guide. You shine a laser on the target with the targeting pod, and a sensor on the bomb follows that laser light. Guide it well to the end and you can put the bomb through a window.”

If last time’s dumb bomb was ‘throwing it at roughly the right moment,’ a guided bomb is ‘bombing that can thread a needle.’

“Wow...”

The exclamation slipped out on its own.

“Two things to check before release. The laser arm switch ON. And whether the bomb and the pod share the same laser code. If the codes differ, the bomb follows someone else’s laser.”

“Someone else’s laser?”

“Four aircraft in a flight, each shining a laser — what happens if the codes match? Check the video.” ▶②

◆ 3. Point Track

“Target confirmed. Target is the enemy command bunker.”

I put the crosshairs on the TV screen exactly on the bunker’s ventilation shaft. Then I pressed TMS Up (target designate) on the stick.

When I pressed the button, the crosshairs turned into a square box and the word ‘POINT’ appeared. The targeting pod clamped

onto the target, and no matter how I moved the airplane around, the camera stayed locked, staring only at that bunker. ▶③

“Lock complete.”

“Good. For the bombing, fly the line, just like CCRP.”

The countdown timer on the HUD ticked. I pressed and held the pickle button.

Clack!

“Release! Bomb is away!”

◆ 4. A Guide This Precise

In the CCRP training I'd dropped the bomb, said “Bye!” and broken off, but this time was different. The letter ‘L’ (laser) began blinking on the TV screen.

“From now until the bomb hits — about 30 seconds — you have to keep the targeting pod looking at the target. Even if you turn the jet, don't let the pod lose the bunker.”

“9... 8.... Not yet... a little more...”

The time it took the GBU-12 to fall felt like an eternity, and the bunker on the screen grew larger and larger.

◆ 5. Direct Hit!

In the black-and-white TV picture, I saw a small dot get sucked — whoop! — straight into the bunker.

“3 seconds... 2... 1...”

FLASH!

The screen blinked out. The infrared camera caught the heat of the explosion and blazed a blinding white. When the white glare cleared, where the bunker had been, only a black hole remained. It

had gone straight down the ventilation shaft and detonated inside the command post.

“A perfect hit.”

Instructor SeaGAL’s short exclamation. Not a scratch on the surrounding buildings — only the target, cleanly erased. Precision strike was art.

“Wow... I’ve got goosebumps. It really gets sucked right in.”

◆ 6. The Sniper’s Solitude

Mission complete, I broke off safely and switched off the targeting pod. It didn’t have the thrill of smashing everything to pieces, but there was a cold pleasure in the precision of a guided bomb.

“Everyone, did you see that? This is a sniper bomb. Like a sniper rifle, wherever you put the laser dot, it snipes with a massive bomb, with no error.”

I muttered at the empty TV screen.

“They say it’s used to take out critical facilities. The catch: while I’m guiding the bomb, I’m a sitting target myself. For both sides, it’s the most dangerous — and maybe the most horrible — moment.”

✈ Lesson 14 at a Glance

- 1 The targeting pod (TGP) is a ‘third eye’ with an infrared camera and a laser designator. Put the crosshairs on the target and press TMS Up for a POINT track.
- 2 The GBU-12 Paveway is a laser-guided bomb. Before release, laser arm ON and confirm the bomb and pod share the same laser code (video). The pod must keep looking at the target until the bomb hits, about 30 seconds.
- 3 It’s not over when you drop it — you guide it to the end. And during that time, you can be a target yourself.

▶ Videos · Lesson 14

short clips

No.	Scene · when to watch	Code	QR
①	Turning on the targeting pod and zooming When searching for a ground target	3-036	
②	Laser arm ON and checking the laser code When the bomb goes somewhere else	3-037	
③	Point track and 30 seconds of guidance When guiding the bomb all the way in	3-038	

On a phone, tap the **bold title**. If the QR won’t scan, enter the code at metapilots.kr/v.

▶ Kaya’s channel · comments

I Put a Bomb Down a Ventilation Shaft (Targeting Pod

GBU-12) · 46K views · 1.7K likes

B

Big_Brother

Wow... is that zoom for real? You could practically count pores. O_O

L

Laser_Man

Laser-guided! Reminds me of the laser pointers they sold at the corner shop when I was a kid lol. Except this one hits like a nuke.

C

Code_Check

I've seen a bomb follow the next flight's laser because the codes weren't set. Watch the video, seriously.

F

Focus

It's not over when you drop it — you guide it to the end and take responsibility. Kind of like life. Leaving with a lesson.

INTERMISSION

The Dragon's Jaw

The Dragon's Jaw

◆ 1. Too Many Weapons!

Resting in the Academy voice channel after training, I suddenly felt I'd come too far. In air-to-air: the Sidewinder, the medium-range AMRAAM, chaff, flares, beaming... and in air-to-ground: dumb bombs, laser-guided bombs, the targeting pod... My head was about to explode.

"Instructor, I have a question."

"What is it?"

"There are so many. And they're complicated. Why not just use one strong one? Why on earth are there this many kinds of weapons and equipment?"

At my blunt question, Instructor SeaGAL paused a moment before he spoke.

"Because every one of those 'kinds' is a history written in blood."

◆ 2. The Bridge That Would Not Fall

"This was during the Vietnam War. In northern Vietnam there was a bridge called the Thanh Hoa Bridge. Nickname: 'the Dragon's Jaw.' A critically important bridge that North Vietnam's supplies passed over."

Instructor SeaGAL's voice dropped low, as if remembering. "The American military pounded that bridge with bombs for years, trying to cut it. Hundreds of sorties, thousands of tons of dumb bombs."

"Wow... with that much, the bridge must have been pulverized?"

"No. The bridge was still standing. Dumb bombs aren't accurate. To hit it, you had to go in low, like the dive bombing you did — and around that bridge, the flak was as thick as a forest."

◆ 3. A Scratch Paid for with an Airplane

"Pilots punched through the flak, risked their lives going down to the deck, and dropped their bombs. But they usually missed, and even when they got lucky and hit, the bridge was so sturdy they couldn't break a single pier. The damage was repaired quickly and the bridge went back into use."

"So... what happened?"

"The bridge held, and the Americans lost dozens of airplanes over that one bridge. Pilots were killed or taken prisoner."

I was speechless. Dozens of airplanes lost trying to break one bridge.

"That was the limit of the 'dumb bomb.' There was no other way, and they paid the highest price."

◆ 4. The Miracle of a Single Day

"But in 1972, the Americans went in with a new weapon. An early model of the very laser-guided bomb we just trained with."

Instructor SeaGAL's voice gained strength.

“This time it wasn’t hundreds of aircraft — a handful of Phantom flights went out. From high altitude, beyond the reach of the flak, they shone a laser on the bridge and dropped guided bombs.”

I thought of the bomb being sucked into the black-and-white TV picture.

“What do you think happened?”

“Um... did it break?”

“The bombs hit the piers and the deck exactly. The ‘Dragon’s Jaw’ that hadn’t budged for years collapsed in a single attack. And that day, the Americans lost nothing.”

◆ 5. Technology Is Life

When the story ended, there was a moment of silence.

“Now do you see? Why they spend so much money to build smart bombs. And why you need a variety of weapons and equipment to fit the situation.”

“Yes... I see it clearly now.”

“Precision-guided weapons weren’t built simply for convenience. They were built to keep pilots alive. So you don’t have to go near the dangerous places — so you finish it in one go and go home.”

I looked again at the targeting pod and the guided bomb under my F-16’s wings. A moment ago they had looked like expensive items in a game. Now they looked different. They were a ‘dragon’s pearl,’ won through the sacrifice and research of countless pilots.

◆ 6. Ending: The Weight of a Button

“I see. From now on I’ll complain a little less and see it through to the end.”

“Good. That attitude is enough. A pilot who doesn’t know history is just a gamer.”

I fiddled with the targeting pod’s zoom button. The crosshairs on the black-and-white screen felt unusually heavy today. The same weight I’d felt opening the bomb bay in Book 2, Lesson 13. In this one button we press without a second thought lay a history that had been traded for dozens of airplanes.

✈ Intermission at a Glance

- 1 In the Vietnam War, the Thanh Hoa Bridge stood through hundreds of sorties and thousands of tons of dumb bombs, and the Americans lost dozens of aircraft.
- 2 In 1972, laser-guided bombs dropped from above the flak brought the bridge down, and that day the Americans lost nothing. (The exact sortie and loss counts vary by source. See the appendix’s note on sources.)
- 3 Precision-guided weapons were made to keep pilots alive. A pilot who doesn’t know history is just a gamer.

► Kaya’s channel · comments

Why So Many Weapons? (The Dragon’s Jaw)

The Story of the Thanh Hoa Bridge) · 63K views · 2.8K likes

H History_Buff

Wow... the Thanh Hoa Bridge story shows up here. As a military nerd, my chest swells.

M

Memorial

Years of failing, then done in a day... A new weapon is a blessing to your side and a curse to the other.

P

Phantom

Respect to the Phantom crews T_T Kaya, flying a simulator, is flying in a very good world.

P

Peace_Keeper

The Kaya who said “I’m scared” during the Book 2 bombing now says “the weight of a button”... that’s growth.

LESSON 15

The Tank Can Opener

AGM-65 Maverick

◆ **1. Catch the Moving Tank**

“Today’s target is a moving tank. So far you’ve destroyed fixed targets like buildings with bombs. But these guys don’t sit still — they move fast.”

The moment Instructor SeaGAL said it, the targeting pod screen showed tanks racing along, kicking up sandstorms.

“Instructor, those have to be doing over 60 km/h? Can I hit those with CCRP bombing too? They’ll move while the bomb is falling...”

“That’s why you use a missile instead of a bomb. It has rocket propulsion, so it’s very fast, and above all it has an eye — a camera — so it chases the target all the way.”

“An eye?”

“The weapon under the wing is the AGM-65 Maverick. Nickname: ‘tank killer.’ And this thing **needs the power on and a few minutes’ wait** before it opens its eye. Switch it on now.”

“Warm-up? For a missile?”

“The sensor has to be cold to see heat. The video explains it.” ▶①

◆ 2. The Maverick Camera Screen

A few minutes later, I switched the right display to the weapons page — WPN. A crackling black-and-white picture came up. Similar to the targeting pod screen, but with a much narrower view.

“This TV picture isn’t the targeting pod — it’s the Maverick missile’s own camera. The missile is asking you, ‘Is the target on this screen the right one?’”

“Wow... I’m sharing the missile’s point of view.”

“Right. This thing uses an optical (TV) sensor or an infrared (IR) sensor to look at contrast. It’s uncanny at finding the temperature difference between cold ground and a hot tank engine.”

◆ 3. Lock-on

I moved the throttle cursor and brought the crosshairs over a tank. I worked slowly and carefully to keep the moving tank inside the narrow picture.

“Good. Put the crosshairs near the tank and TMS Up — designate!”

When I pressed the button, the crosshairs shivered, then suddenly snapped onto the tank. As the tank moved forward, the crosshairs followed, stuck to it like a magnet. ▶②

“Got it!”

“All right, the Maverick has bitten the target. You’re in range. Shoot!”

◆ 4. Rifle!

Air-to-air missiles were ‘Fox 2!, 3!’ and bombs were ‘Bombs away,’ but an air-to-ground missile had a different call.

“Rifle!”

When I pressed the fire button, an enormous flame burst from under the left wing.

Shwaaaaang—!

It didn’t drop away like a bomb; it shot off like a bullet, trailing white smoke. The powered missile accelerated to near the speed of sound in an instant and flew at the tank.

◆ 5. Fire and Forget

“Now break off!”

“What? I can just leave? No guiding?”

“The Maverick is ‘fire and forget.’ The camera has already got the target, so whether you go home and cook ramen or go to sleep, it chases the target on its own.”

I rolled the jet into a hard turn and looked back. Far away, a white smoke trail was charging at the tank.

KA-BOOM!

The missile planted itself precisely in the top of the fleeing tank. The tank became a ball of fire and stopped where it was.

“Wow... this is so easy! With the laser bomb I couldn’t even breathe while guiding it, but this is shoot and scoot and done!”

“That is the power of a missile. Just remember, one of those costs a lifetime’s worth of ramen.”

“Where did you hear about the ramen?”

“...The comments.”

◆ 6. Ending: The Most Expensive Can Opener

On the way back from the mission, I looked at my empty wings in admiration.

“Everyone, satisfying, right? Even a tank that’s invincible on the ground is helpless. The Maverick chases it down and opens it like a can.”

But part of me felt a bitter note too.

“We take out the enemy with one button and have a blast, but I’m reminded again that in reality, that weight is never light.”

It was a simulated weapon, but the destructive power inside it made me think about the real thing.

“Anyway... today’s lesson! Expensive weapons earn their price. And switch them on early.”

✈ Lesson 15 at a Glance

- 1 For moving tanks, use the AGM-65 Maverick instead of a bomb. Switch the power on and wait a few minutes for the sensor to open its eye (video). The Maverick's own camera picture appears on the WPN page.
- 2 Put the crosshairs near the tank and press TMS Up, and it snaps onto the target and follows it. If you're in range, fire. The call is "Rifle."
- 3 Fire and forget: the camera already has the target, so shoot and break off right away.

▶ Videos · Lesson 15 short clips

No.	Scene · when to watch	Code	QR
①	Maverick power and warm-up When the WPN page is black	3-039	
②	Maverick lock-on and Rifle When locking a moving target	3-040	

On a phone, tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

▶ Kaya's channel · comments

Even Missiles Need a Warm-up (Maverick Rifle) · 39K views · 1.5K likes

C

Cowboy
Wondered why the call is "Rifle," and it's because it hits like a sniper rifle. Nice!

R Repair_Bill_Bot

[Automatic Estimate System] 1 Maverick = approx. 120,000 bowls of ramen. The Instructor quoted my data. An honor.

R Run_Run

Chasing down a fleeing tank and nailing it — chilling. No way you dodge that.

C Cold_Seeker

Hi, I'm the one who opened the WPN page without warming up and got a black screen. Wait a few minutes, folks.

LESSON 16

The Most Dangerous Mission

Wild Weasel & HARM

◆ 1. Wild Weasel

“Today we go hunting the ones who are trying to get us.”

Instructor SeaGAL's voice sounded distant in the headphones.

“Instructor... surviving in the supersonic world is really hard.”

I muttered it.

“It's almost over now. Stay focused a little longer. Naturally, the enemy has missiles on the ground meant to shoot us down too, right? Those are SAMs — surface-to-air missiles.”

“A SAM is the grim reaper for a pilot. Before you can enter enemy territory, the first thing you have to do is take down these air defenses. Simply put, you take out their eyes — the radar.”

“Gouge their eyes out?”

“Hmm... yes. This mission is called ‘Wild Weasel.’ Without radar, the enemy’s missiles are useless.”

I swallowed hard. Inside enemy territory, they said, there were enemy fighters, surface-to-air missiles, and flak. And I had to walk in there on my own two feet.

◆ 2. Be the Bait (YGBSM)

“Long ago, the first pilot given this mission said, ‘You gotta be shit-tin’ me!’ You want me to be missile food?”

“I think I’d have said the same...”

“Yes. Today’s training is simple. You fire a missile that follows the enemy’s radar emissions.”

AGM-88 HARM. The High-speed Anti-Radiation Missile. A terrifying thing that chases radio waves.

◆ 3. The Bone-Chilling Warning

The moment I entered enemy airspace, the cockpit got noisy.

Deet- deet- deet-

The RWR sounded intermittently. A sign that the enemy was detecting me.

“Get ready. The enemy is tracking you with a search radar. If they lock on, the sound will change.”

I opened the HARM page on the left MFD. A mode in which the missile itself listens for emissions. On the empty screen, a ‘6’ suddenly appeared. ▶①

“Found it! An SA-6 anti-aircraft missile radar!”

◆ 4. Magnum!

Wee-eeeng—! Wee-eeeng—!

Suddenly the RWR shrieked as if in a seizure. Not mere detection — the enemy had put me in its sights to fire an SA-6. A chill ran down my spine.

“Mud Spike! Ground threat has me targeted!”

I reported the combat situation in a rush.

“Get ready! The enemy radar is tracking you, so it’s time for you to fire the HARM. Now! Shoot!”

With a trembling hand I pressed the fire button.

“Magnum!”

My firing call echoed through my six-pyeong room. The HARM launched, spewing white smoke. It flew like an arrow, chasing the enemy radar’s emissions. ▶②

◆ 5. A Game of Chicken with Death

“Now, defensive maneuver!”

[Launch Alert] Beep- beep- beep-

At the same moment my HARM flew off, a blood-red column of fire rose from the enemy air defenses. An enemy surface-to-air missile. Would my missile arrive first, or theirs? A game of chicken with my life on the line.

“Aaaaah! Save me!”

I rolled the jet 90 degrees off and dove hard, popping chaff like mad. The beam maneuver from Lesson 10.

KWAAAANG!

A massive shockwave hit from behind. The enemy missile seemed to have gone off near my tail. The jet bucked, but thankfully I wasn't shot down.

That instant,

Ba-ba-bang!

Far away on the ground, another explosion went off. My HARM had rammed straight into the enemy radar antenna.

◆ 6. Ending: A Silent Sky

.....

The RWR, which had been screaming nonstop, cut off as if someone had flipped a switch. With the enemy radar destroyed, only a peaceful silence remained in the sky.

“Magnum impact. SA-6 radar silent.”

“Haah... I'm alive...”

I lifted my oxygen mask — no, my headphones — and gasped for breath.

“Good work, Kaya. Thanks to you, the friendly bombers coming in behind will carry out their mission safely.”

The mission of going into enemy territory first and taking out the most dangerous air defenses. My whole body was soaked with tension, but today the name ‘Wild Weasel’ felt like a medal.

“Wow... my heart can't take this, seriously. But... this mission? That close-call feeling is kind of addictive?”

“The first pilot given that mission said the same thing, later. It’s what you had the decoys do in the Book 2 Part One Evaluation. This time, you do it.”

“...Now I know how No. 3 felt.”

✈ Lesson 16 at a Glance

- 1 Wild Weasel: the mission of taking out the ‘eyes’ — the radar — of enemy surface-to-air missiles (SAMs).
- 2 The AGM-88 HARM is an anti-radiation missile that follows an enemy radar’s emissions. Check the threat (e.g., SA-6) on the HARM page. The call for being locked by a ground radar is “Mud Spike”; the firing call is “Magnum.”
- 3 After launch, straight into a defensive maneuver. Dive hard at 90 degrees off and pop chaff (beaming).

▶ Videos · Lesson 16

short clips

No.	Scene · when to watch	Code	QR
①	Finding threats on the HARM page When you don’t know which radar is looking at you	3-041	
②	Firing a Magnum and the defensive maneuver When you don’t know what to do after firing the HARM	3-042	

On a phone, tap the **bold title**. If the QR won’t scan, enter the code at metapilots.kr/v.

▶ Kaya’s channel · comments

You Want Me to Be Missile Food? (Wild Weasel

HARM · Magnum) · 48K views · 1.9K likes

W

Wild_Weasel

YGBSM! So that's where that comes from lol. A mission where you really put your life on the line.

M

Magnum

"Magnum!" — that firing call is pure swagger... like a gunslinger in a western.

R

Radar_Hunter

Using the enemy radar's own emissions to send them home... what a feast of weaponry.

B

BoraBora_No3

Decoy No. 3 from Book 2 here. Now you know, right? How long that one minute is.

FINAL EVALUATION

The Viper's Fang

Operation Viper's Fang

■ Final evaluation plan · Team strike tactics

Aircraft	F-16C × 4
Flight	Viper 1 Kaya (flight lead) · Vipers 2, 3, 4 Bora Bora classmates
SEAD/escort element (Nos. 1, 2)	AIM-120, AIM-9, AGM-88 HARM
Strike/bombing element (Nos. 3, 4)	AIM-120, GBU-12 × 4, targeting pod
Objective	Precision strike and destruction of the enemy's key command and control center
Threats	2 SA-6 surface-to-air missile batteries, 2 enemy interceptors (flown by instructors)
Support	AWACS 'Magic' — Tutor Ray
Time limit	10 minutes (before fuel runs out and enemy reinforcements arrive)

[Required] Target destroyed (50 pts)	Complete destruction of the command center with GBU-12s
[Required] Air defenses suppressed (30 pts)	Enemy radar silenced with HARMs
[Bonus] Survival (20 pts)	No friendly aircraft hit (–10 pts each)
Disqualification	Failure to destroy the target, or loss of the entire strike element (Nos. 3, 4) = mission failure
Scoring	Flight-record evaluation (individual) + instructor review (flight). ‘Role performance’ is weighted above individual kill count

◆ **1. Give It Everything**

“Training is over. Today is a live scenario.”

Instructor SeaGAL’s voice was more charged than I’d ever heard it.

“The evaluation mission: punch through enemy airspace (SEAD), shoot down enemy fighters (air-to-air), precision-strike a key ground facility, and come home alive. AWACS is Magic. Two instructors fly the enemy fighters. Who they are, you’ll find out afterward.”

“Two instructors...?”

“Launch. Good luck.”

I sat in the cockpit behind the steel door and checked the weapons on the four F-16s. AMRAAMs and Sidewinders on the

wingtips, HARMs and GBU-12 guided bombs under the wings, and a targeting pod and fuel tank on the belly. A 'fully loaded' heavy configuration, in every sense.

"Viper flight, cleared for takeoff! Afterburners on!"

Four F-16Cs kicked off the runway with a thunderous roar.

"Viper 1, airborne!"

"We go by the plan. Nos. 1 and 2: SEAD and escort. We go in front, soak it up, and remove the SAM radars and the enemy fighters."

"Nos. 3 and 4 are the strike element. You're carrying heavy bombs, so do not get drawn into a fight, no matter what. We open the road, you go in, hit it, and get out. Confirm laser codes."

"Viper 3, copy! Codes confirmed. We're trusting the flight lead!"

"Viper 4, copy. No parachute."

◆ 2. Opening the Gates of Hell

"Viper, Magic. **Mud Spike**, 12 o'clock!"

The moment we crossed the enemy line, the warning tones went wild. A surface-to-air missile radar had locked us up.

"Viper 1, 2! **Magnum!**"

No. 2 and I split the targets and fired our HARMs at the same time. The missiles streaked away trailing white smoke and destroyed the enemy's eyes — the radars.

"Magic, Viper. SAM **Silent**. 3, 4, go in!"

But it was one mountain after another.

"Viper, Magic. **Bandit**, 12 o'clock, 20 miles, two-ship. **Hot.**"

Enemy interceptors were closing fast, going for the strike element. Loaded with heavy bombs and fuel tanks, Nos. 3 and 4 couldn't maneuver quickly.

◆ 3. Make Them Shoot at Me

“Viper 1, this is 3! Bandits confirmed!”

No. 3’s urgent shout.

“3, one AMRAAM and break off. 1 and 2 engage. 2, drop your tanks and get in front of them. We make them waste their missiles on us.”

“...Flight Lead. In Book 2 I was on the intercept element. This time I’m bait?”

“That’s right. This time we’re the decoys. Just like No. 3 taught us.”

“Copy. I can hold out one minute.”

We held our distance right under the bandits’ noses and locked them up on radar. To deal with the bigger threat first, the bandits ignored Nos. 3 and 4 and poured missiles at us.

“Viper, Magic. **Missile!** 1, 2!”

“**Break!** Chaff, flares!”

The sky filled with missile smoke. A game of tag with death. Beam. Chaff. Beam. Chaff. The two bandits moved strangely. One was by the textbook; the other was very generous with its flares. Where had I seen that before?

◆ 4. A Split-Second Chance (Shack)

While No. 2 and I flew aerobatics to keep the bandits tied up, an empty corridor of sky opened.

“This is 3. Target confirmed. Going in!”

“Roger!”

The strike element reached the target area. Calmly, they lased the target and released their GBU-12s.

“Bombs away!”

Thirty seconds. Even as they turned their jets, Nos. 3 and 4 kept their pods tied to the bunker. A moment later, a giant flash lit up the ground. The enemy command center broke cleanly in two and collapsed.

“Viper, Magic. **Shack!** Target destroyed, confirmed!”

◆ 5. Everyone Comes Home (RTB)

“Mission complete! Everyone egress! Burners on and get out!”

Lightened by their bombs, Nos. 3 and 4 whipped their noses around like arrows. No. 2 and I flung our remaining AMRAAMs at the bandits to keep them busy, then broke hard and left the battle - field. The bandit who hadn't spared its flares rocked its wings. A farewell.

[MISSION SUCCESS]

The fuel warning lights were blinking, but all four of us were unharmed.

“Viper 1. All four accounted for. Magic, returning to base.”

“Magic, copy. And... I said words only, but today I'll allow myself one sentence. I'm glad all four of you came back.”

Across a sky at sunset, four F-16s flew wingtip to wingtip. The relief of having protected one another came through the radio.

◆ 6. Ending: We Are a ‘Package’

Gathered in the briefing room, the team traded kind words. No. 3 sent a heart emoji.

“Flight Lead, when those bandits locked us up, I honestly thought I was done. Thank you for drawing their fire. Now you know how I felt in Book 2, right?”

“Yes. I never knew a minute could be that long.”

I answered the camera with a smile.

“Modern warfare isn’t playing hero on your own. The supersonic world! It was a pleasure to fly with you all.”

[Evaluation result · Flight record (Viper 1): HARM hits 1/1 · Launches on unidentified targets 0 · Average beam angle 86° · G exceedances 1 · Returned at Bingo fuel · Individual 91 points]

[Evaluation result · Flight: Target destroyed 50 · Air defenses suppressed 30 · Survival 20 · Total 100 points · Pass]

Instructor SeaGAL’s one line.

“A flight leader is judged by her decisions, not her kills. The one minute you left the decoys alone for in Book 2 — this time, you held it yourself. Only someone who has switched roles understands a flight. Pass.”

“Instructor, that’s three lines this time...”

“Graduation day. I’ll let it slide.”

► **Kaya’s channel · comments**

This Time I Was the Bait (Final Evaluation)

Operation Viper’s Fang, Full Video) · 112K views · 5.1K likes



Iron_Shield

Wow... look at 1 and 2 soaking up every enemy missile. I’m seriously tearing up.

B Bomb_Truck

3 and 4 are amazing too. Missiles flying past and they keep their nerve and hold the laser for 30 seconds.

B BoraBora_No3

Book 2 decoy → Book 3 strike element. The flight lead paid back my one minute.

F Flare_Pattern

The bandit who's so generous with flares... that's the one from Lesson 8, right? I saw the wing rock.

T Teamwork

This is real modern air combat. Clear division of roles (SEAD/Strike). More like a movie than the movies.

Final Evaluation at a Glance

- 1 Nos. 1 and 2 (the SEAD/escort element) draw the air defenses and the enemy fighters to open the road for the strike element. Nos. 3 and 4 (the strike element) stay out of the fight, hit the target with GBU-12s, and get out. Laser codes are set before launch.
- 2 “Make them shoot at me”: the strike element lives only if the enemy wastes its missiles on the escorts. Move on the AWACS's words (Mud Spike, Magnum, Bandit, Missile, Break, Shack).
- 3 The evaluation weights role performance above individual kill count. Only someone who has switched roles understands a flight.

Phase 3 · Operation Viper's Fang Complete

EPILOGUE

Callsign

EPILOGUE · Callsign

◆ 1. Logging Off: From Virtual to Real

“Well done. There’s no debriefing now. Today, there is only celebration.”

Instructor SeaGAL’s last radio call ended, and I took off my headphones in the cockpit behind the steel door. Beads of sweat stood on my forehead. The room was silent, but the roar of the afterburner still rang in my ears.

I remembered the first time I sat in the Cessna 152 cockpit, lost, unable to even find the starter button. I’ll never forget that first wonder above the dazzling sea of Bora Bora. I ran the BF-109 off the runway and planted it in the dirt, and broke the landing gear twelve times trying to land. I came home on one engine in the He 111, my legs shaking.

But now, in the supersonic world, I could handle that supercomputer with wings, the F-16, like my own hands and feet.

◆ 2. Two Enemy Fighters

The steel door opened. Boss Tita stood there holding two cups of ramen.

“Good work. Ramen’s on me. I lost today.”

“...You lost? Lost what—”

“The bandit who was so generous with its flares. You didn’t see the wing rock?”

My mouth fell open. Enemy No. 1 in the Part Two Evaluation, the one who flew by the textbook, had been Instructor SeaGAL. And enemy No. 2, the one who hadn’t spared its flares.

“I used the exact same pattern that got you killed in Lesson 8, and this time you waited one beat. Tutor Ray said it back in Book 2: ‘Kaya uses what she learns the next day.’ He was right.”

“So when the Instructor said ‘think about it in the epilogue’—”

“Yep. That man puts everything in one line and never tells you.”

◆ 3. MetaPilot Certification

A new notification came up on the screen. The ‘Certificate of Achievement,’ sent by the instructor. I looked at the name field and stopped. There was a callsign written there.

CERTIFICATE OF ACHIEVEMENT

Certificate

Name **Kaya · Callsign Palette**

Course **MetaPilot Season 3 · High-
Performance Tactical Fighter Course
(F-16C)**

Grade **Level 3 · Wing Commander**

BASIC FLIGHT

**The Viper's
First Solo**

Passed the Part One
Evaluation
Startup · Navigation
· Landing

AIR COMBAT

Two on Two

Passed the Part Two
Evaluation
Radar · Missiles ·
Refueling

TEAM STRIKE

**The Viper's
Fang**

Passed the Final
Evaluation
SEAD · Guided
Bombing ·
Formation

Remarks **Realigned the INS after a sneeze ·
Survived 9 G · Flew decoy and brought
the whole flight home · Both bandits
were instructors**

This certifies that the above pilot has passed all three evaluations in the virtual sky and demonstrated outstanding airmanship and tactical leadership, and is hereby granted the title of 'MetaPilot' and the wings of a flight leader. — Chief Instructor SeaGAL · GGsF
MetaPilot Academy

[SeaGAL]: “Ray told me that in the Book 2 Part Three Evaluation you said, ‘I don’t have a callsign.’ A callsign isn’t something you make up. It’s something you’re given. I named you for what you drew in the sky. Palette. The day you drew a heart in smoke above the clouds — that’s when I decided.”

“Palette...”

I read it out loud. I remembered the hand that had set down its paintbrush in Book 1, the hand that had drawn Ray on a napkin in Book 2, the hand that had held the throttle like a brush in Book 3.

[Ray]: “Palette, Magic. Congratulations on the callsign. Now I can call you by it too. ...One more word. Good.”

This wasn’t simply clearing a game. It was ‘proof of myself’ — that I had learned to understand the complex systems of the past and the real world, and to judge coolly in urgent situations.

◆ 4. The Instructor’s One Line, and What’s Next

Instructor SeaGAL came into the voice channel. Rarely, it was neither the address tone nor the instructor tone.

“Palette. The flight-record evaluation looks at takeoff, landing, pattern work, maneuvers, and basic fighter maneuvers. Above that — formation air combat, ACM — the machine can’t see yet. So I flew. To watch your flight, the only way was for me to sit in an enemy jet.”

“You, yourself... so that’s the two instructors.”

“Tita called herself sloppy with her own mouth, so she’s sloppy. I’m not. And one more thing. A MetaPilot graduate becomes a tutor or an instructor. Ray did, and it’s your turn. Not right away. Right away...”

“Right away?”

“Hear it from Tita.”

Boss Tita peeled back the lid of her ramen and said:

“Pedals. What did I say at the end of Book 2?”

“...Or build your own. I’ve got the drawings.”

“Instructor SeaGAL opened a gear workshop at the Academy. I’m the instructor there. Aloof at the counter, warm in the workshop — that’s the deal. We start with the stick. Your pink stick — this time with your own hands.”

“...That’s Book 4.”

“It’s Book 4. And the sea?”

Instructor SeaGAL cut in.

“The sea is someday. A moving runway takes more than ten fingers. Build the fingers first.”

◆ 5. Last Salute

I tapped at the keyboard and left the last sentence in my training log.

“Flight simulation isn’t simply a game about flying an airplane. It’s a process of endless learning, challenge, and overcoming fear. My F-16 training is over, but the sky is still wide, and there are many shining wings.”

“To every wingman who has flown with me until now — a salute. Gal! (Salute)”

The channel had passed 10,000 subscribers. One of them was Mom, one was Magic, three were the Bora Bora classmates, one was TITAN_PCbang, and one... was ‘FM_Instructor,’ whose join date was the day of the Book 2 Part One Evaluation. For the first time, I

looked up that account's comments. There was only one. Under the Part One Evaluation video.

"A line and a half."

Season 3 · The Instructor — The End

► Kaya's channel · comments

I Got a Callsign — Palette (Season 3 Graduation)

138K views · 6.4K likes

- M
MetaPilot_Kaya
Pinned

Everyone, Season 3 is over. Started with a sneeze, ended as bait. The callsign is Palette. Next is Book 4: I build a stick with my own hands. The sea is someday. (Likes and subscribes are love)

1,200 likes · 210 replies
- F
Flight_Sim_Lover

Wow... it feels like yesterday she was circling Bora Bora in a Cessna and now she's an F-16 flight lead T_T Kaya's growth arc is insane... Going back for a rewatch from episode one.
- N
Newbie_Pilot

Watched this and bought starter gear myself. Why does that certificate screen make my heart pound like this?
- V
Viper_One

I gave up studying the F-16 manual, but thanks to this series I made it to the end. Memorized the twenty-word table.
- F
FM_Instructor

A line and a half.
- T
TITAN_PCbang

Workshop opens. You're allowed to lose a screw three times. —T

R

Ray [Official Tutor]

Palette. Good.

R

Repair_Bill_Bot

[Automatic Estimate System] Season 3 final tally: 1 bowl of ramen (Kaya → Tita), 2 bowls of ramen (Tita → Kaya). Net profit: 1 bowl. The first surplus in series history.

APPENDIX A

Weapons at a Glance

The weapons and firing calls learned in the F-16C course.

Weapon	Call	How to use
AIM-9 Sidewinder Short-range heat-seeking air-to-air missile	Fox Two	When the growl turns into a high tone (good tone), it's locked. It feeds on the enemy's engine heat and is fooled by flares.
AIM-120 AM - RAAM Medium-range air-to-air missile (own radar)	Fox Three	Check the DLZ and shoot cue, then fire. Keep illuminating the target with your radar until Pitbull (timer A→T).
M61 20mm cannon Gun	—	The last resort when the missiles miss or run out. Basic fighter maneuvers (BFM) are essential.
Mk-82 500-pound dumb bomb	Bombs Away	Dive, match the CCIP fall line and pip - per, release, and break away at once (about 4 G).
Mk-84 2,000-pound high-explosive bomb	Bombs Away	Designate coordinates with CCRP and consent to release. The computer drops it by itself.

Weapon	Call	How to use
GBU-12 Paveway Laser-guided bomb	Bombs Away (Pickle)	Laser arm ON, check the code. The pod's laser guides it. Don't lose the target until impact (about 30 seconds).
AGM-65 Maverick Air-to-ground missile (camera-guided, tank killer)	Rifle	Power on and warm up for a few minutes. Put the crosshairs on the WPN page and TMS Up. Fire and forget.
AGM-88 HARM High-speed anti-radiation missile	Magnum	Follows the enemy radar's emissions and takes out the SAM's eyes. Straight into a defensive maneuver after firing.
Flares / chaff Countermeasures (CMS on the stick)	—	Flares fool heat-seeking missiles; chaff fools radar-guided missiles.

APPENDIX B

F-16C Key Procedures

Only the sequences and numbers SeaGAL teaches in the story. These are simulation-training references, set for this book's training course and separate from the operating limits of real aircraft. Switch locations are in Appendix C; check the videos for the detailed moves.

Item	This book's training standard
Cold start	Main Power BATT→MAIN → JFS START 2 → throttle to IDLE at 20% RPM → avionics ON → INS ALIGN (not one millimeter of movement until it finishes) → NAV
Taxi & takeoff	NWS ON → NWS OFF once lined up on the run - way → brakes on, 90% → release and push past the detent (AB) → rotate at about 150 knots → gear up → AB OFF
9 G training	450 knots, max power, level turn. L-1 breathing. Release when tunnel vision sets in
Mach 1	Afterburner at 30,000 feet

Item	This book's training standard
Landing	Speed brake → gear down → FPM in the AOA bracket → doughnut (On Speed), about 150 knots → FPM on the runway threshold → IDLE and flare → aerobrake at 13° nose-up → nose - wheel below 100 knots → brakes
Radar lock	Throttle cursor → TMS Up on the stick (look) → IFF (hold TMS Left) → TMS Up (lock)
Sidewinder	Master Arm ON → DGFT on the throttle → good tone → Fox Two
AMRAAM	Lock → inside the DLZ, SHOOT → Fox Three → hold the nose until the timer goes A→T (Pitbull)
Missile evasion	Don't turn tail. Beam (missile at 3 or 9 o'clock, 90°) + chaff (CMS). Flares for heat-seekers
Aerial refueling	Request on the radio (Cleared) → open the re - fuel door → push through the wake to pre-contact → fine thrust by the director lights → freeze after contact → disconnect → close the refuel door
CCIP	Master Arm ON, A-G → entry at 8,000 feet, 30° dive → match the fall line and pipper → pickle → break away at once (4 G). Don't shoot below the break-away altitude
CCRP	Designate coordinates → line up on the ASL (steering line) → hold level → from 10 seconds out, hold the pickle button and wait

Item	This book's training standard
GBU-12	Laser arm ON, codes matched → TGP point track → CCRP release → hold the laser about 30 seconds
Maverick	Power ON and warm up → WPN page → cursor and TMS Up → In Range → Rifle → break away
HARM	Confirm the threat on the HARM page → call Mud Spike → Magnum → beam and chaff

APPENDIX C

HOTAS Switch Map

The F-16 is flown with the fingers. Five on the stick, five on the throttle. Memorize only which hand does what, and your fingers remember the rest. Button shapes differ from one set of gear to another, so assign these roles on your own stick (Prologue video).

Where	Switch	What it does
Stick	Trigger	Fires the cannon
Stick	Pickle button	Launches missiles and bombs, consent to release
Stick	TMS (Target Manage - ment)	Up: designate / lock a tar - get. Hold Left: IFF
Stick	CMS (Coun - termeasures)	Dispenses chaff and flares
Stick	NWS button	Nosewheel steering on / off (on the ground)
Throttle	DGFT switch	Instant switch to dogfight mode

Where	Switch	What it does
Throttle	Radar cursor	Moves the cursor on the radar and pod displays
Throttle	Speed brake	Open / close
Throttle	Comms switch	Radio (refueling request, AWACS)
Throttle	Refuel door switch	Opens and closes the air refueling door
Pedals	Rudder & brakes	Ground steering (with NWS); the tips of the pedals are the wheel brakes

APPENDIX D

Radio Brevity Table

The radio is words, not sentences. These are the words Ray used from the AWACS. With these twenty-odd, you'll understand most of the radio on a battlefield. The Academy subtitles do the rest.

Word	Meaning
Bandit	Confirmed enemy aircraft
Bogey	Unidentified aircraft
Hot	Approaching
Cold	Moving away
Locked	Locked on radar
Fox Two	Heat-seeking missile fired
Fox Three	Medium-range radar missile fired
Pitbull	Missile is tracking on its own
Splash	Kill confirmed
Missile	Enemy missile launched

Word	Meaning
Break (right/left)	Hard turn now (right/left)
Pop-up	A threat that appeared suddenly
Abort	Cancel the mission
Mud Spike	A ground radar is targeting me
Magnum	Anti-radiation missile fired
Silent	Enemy radar has gone quiet
Rifle	Air-to-ground missile fired
Bombs Away	Bombs released
Shack	Bombs on target
Bingo	Fuel state for return reached
Cleared	Approved (refueling, landing)
Knock it off	Stop the training / engagement
RTB	Return to base
Egress	Leave the battle area

APPENDIX E

Kaya's One-Line Lessons · Glossary

The lessons learned from each training session first, then the terms in alphabetical order.

Lesson learned	In one line	Source
Flow, not location	Don't memorize 300 buttons; understand the order: electricity → air → fire → brain. A sneeze counts as a millimeter.	Lesson 1
The F-16 is flown with the fingers	Five on the stick, five on the throttle. The left hand points, the right hand clicks.	Prologue · Lesson 6
Trust the soul of the airplane	The airplane goes where the FPM goes, not where the nose points. Inside a cloud, don't lower your head.	Lesson 4 · Part One Evaluation
No response is not an enemy	No IFF reply means 'unknown.' Don't shoot until it's confirmed.	Lesson 6

Lesson learned	In one line	Source
Fire, but don't forget	You illuminate the AMRAAM until Pitbull. A pilot pictures the fight until impact.	Les - son 9
Turn tail and you die	Keep the missile off your side (beam). Show the radar zero motion (notch).	Les - son 10
Like holding a brush	At the tanker, the throttle is fingertips only. After contact, freeze.	Les - son 11
Break right is a turn, not a brake	The radio is words, not sentences. Subtitles are training wheels; twenty words are wings.	In - ter - mis - sion
The ground is not a bed (jet edition)	Don't shoot below the break-away altitude. The flight record counts everything.	Les - son 12
Don't doubt — hold the line	CCRP is faith. The computer knows the most perfect moment.	Les - son 13
It's not over when you drop it	Laser guidance is your responsibility until impact. Match the codes.	Les - son 14
A pilot who doesn't know history is a gamer	Every weapon is a history written in blood. A button has weight.	In - ter - mis - sion
Only someone who has switched roles understands a flight	A flight leader who has lived the decoy's one minute understands the flight.	Final Eval - uation

◆ Glossary

Aerobraking

Running down the runway nose-high after touchdown, using the body's drag to slow down.

AOA (angle of attack)

The angle between the wing and the air. Put the FPM in the HUD's side - ways-'U' AOA bracket and the landing angle is right.

AWACS

An aircraft that watches the battlefield from above and feeds information to friendlies. Its callsign in this book is 'Magic.'

Beaming

An evasive maneuver flown at a right angle to a missile, with it at 3 or 9 o'clock.

BFM (basic fighter maneuvers)

The basic maneuvers for getting on an enemy's tail, or getting away, in a close fight.

BVR (beyond visual range)

Combat fought with missiles at distances too far to see.

CCIP

A bombing mode in which the computer shows, with a fall line and pip - per, where the bomb will land if released now.

CCRP

A bombing mode in which you fly straight toward entered coordinates and the computer releases automatically at the best moment.

CMS (countermeasures)

The stick switch that dispenses flares and chaff.

Detent

The 'click' you feel pushing the throttle forward. Past it is the afterburner.

DGFT (dogfight mode)

A single throttle switch that puts the aircraft straight into air-combat mode.

DLZ (dynamic launch zone)

A HUD scale that shows the range at which a missile can hit.

FBW (fly-by-wire)

A system in which a computer interprets your control inputs and moves the aircraft within safe limits.

FCR (fire control radar)

The 'third eye' that finds enemy aircraft and reports their altitude, speed, and more.

Flares / chaff

Flames that fool heat-seeking missiles / metal strips that fool radar-guided missiles.

FPM (flight path marker)

The HUD symbol showing where the aircraft is actually flying. 'The soul of the airplane.'

G-LOC

Losing consciousness under heavy G when the brain runs short of blood. Tunnel vision is the warning.

Good tone

The high-pitched sound the Sidewinder makes when it has bitten the target's heat.

HSD (horizontal situation display)

The minimap screen showing your position, route, friendlies, and enemies.

HUD (head-up display)

The green information display projected on the windscreen. Map and compass in one.

IFF (identification friend or foe)

A device that asks whether a radar target is friendly. No response means ‘unidentified.’

INS (inertial navigation system)

The system that computes the aircraft’s position and attitude. Don’t move during alignment.

JFS (jet fuel starter)

A small auxiliary engine that spins up first to turn the big engine.

L-1 breathing

A breathing technique for withstanding G: tighten the gut and breathe in short, chopped breaths.

Laser code

The number that makes a guided bomb and a pod follow the same laser.

Master Arm

The weapons safety. It must be ON to fire.

MFD (multifunction display)

The two square screens that show the radar, weapons, and pod pages.

Notching

Flying at a right angle to a missile’s radar so you look like ‘zero-motion’ background.

NWS (nosewheel steering)

Turns the nosewheel with the rudder pedals on the ground. Switched on and off with a stick button.

Overshoot

When the pursuer flies past the aircraft it was chasing, and the roles reverse.

Pitbull

The moment an AMRAAM switches on its own radar and starts chasing the target.

RWR (radar warning receiver)

The 'spider-sense' that tells you, by sound and number, that an enemy radar is looking at you.

SAM (surface-to-air missile)

An anti-aircraft missile fired from the ground. Its radar is its eyes.

SEAD (suppression of enemy air defenses)

The mission of taking out enemy SAM radars first. Wild Weasel.

Shoot cue

The HUD indication that it's okay to fire a missile.

Steerpoint

A point marked along the flight route. The diamond on the HUD.

TGP (targeting pod)

An electronic pod with an infrared camera and laser designator. The eye of God.

TMS (target management switch)

A stick switch. Up designates and locks; holding Left is IFF.

Tunnel vision

Vision narrowing from the edges under heavy G. The step before G-LOC.

Wild Weasel

The most dangerous mission: hunting enemy radars. YGBSM.

APPENDIX F

Academy Services

The actual names of the features the text calls ‘Academy subtitles’ and ‘flight-record evaluation.’ Screens, menus, and usage may change, so the book describes only the features; the guide is kept at metapilots.kr.

Wording in the text	Actual name · what it does
Academy subtitles (Intermission, “Is That Even English?”)	MULTILINGUAL MISSION BRIEFING TERMINAL — displays the briefings and radio calls of English missions as subtitles in plain language, in several languages. Subtitles are training wheels. Use them together with the brevity table in Appendix D.
Flight-record evaluation (Part One, Part Two, and Final Evaluations)	AI-CHECKVAL PRO SYSTEM — reads the flight-record data after a training session and scores takeoff, landing, pattern work, maneuvers, and basic fighter maneuvers (BFM) item by item. Formation air combat (ACM) evaluation is in preparation; until then, an instructor flies the enemy aircraft.
App guide	An aircraft’s numbers and flying principles are the same in any app, so the text uses no app names. The criteria for choosing an app and example apps are in Appendix D of Book 1, The Guide .

Wording in the text	Actual name · what it does
Historical sources	In the Thanh Hoa Bridge story of the Intermission “The Dragon’s Jaw,” the sortie and loss counts vary by source, so the text says “hundreds of sorties, dozens of aircraft.” A list of sources is kept at metapilots.kr .

APPENDIX G

Video Index

Every scene video in one place. Each video is a short, looping clip showing a single control move. On a phone, tap the title; if a QR won't scan, enter the code at **metapilots.kr/v**. Scenes not yet made show as “coming soon,” and the addresses never change — check back later.

Where	Scene	Code	QR
Prologue ①	The ten buttons on the stick and throttle — where your fingers live on the HOTAS When you don't know which finger goes on which switch	3-001	
Prologue ②	Mapping the F-16C stick, throttle, and pedal keys When you press a button and nothing happens	3-002	
Lesson 1 ①	The cold-start flow — Main Power, JFS, IDLE When the startup order is confusing	3-003	

Where	Scene	Code	QR
Lesson 1 ②	Avionics power and INS alignment When the HUD won't come on or the nav points at a mountain	3-004	
Lesson 2 ①	NWS taxiing and toe brakes When you can't steer on the ground	3-005	
Lesson 2 ②	Afterburner takeoff — 90%, brakes, detent When you don't know when to pull on takeoff	3-006	
Lesson 3 ①	Feeling fly-by-wire — full back stick at low speed When stalling scares you	3-007	
Lesson 3 ②	The 9 G turn and L-1 breathing When the screen goes dark	3-008	
Lesson 3 ③	Breaking Mach 1 When you're curious about supersonic flight	3-009	
Lesson 4 ①	Following the steer - point diamond When you don't know where to go	3-010	

Where	Scene	Code	QR
Lesson 4 ②	The FPM and the gun cross — the soul of the airplane When the nose and your actual path disagree	3-011	
Lesson 5 ①	Speed brake and gear down When the speed won't come off	3-012	
Lesson 5 ②	Putting the FPM in the AOA bracket — the doughnut When you don't know the landing angle	3-013	
Lesson 5 ③	Aerobraking — nose at 13 degrees When you don't know when to lower the nosewheel after landing	3-014	
Part One Evaluation ①	How to read the flight-record report When you want to know why your score is what it is	3-015	
Lesson 6 ①	Radar cursor (throttle) and TMS Up (stick) When you can't designate a radar contact	3-016	

Where	Scene	Code	QR
Lesson 6 ②	Reading the RWR — numbers and directions When you don't know what the warning tone means	3-017	
Lesson 6 ③	IFF — hold TMS Left When you don't know if it's a friendly	3-018	
Lesson 7 ①	Master Arm and DGFT on the throttle When you can't switch to dogfight mode	3-019	
Lesson 7 ②	Sidewinder good tone and Fox Two When you don't know when the missile has locked	3-020	
Lesson 8 ①	Flares — dropping them with the CMS When a heat-seeker is coming at you	3-021	
Lesson 8 ②	Forcing an overshoot with the speed brake When someone is on your tail	3-022	
Lesson 9 ①	AMRAAM lock — TMS Up twice and IFF When locking a medium-range target	3-023	

Where	Scene	Code	QR
Lesson 9 ②	Reading the DLZ and the shoot cue When you don't know when to fire	3-024	
Lesson 9 ③	Holding until Pitbull — from A to T When you don't know how soon you can turn after firing	3-025	
Lesson 10 ①	Hearing the RWR missile warning When the tone turns into a siren	3-026	
Lesson 10 ②	The beam maneuver — missile at 9 o'clock When a missile is in - bound	3-027	
Lesson 10 ③	Chaff — CMS When spoofing a radar-guided missile	3-028	
Lesson 11 ①	The refueling request and opening the re - fuel door When you don't know what to do behind the tanker	3-029	
Lesson 11 ②	Making contact by the director lights When the jet keeps bouncing	3-030	

Where	Scene	Code	QR
Intermission ①	Turning on Academy subtitles and the twenty radio words When you can't follow the radio	3-031	
Lesson 12 ①	Air-to-ground mode and the CCIP clothesline When you can't see the pipper	3-032	
Lesson 12 ②	Dive, pickle, break away When you don't know the release timing	3-033	
Lesson 13 ①	CCRP coordinates and the steering line When targeting some - thing you can't see	3-034	
Lesson 13 ②	Consent to release — hold the button and wait When you press the button and nothing drops	3-035	
Lesson 14 ①	Turning on the targeting pod and zooming When searching for a ground target	3-036	

Where	Scene	Code	QR
Lesson 14 ②	Laser arm ON and checking the laser code When the bomb goes somewhere else	3-037	
Lesson 14 ③	Point track and 30 seconds of guidance When guiding the bomb all the way in	3-038	
Lesson 15 ①	Maverick power and warm-up When the WPN page is black	3-039	
Lesson 15 ②	Maverick lock-on and Rifle When locking a moving target	3-040	
Lesson 16 ①	Finding threats on the HARM page When you don't know which radar is looking at you	3-041	
Lesson 16 ②	Firing a Magnum and the defensive man - euver When you don't know what to do after firing the HARM	3-042	

NEXT · BOOK 4

MetaPilot 4: The Flight Gear Manual

A Stick Built with Your Own Hands

The pink stick — this time, with your own hands.
Tita is waiting in the Academy gear workshop.

GGsF stick · rudder pedals · expansion board

A build video for every STEP

And the sea, someday.
Build the fingers first.



“Flying is not instinct. It is science.”

The age of propeller noise and the smell of oil is over.
Now the sky is ruled by systems.

300 buttons, 9 G, Mach 1.0, radar and missiles,
twenty words from the AWACS — and a callsign.
The training log of how Kaya came to handle the F-16C,
a supercomputer with wings, like her own hands and feet.

Read it like a story. Follow it like a manual.

F-16C startup, takeoff, and landing

Air-to-air and air-to-ground weapons

The team strike evaluation