Annotated Runup

Made by Michael Tet

Free to use in educational setting

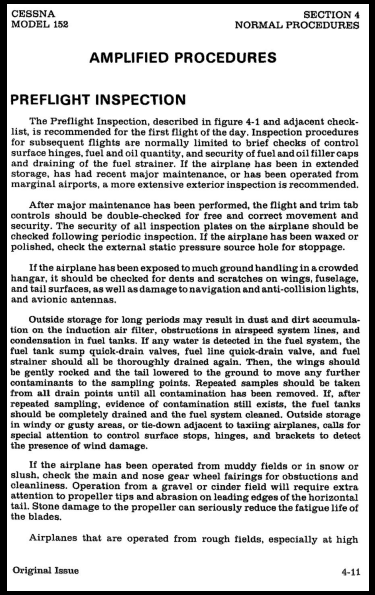
It goes without saying, this is not a replacement for a checklist. This is meant to assist in understanding the theory and application *of your* checklist.

I **strongly recommend** you first read your POHs' Amplified Normal Procedures (found in section 4) *before* reading this guide.

Once complete, then come back to this guide!

Amplified procedures describes *your* airplanes specific procedures. In old cessna POHs' the "runup" is discribed in the "before takeoff" part.

C152 pg. 4-14 | C172p pg. 4-13 | C172s pg. 4-23



CESSNA
MODEL 152

SECTION 4
NORMAL PROCEDURES

AMPLIFIED PROCEDURES

PREFLIGHT INSPECTION

The Preflight Inspection, described in figure 4-1 and adjacent checklist, is recommended for the first flight of the day. Inspection procedures for subsequent flights are normally limited to brief checks of control surface hinges, fuel and oil quantity, and security of fuel and oil filler caps and draining of the fuel strainer. If the airplane has been in extended storage, has had recent major maintenance, or has been operated from marginal airports, a more extensive exterior inspection is recommended.

After major maintenance has been performed, the flight and trim tab controls should be double-checked for free and correct movement and security. The security of all inspection plates on the airplane should be checked following periodic inspection. If the airplane has been waxed or polished, check the external static pressure source hole for stoppage.

If the airplane has been exposed to much ground handling in a crowded hangar, it should be checked for dents and scratches on wings, fuselage, and tail surfaces, as well as damage to navigation and anti-collision lights, and avionic antennas.

Outside storage for long periods may result in dust and dirt accumulation on the induction air filter, obstructions in airspeed system lines, and condensation in fuel tanks. If any water is detected in the fuel system, the fuel tank sump quick-drain valves, fuel line quick-drain valve, and fuel strainer should all be thoroughly drained again. Then, the wings should be gently rocked and the tail lowered to the ground to move any further contaminants to the sampling points. Repeated samples should be taken from all drain points until all contamination has been removed. If, after repeated sampling, evidence of contamination still exists, the fuel tanks should be completely drained and the fuel system cleaned. Outside storage in windy or gusty areas, or tie-down adjacent to taxiing airplanes, calls for special attention to control surface stops, hinges, and brackets to detect the presence of wind damage.

If the airplane has been operated from muddy fields or in snow or slush, check the main and nose gear wheel fairings for obstuctions and cleanliness. Operation from a gravel or cinder field will require extra attention to propeller tips and abrasion on leading edges of the horizontal tail. Stone damage to the propeller can seriously reduce the fatigue life of the blades.

Airplanes that are operated from rough fields, especially at high

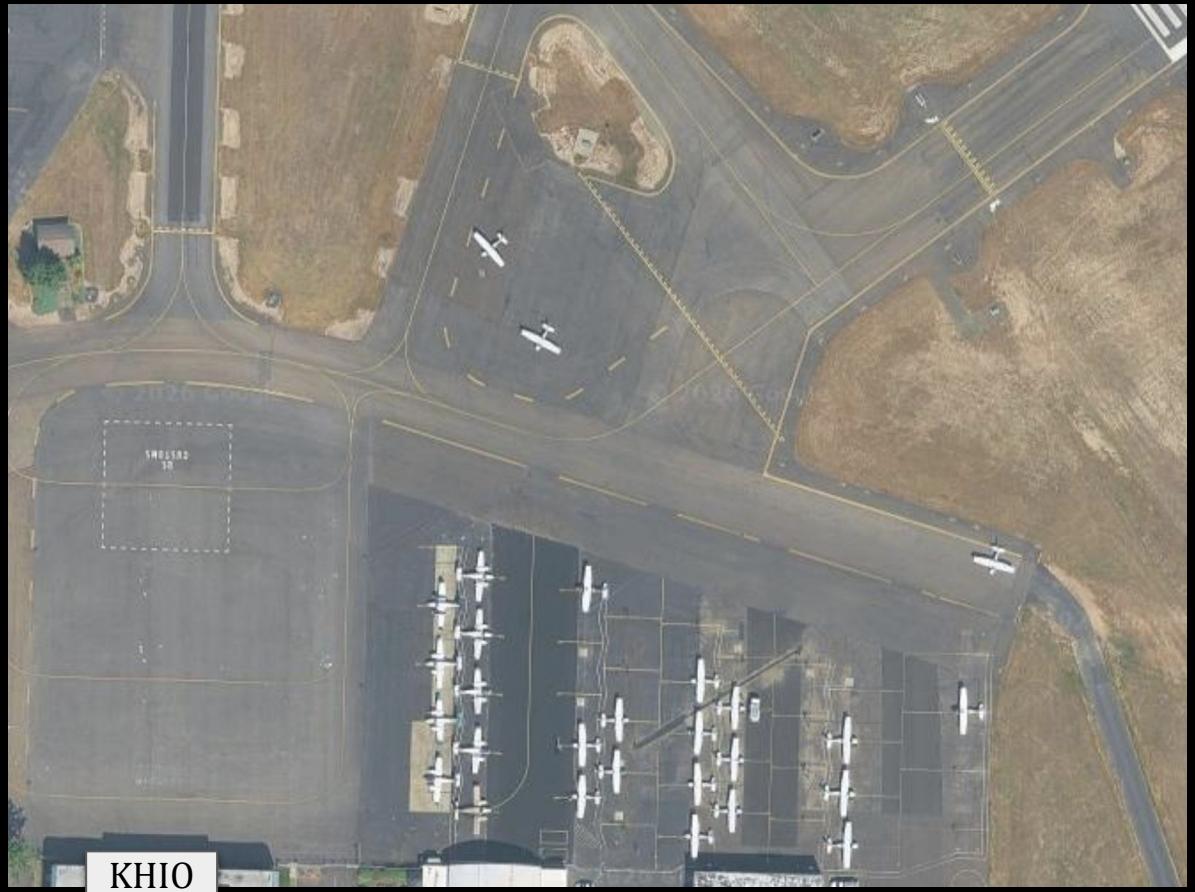
Original Issue

4-11

Lesson Flow

- Selecting runup area -> where do I go?
- Line-by-line breakdown:
  - Flight controls
  - Flight instruments
  - Radios & Avionics *(VFR flight)*
  - Mixture setting
  - Carb Ht. check
  - Magneto check
  - Ammeter
  - Engine instruments

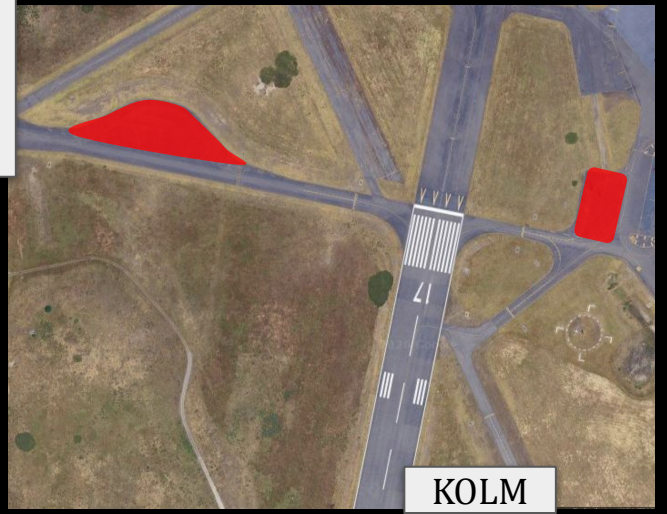
Finding Runup Areas



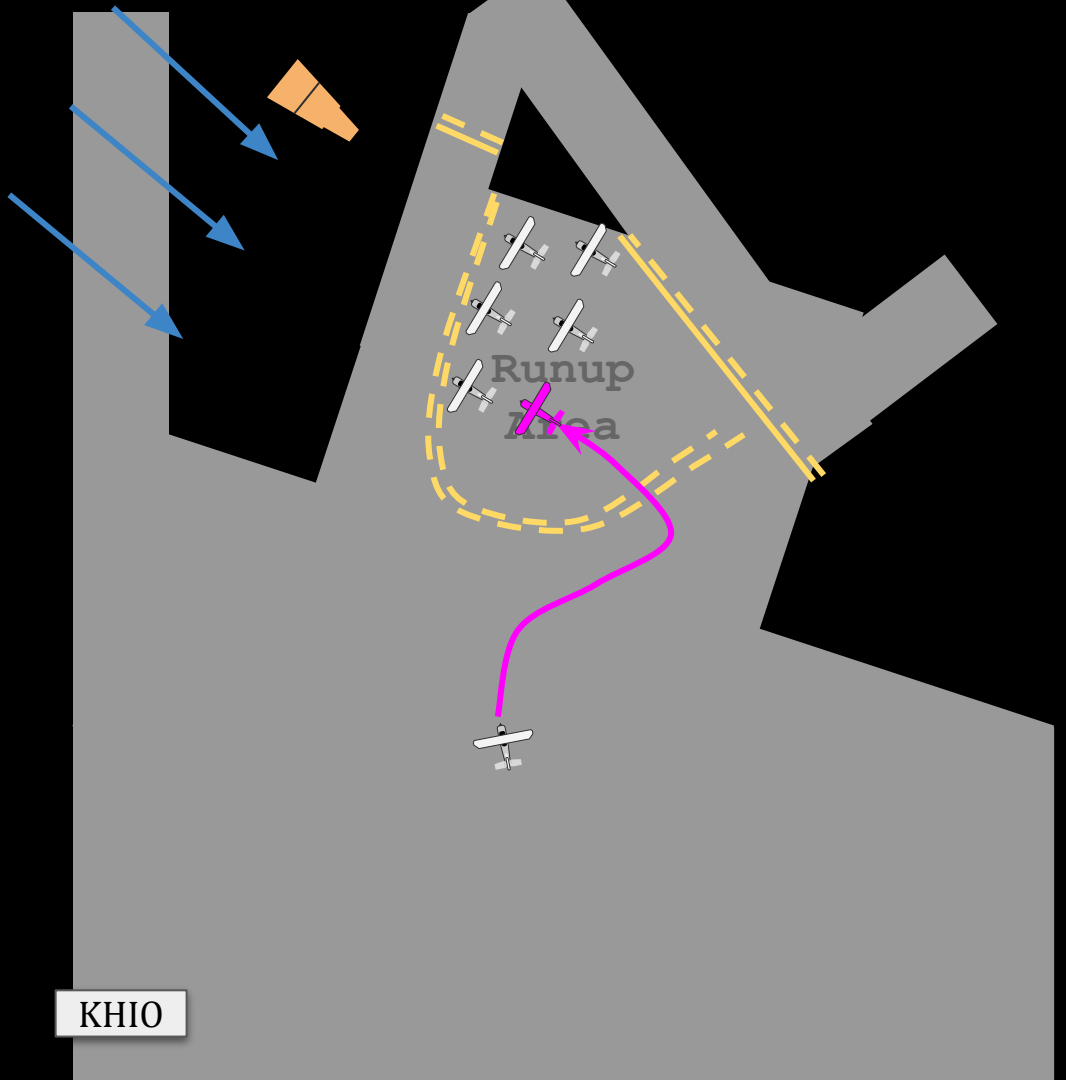
Finding Runup Areas

When unsure:

1. Ask other pilots before departure
2. ask ground controller
   (progressive taxi?)

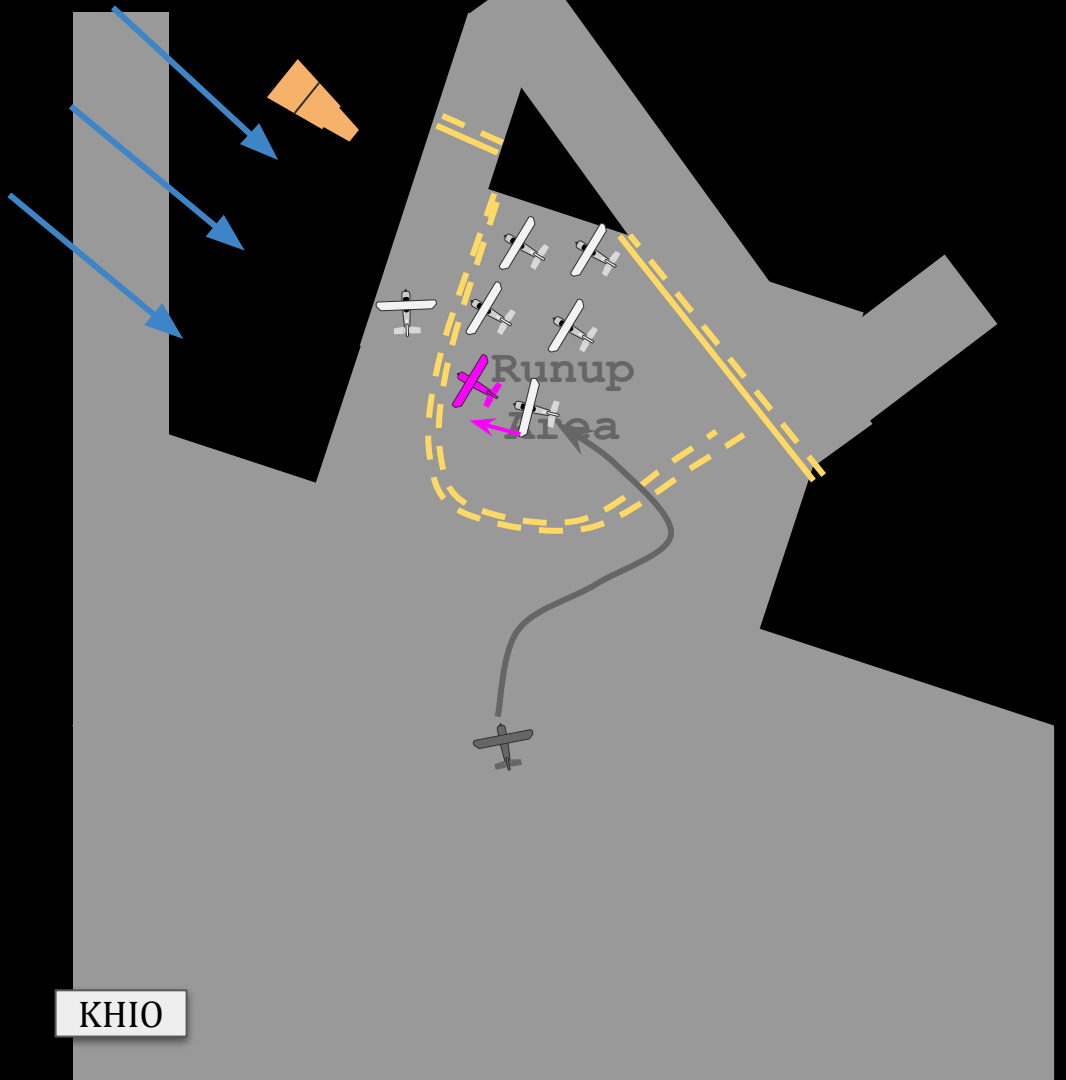


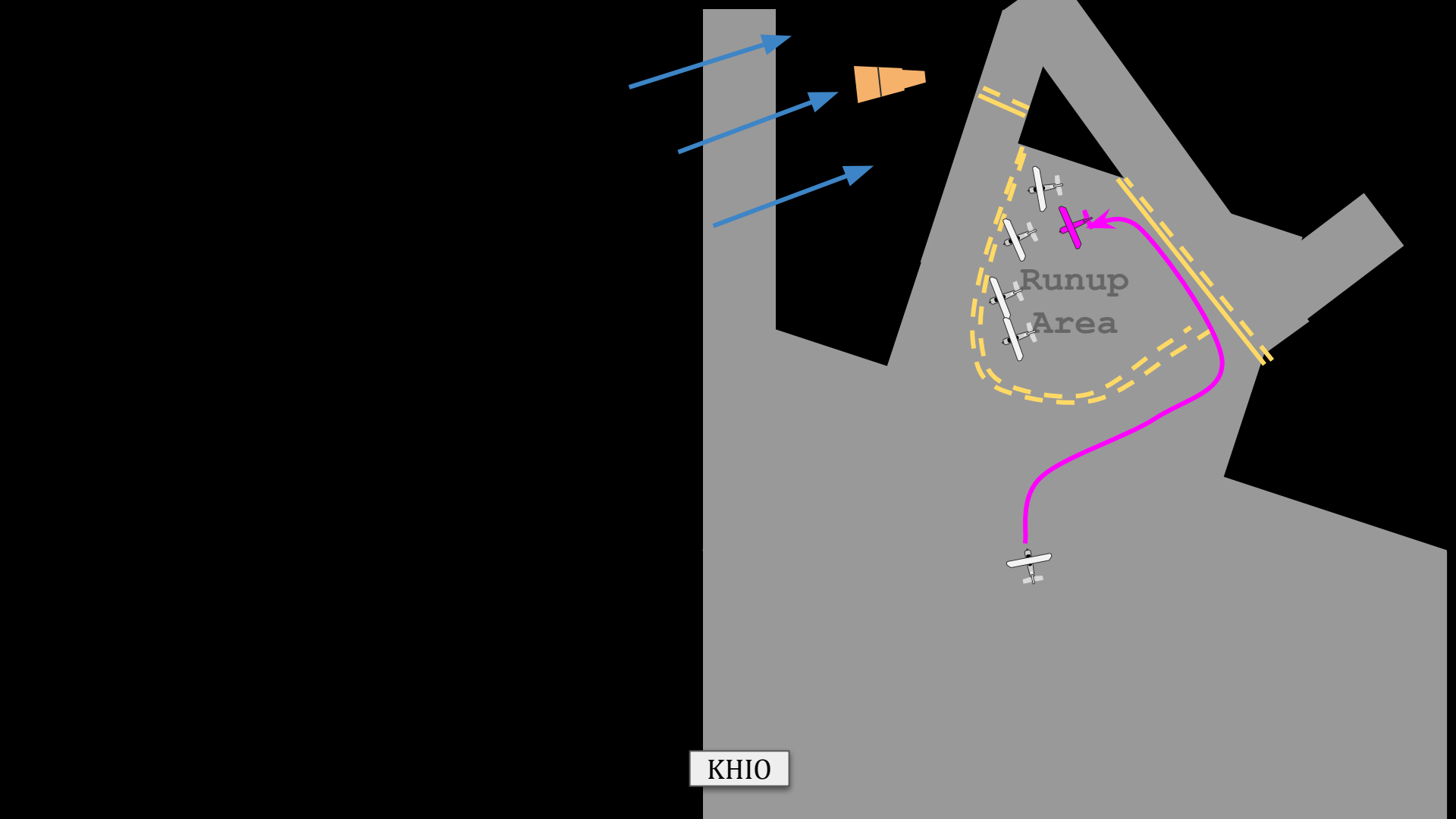
Perform runup *into* the wind for best engine cooling

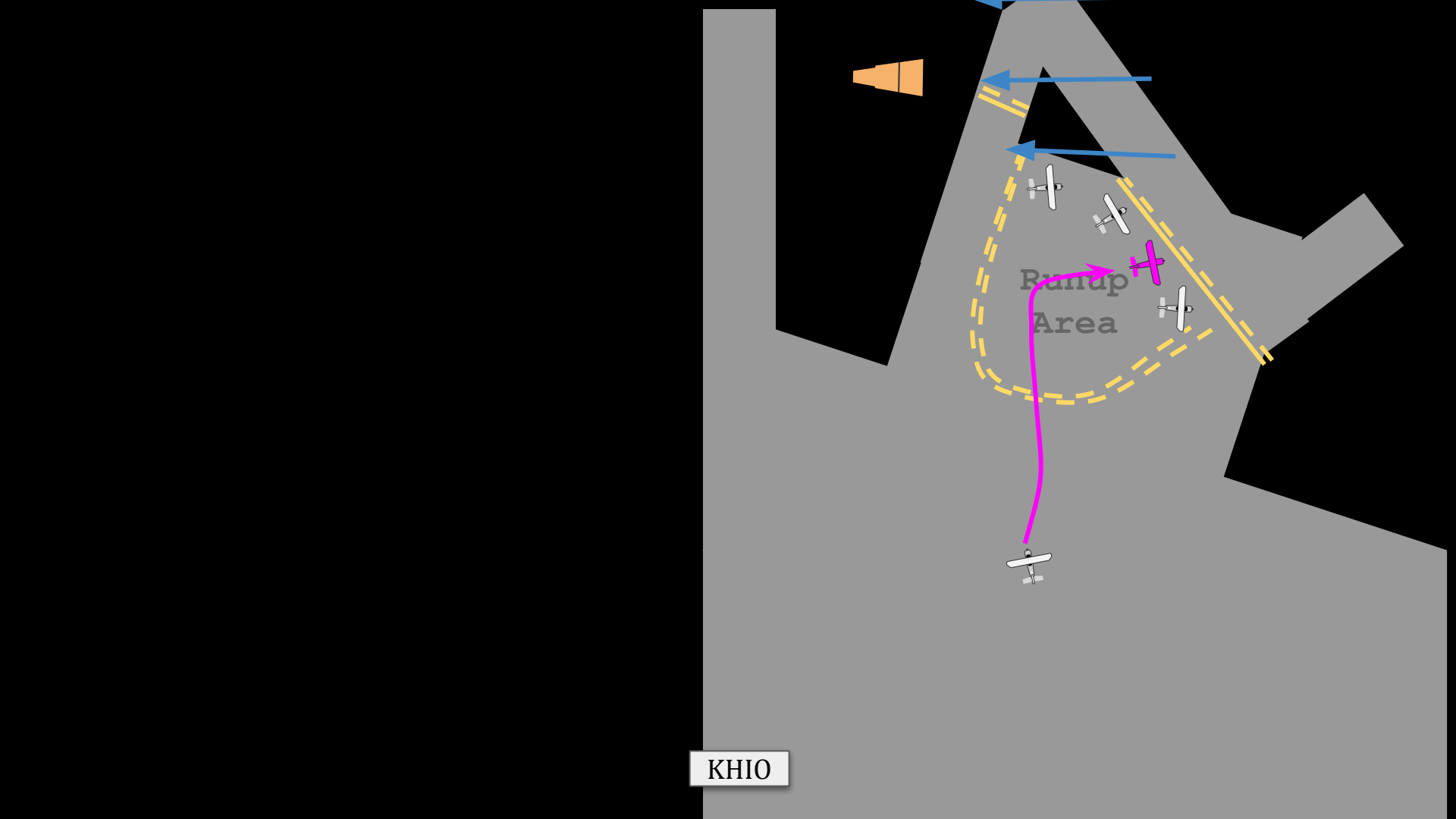


Perform runup *into* the wind for best engine cooling

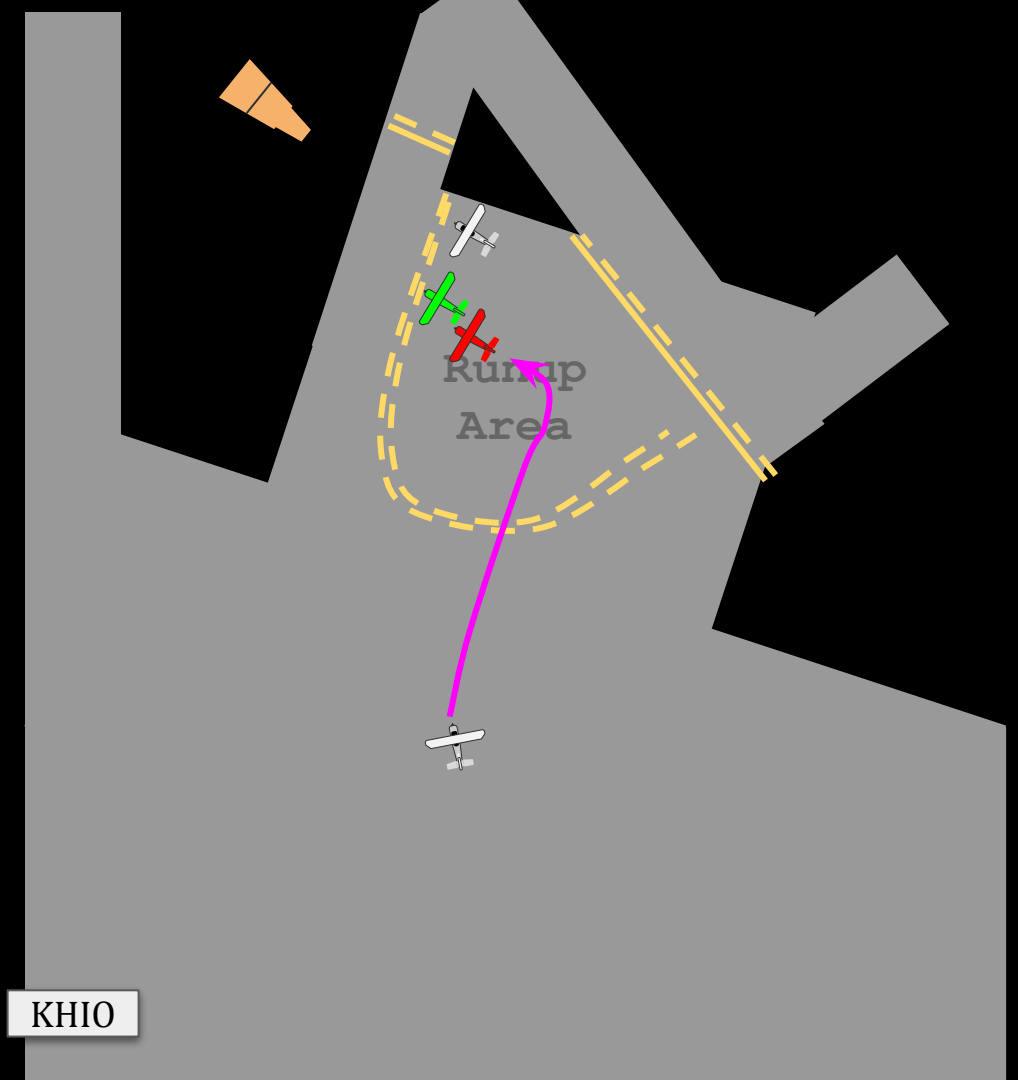
Pull forward when the aircraft in-front of you leaves (make room for more behind you)

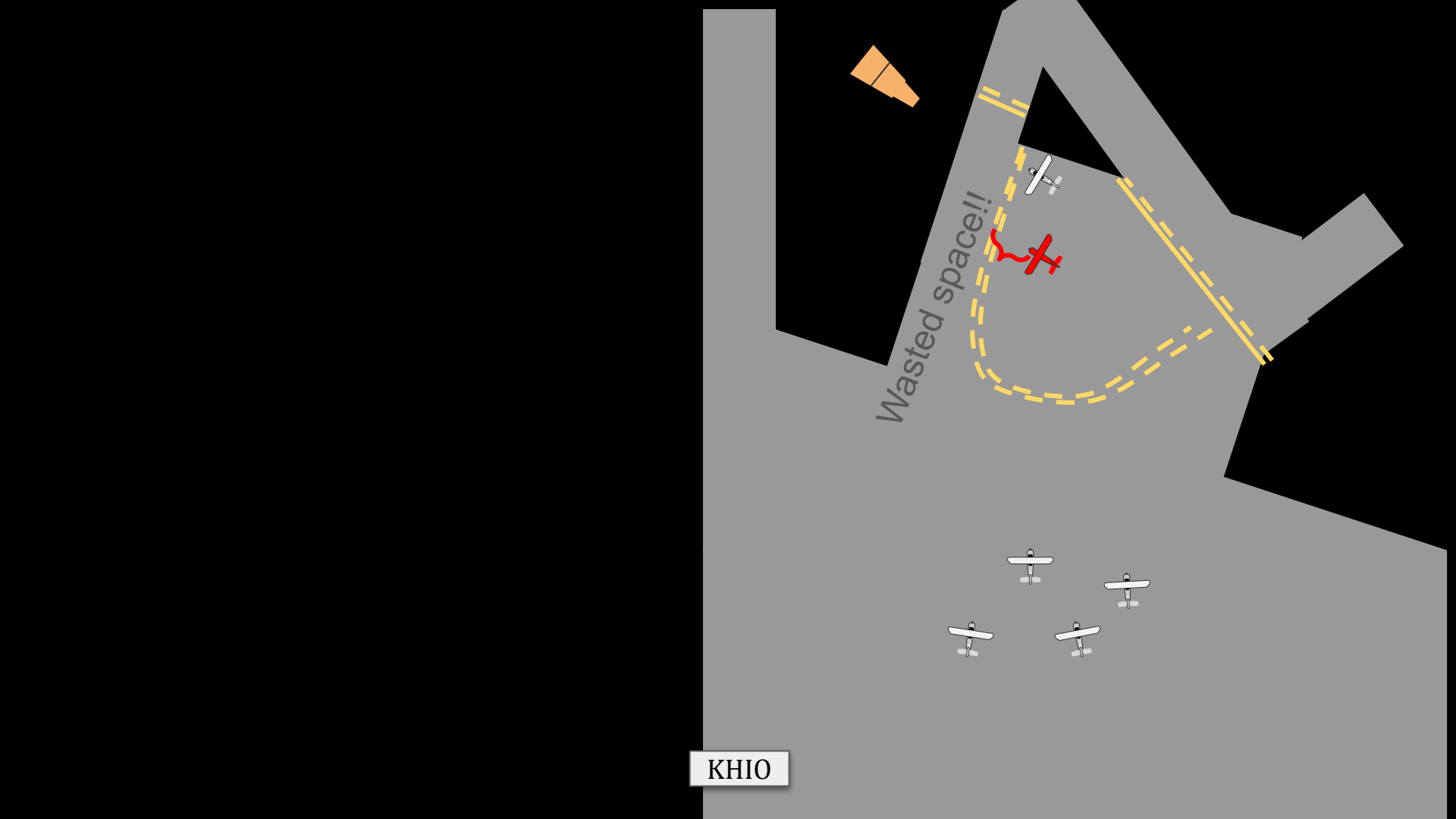


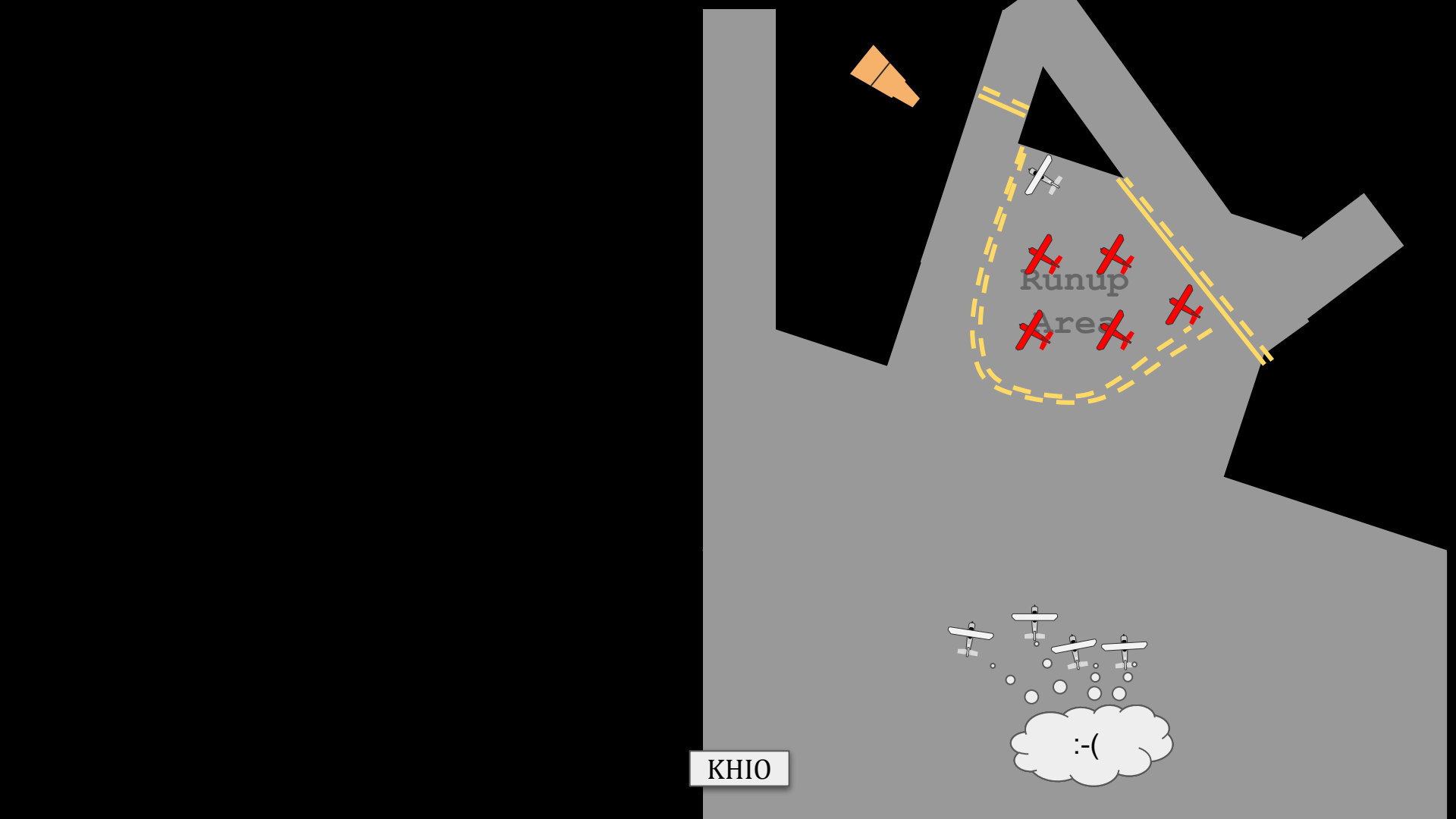

Runup
Area
KHIO

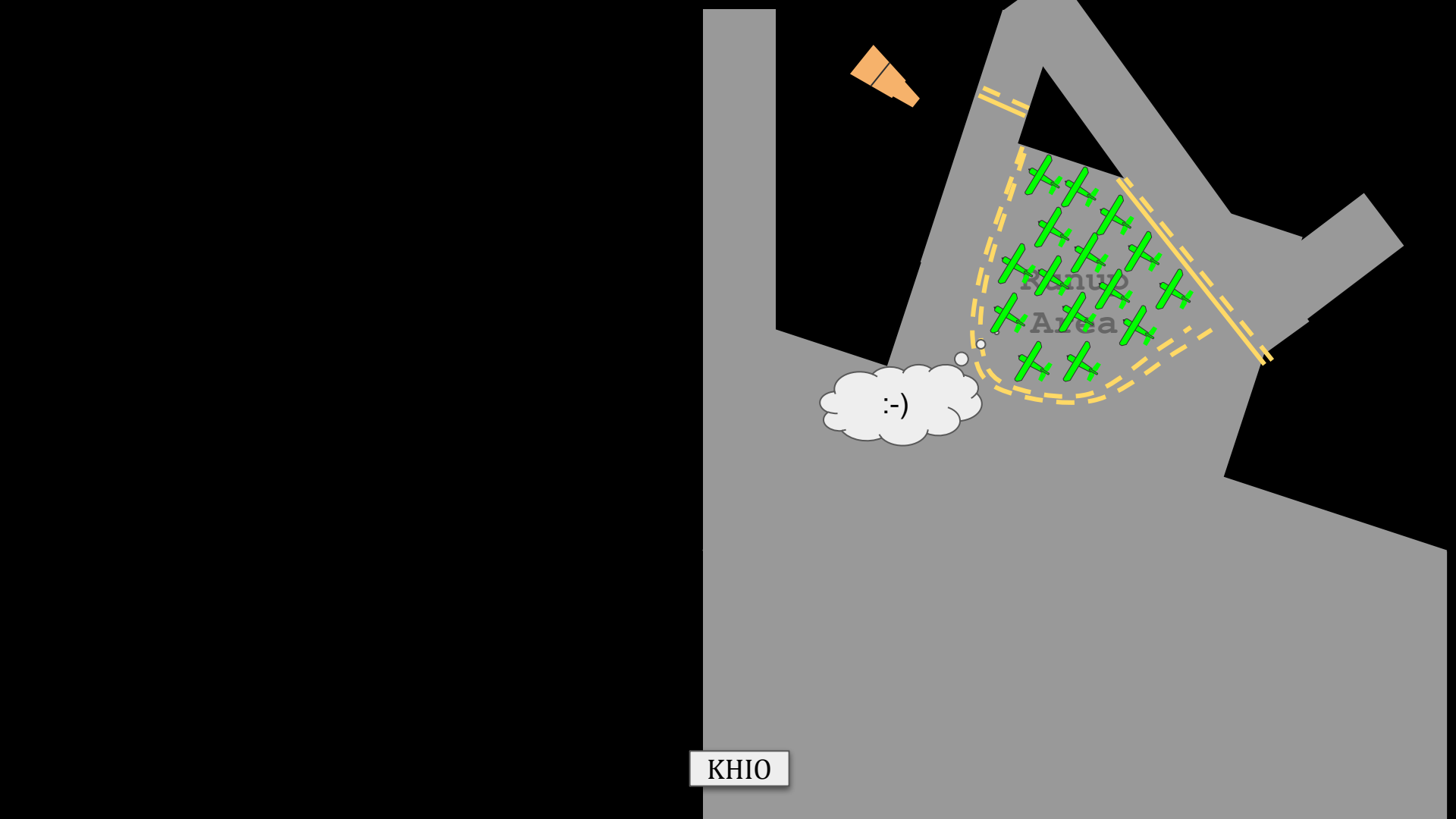

Runup
Area
KHIO

Avoid wasting space. Especially at busy airports, make room for more people behind you!

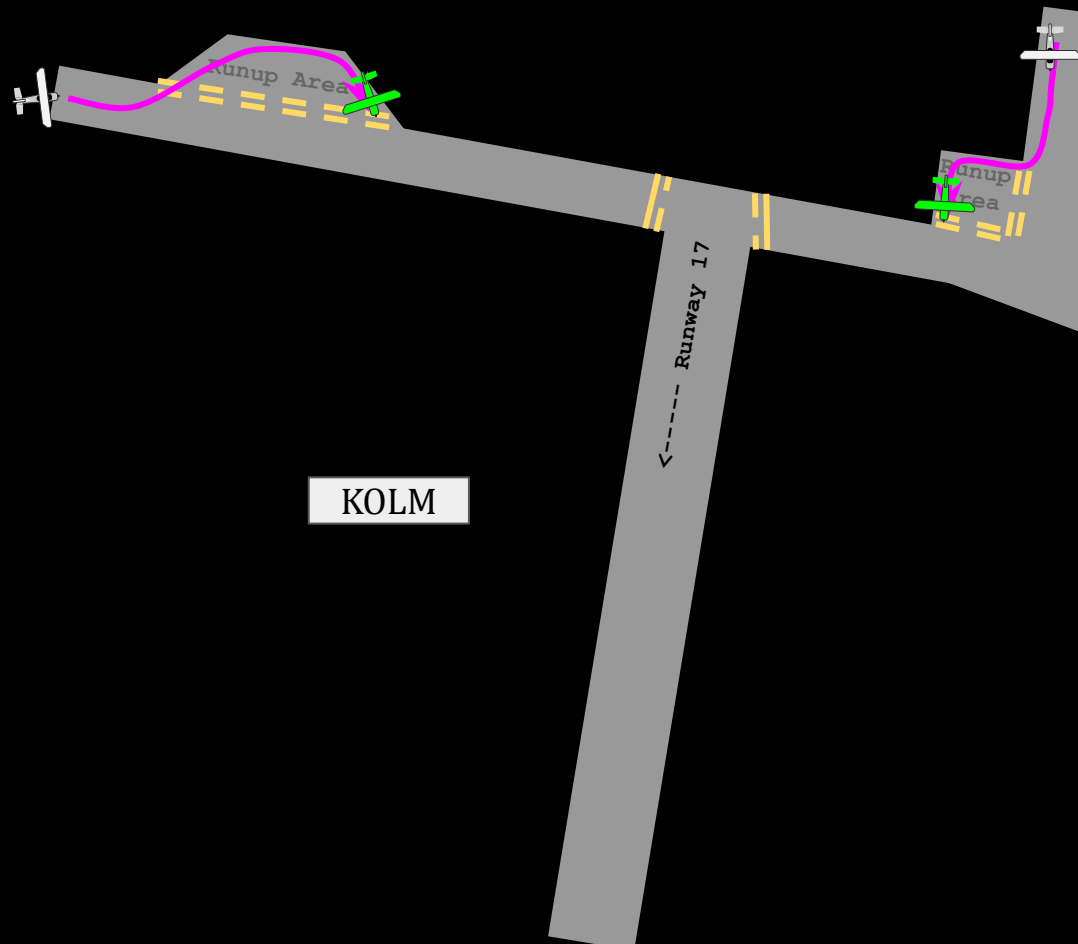



Wasted space!!
KHIO


Runup
Area
:-(
KHIO


Runup
Area
:-)
KHIO

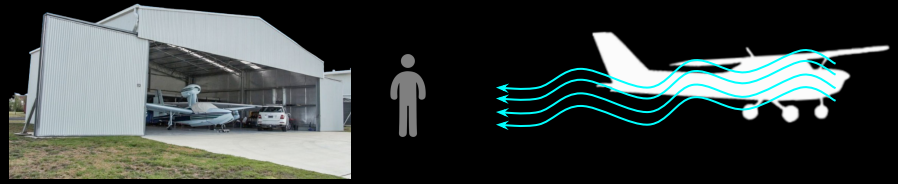
Example of KOLM. Some different-looking runup areas



Finding Runup Areas

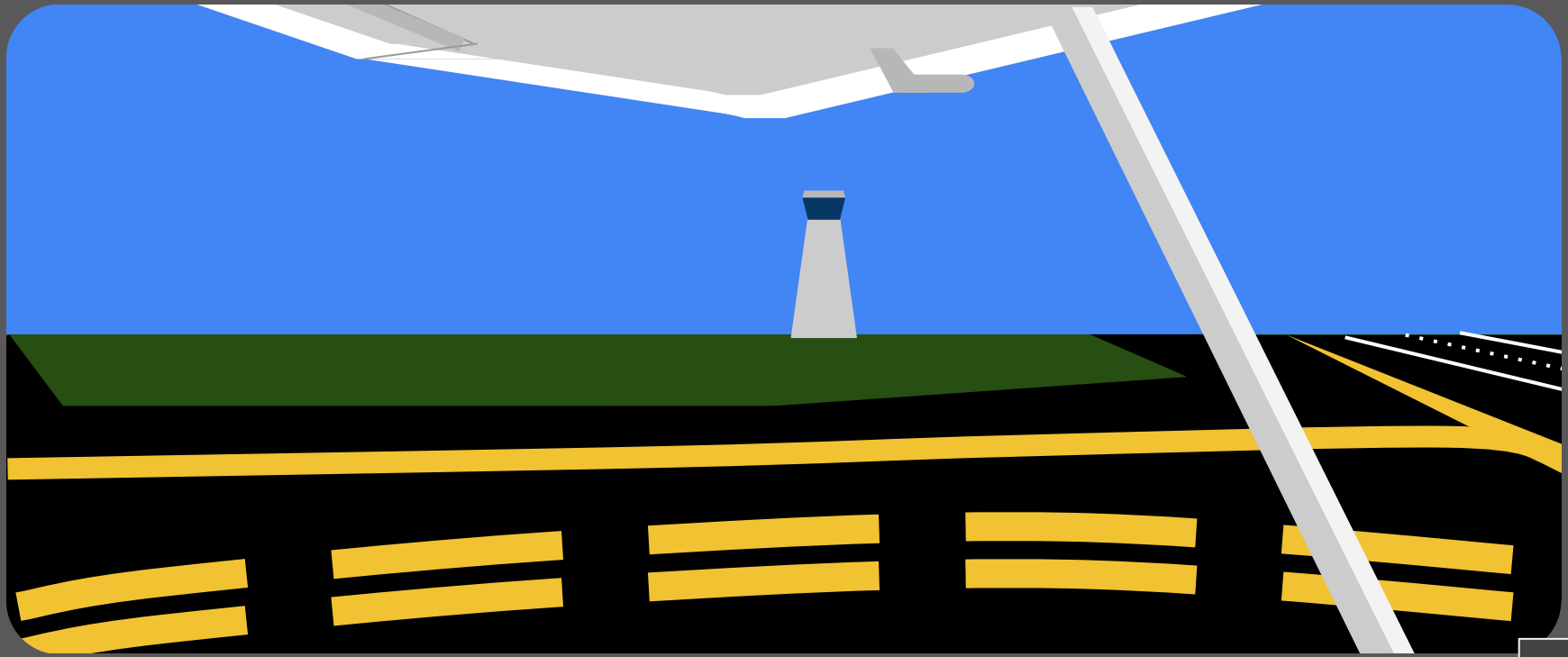
NO designated runup area?

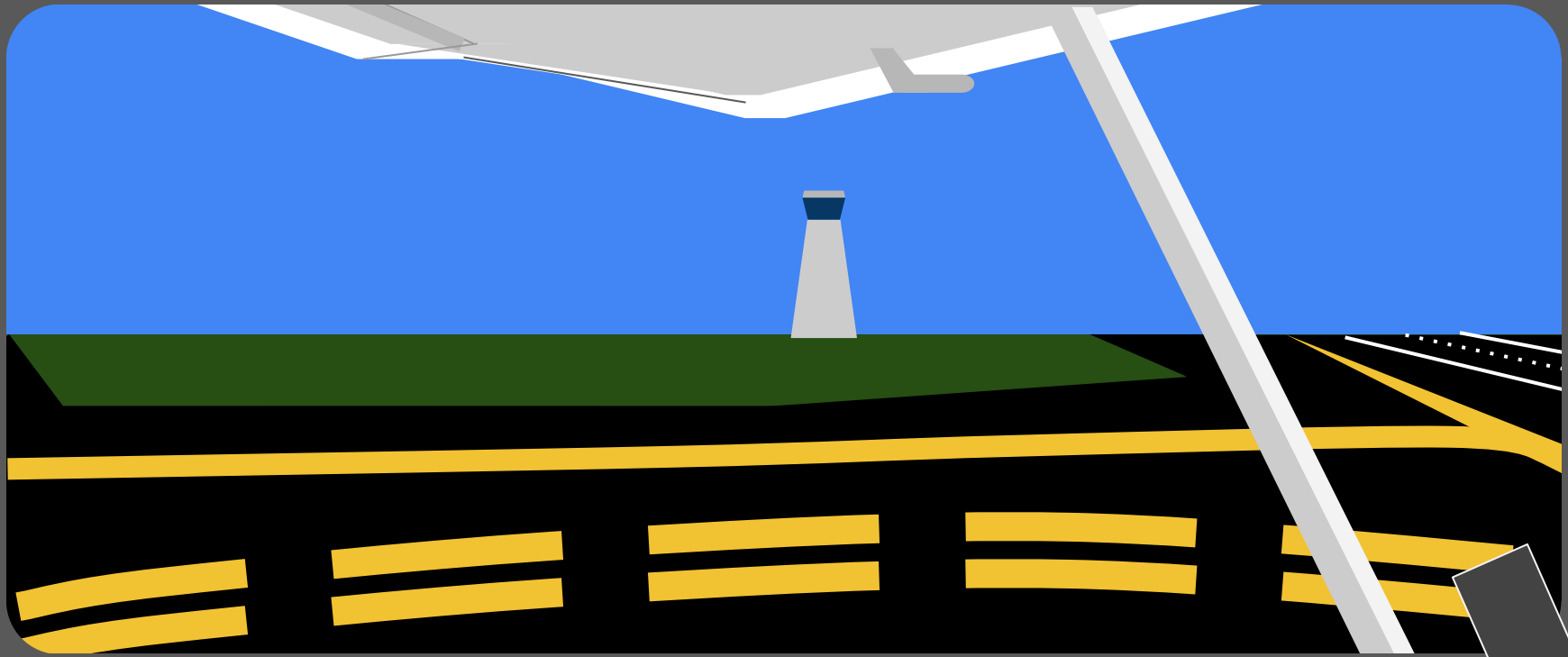
If safe position in ramp area: do your runup on ramp



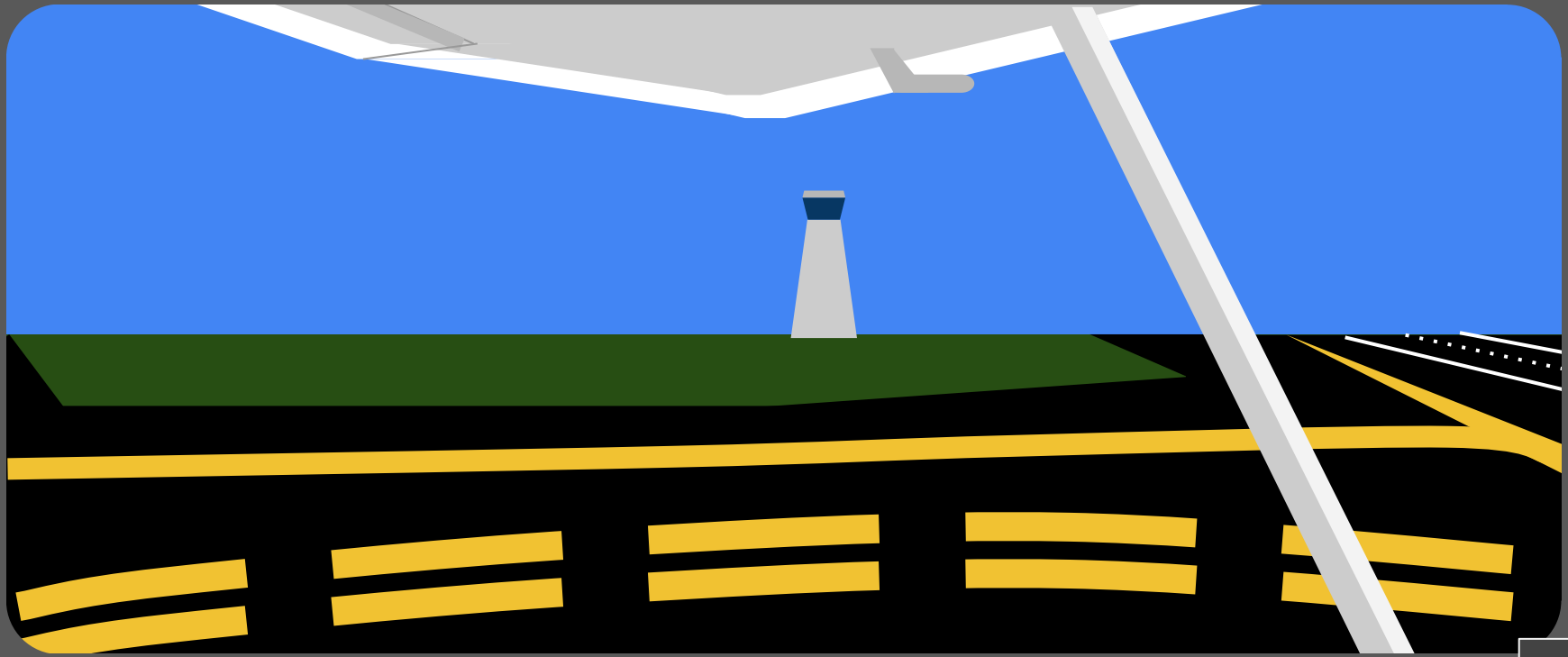
Avoid runup blowing prop blast at people or hangars & buildings

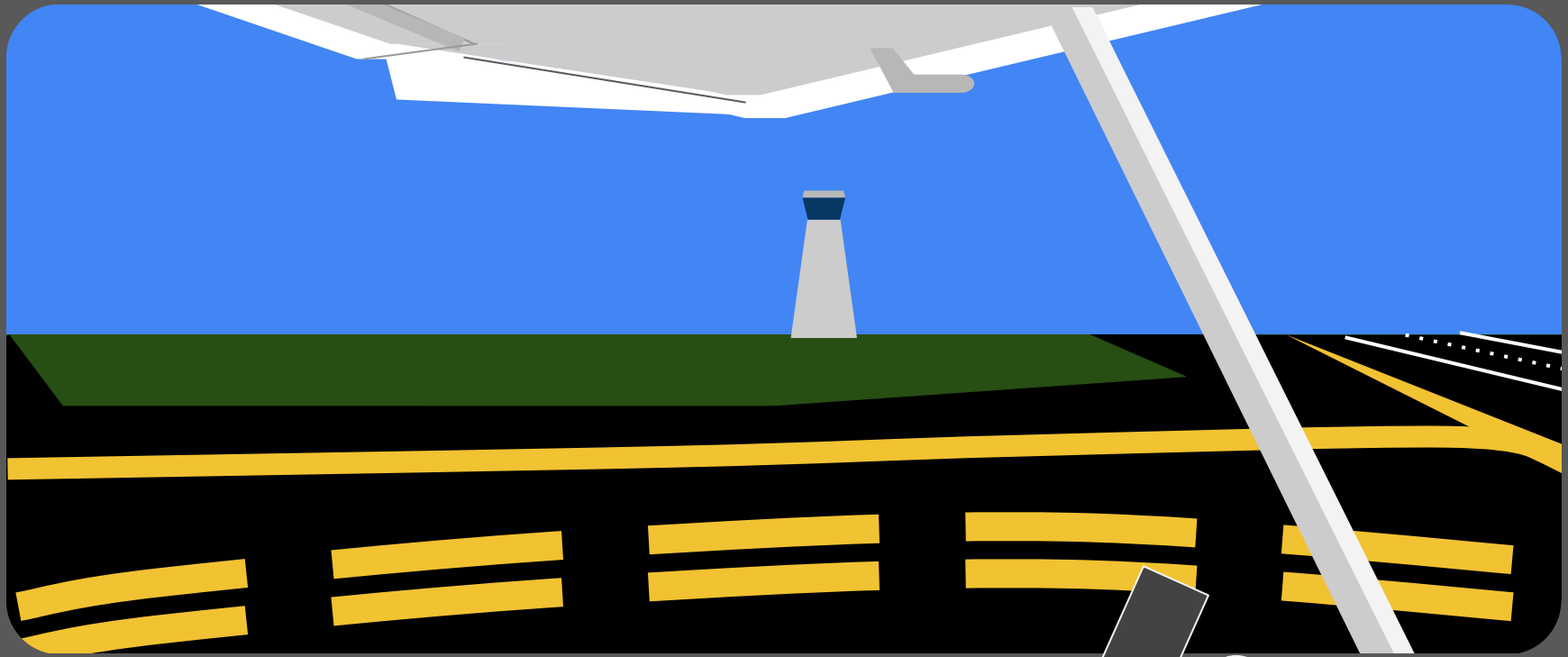
If unable to runup on ramp, verify with Tower (if towered airport) and runup on taxiway



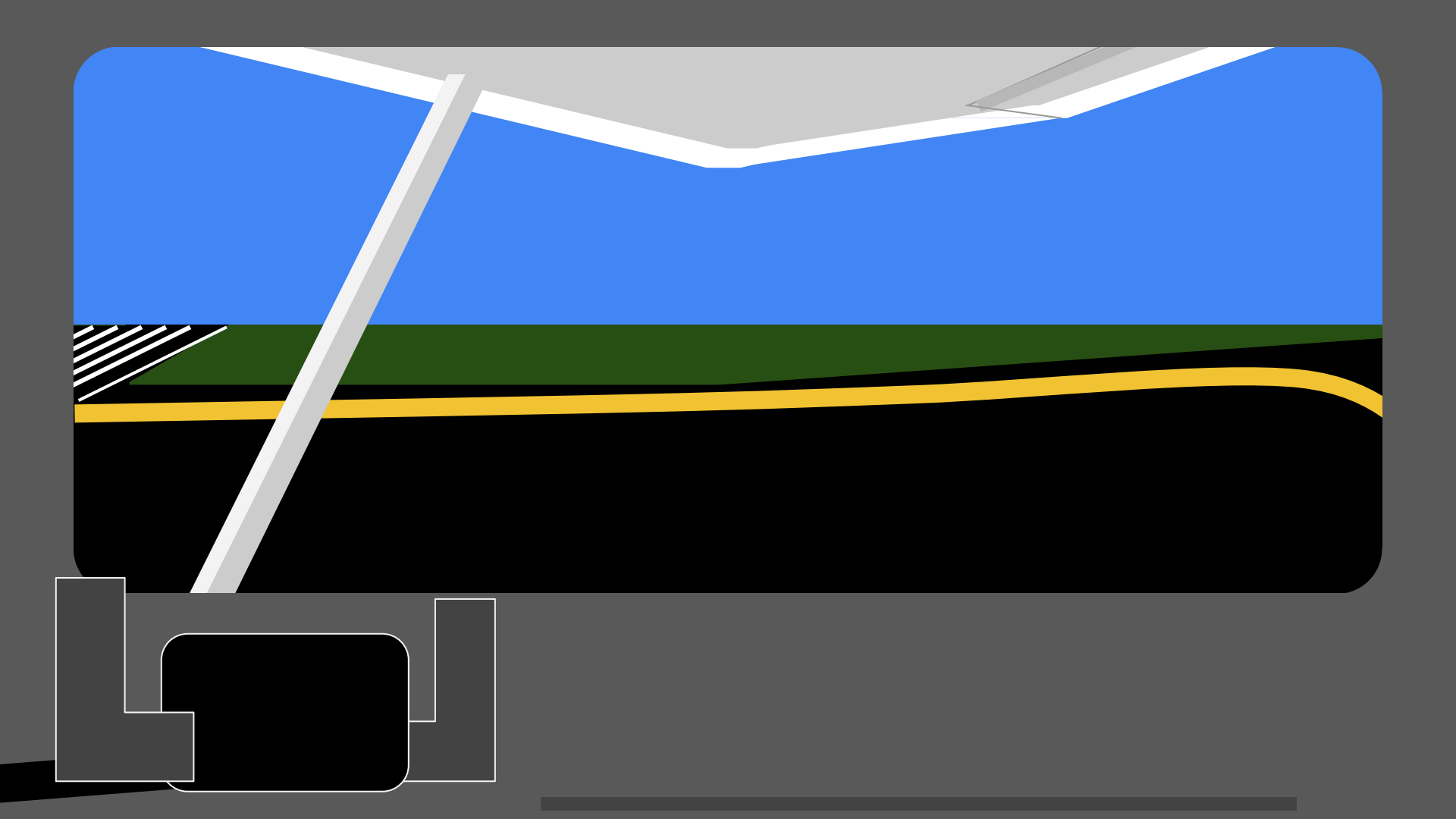


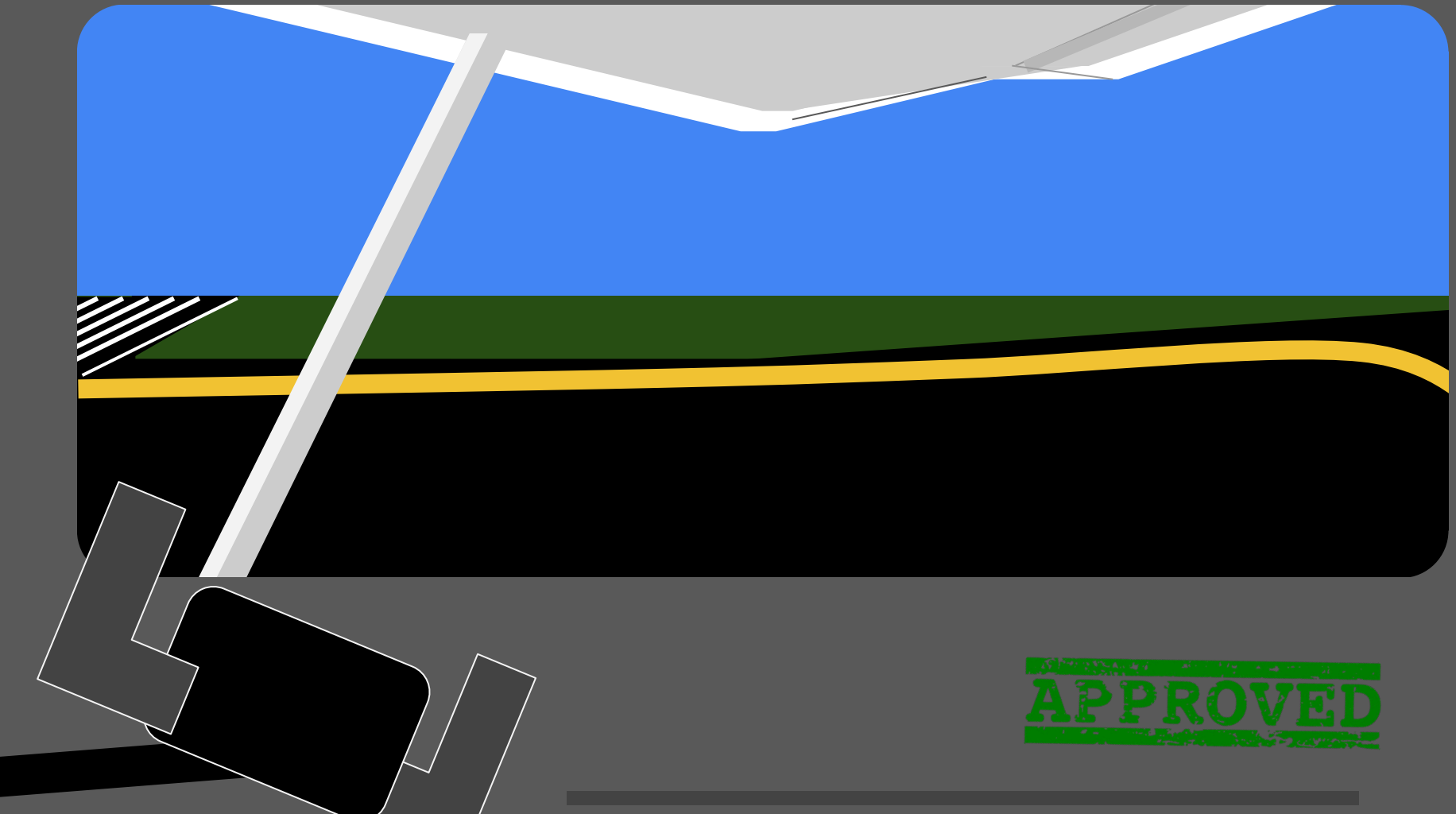
APPROVED

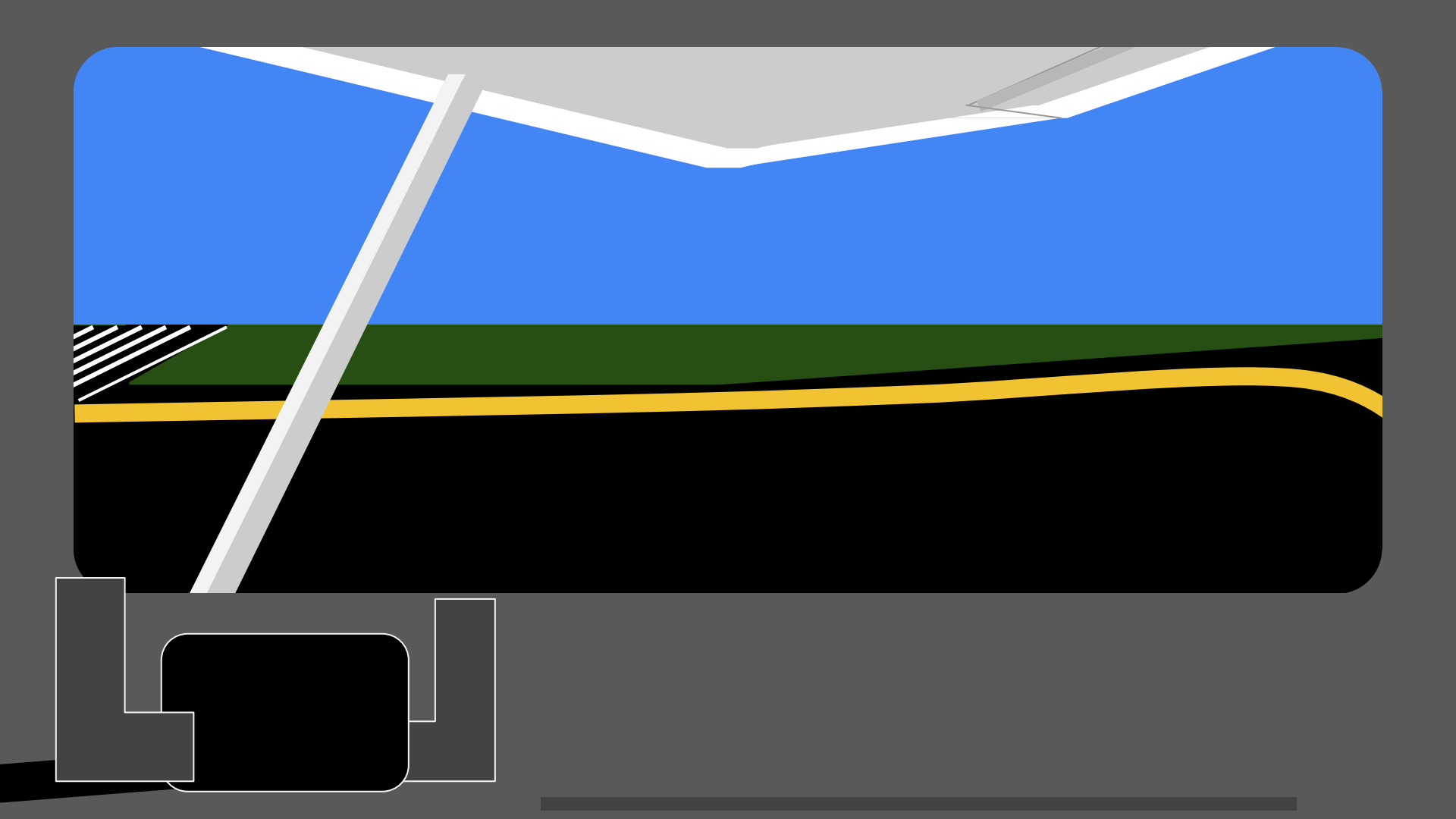


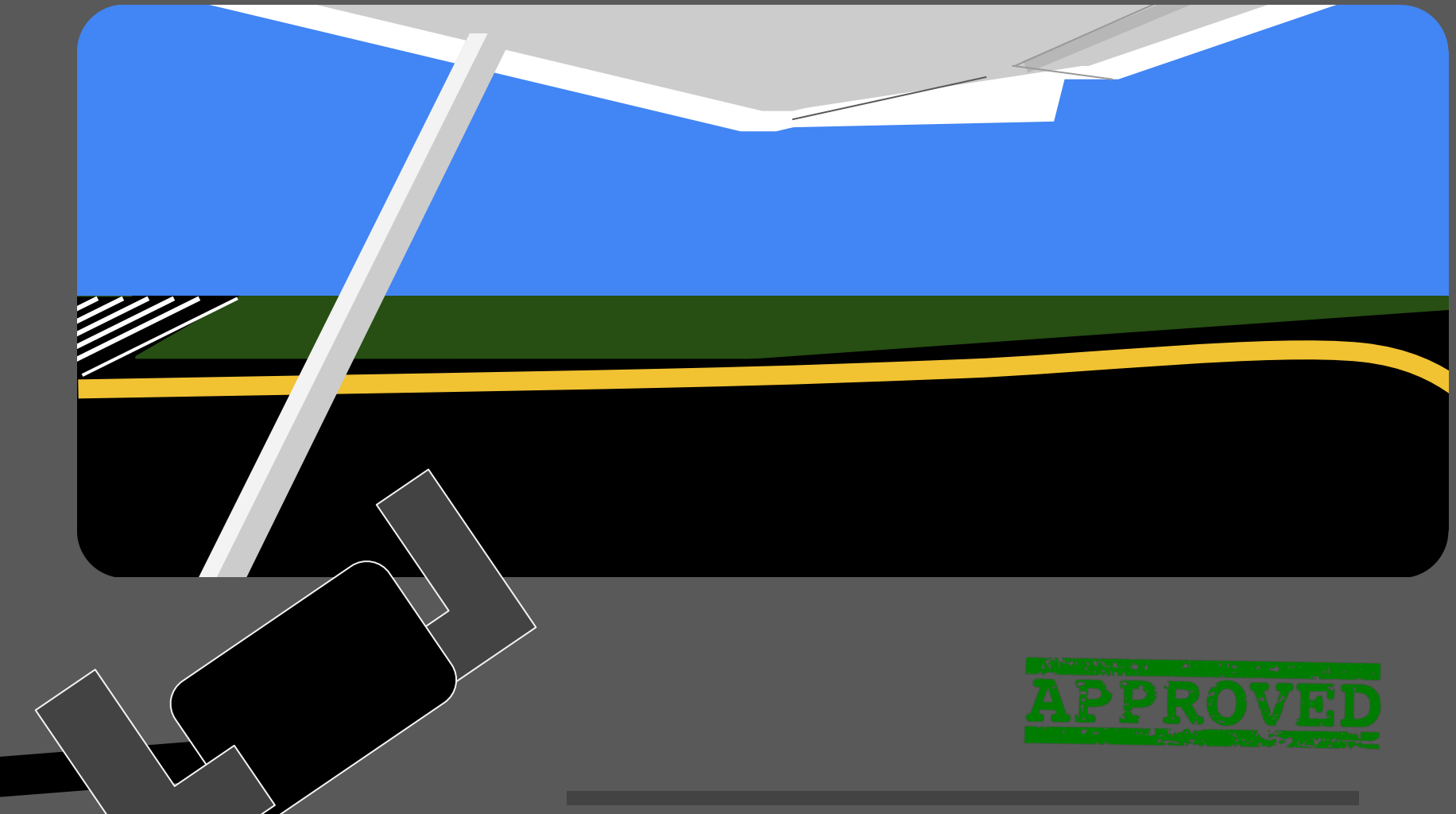


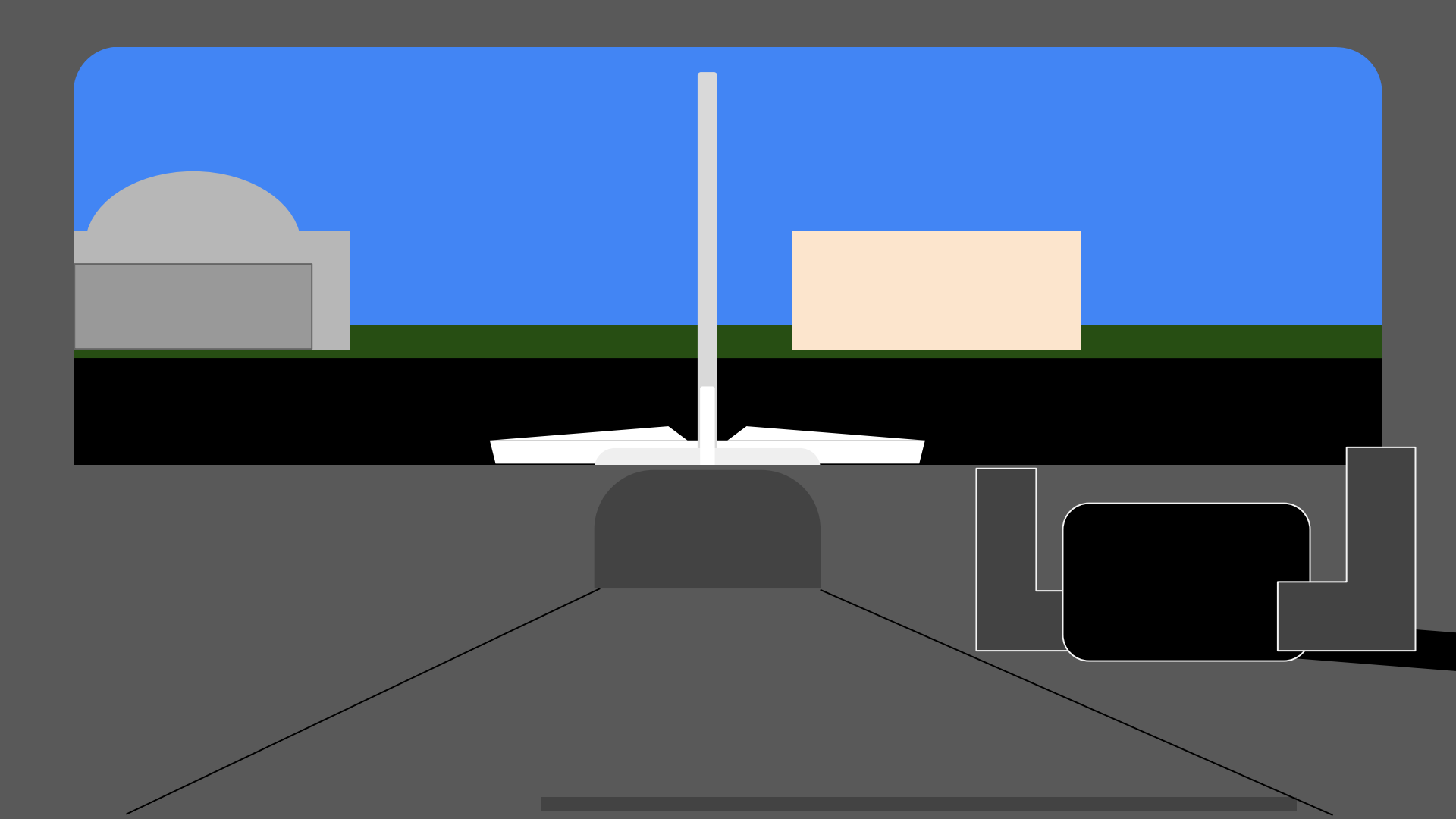
APPROVED

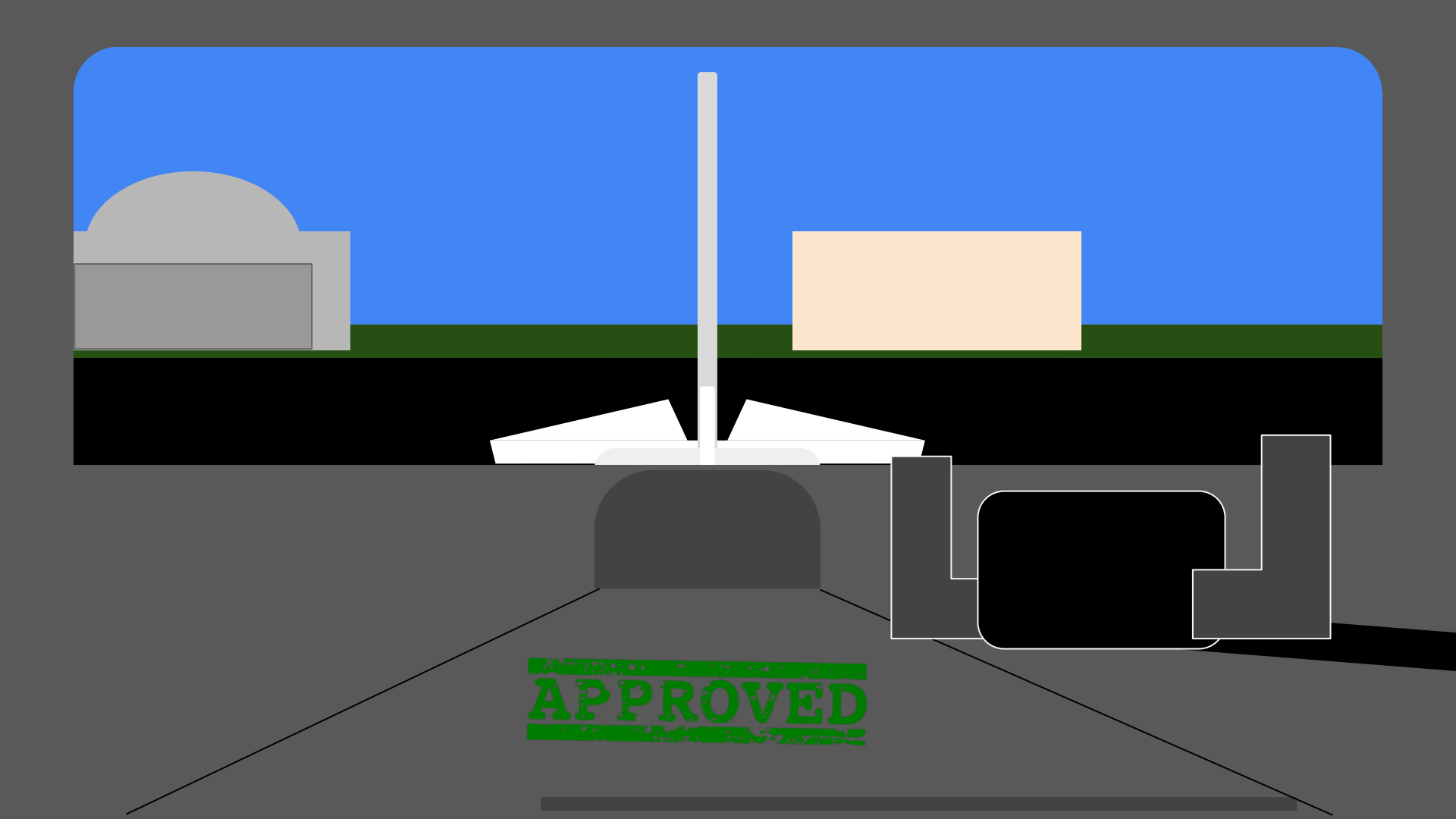


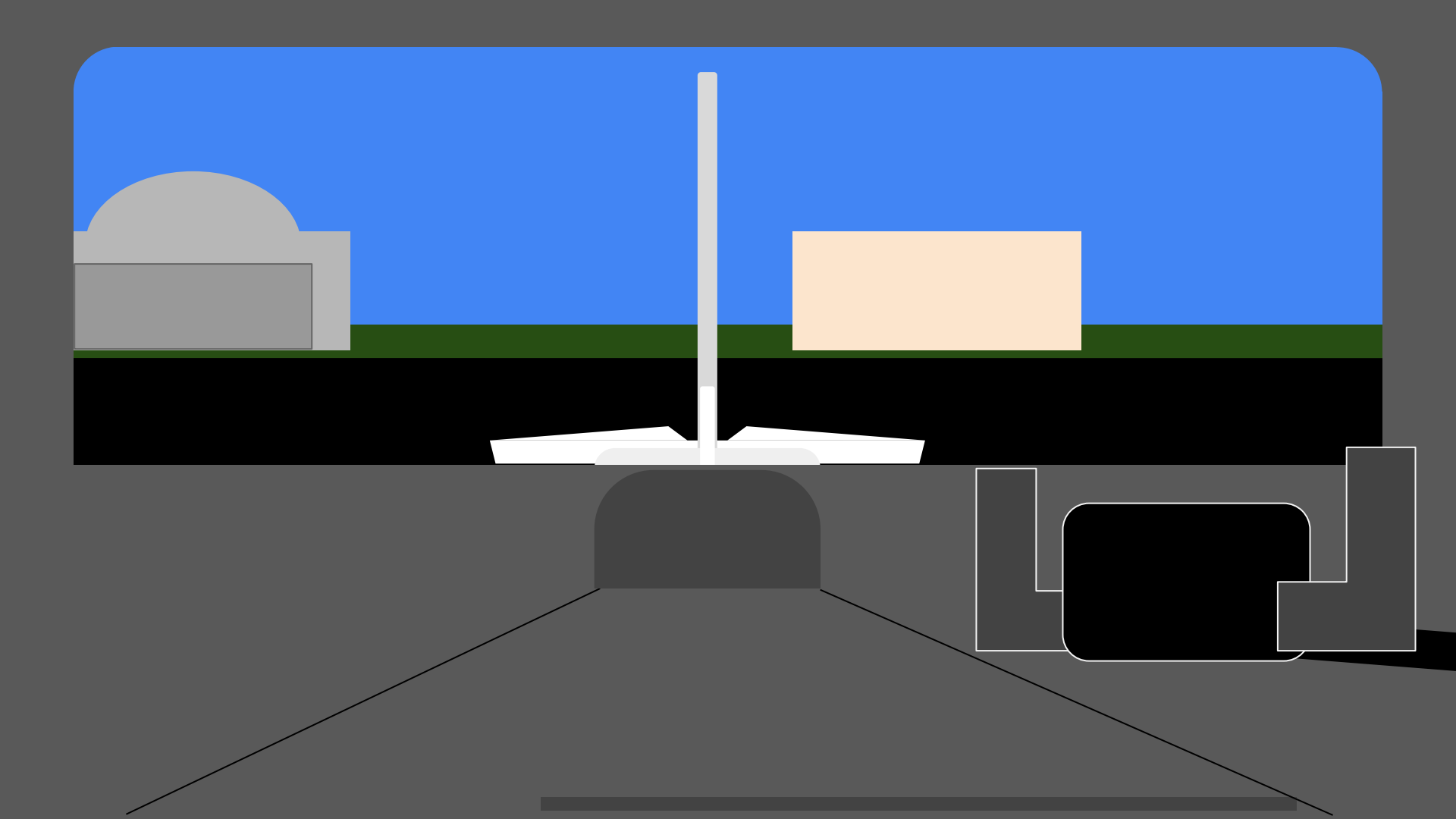

APPROVED

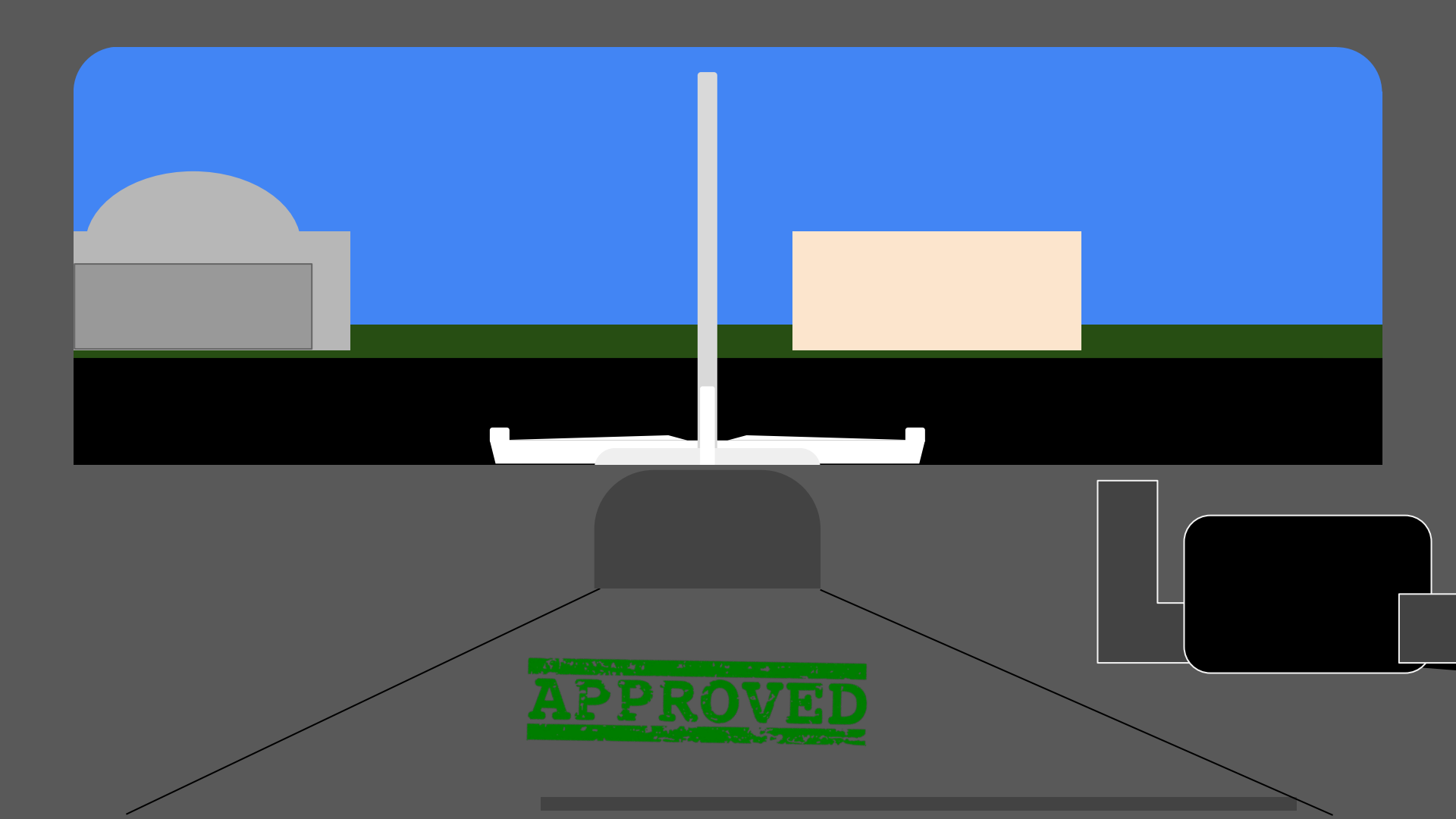


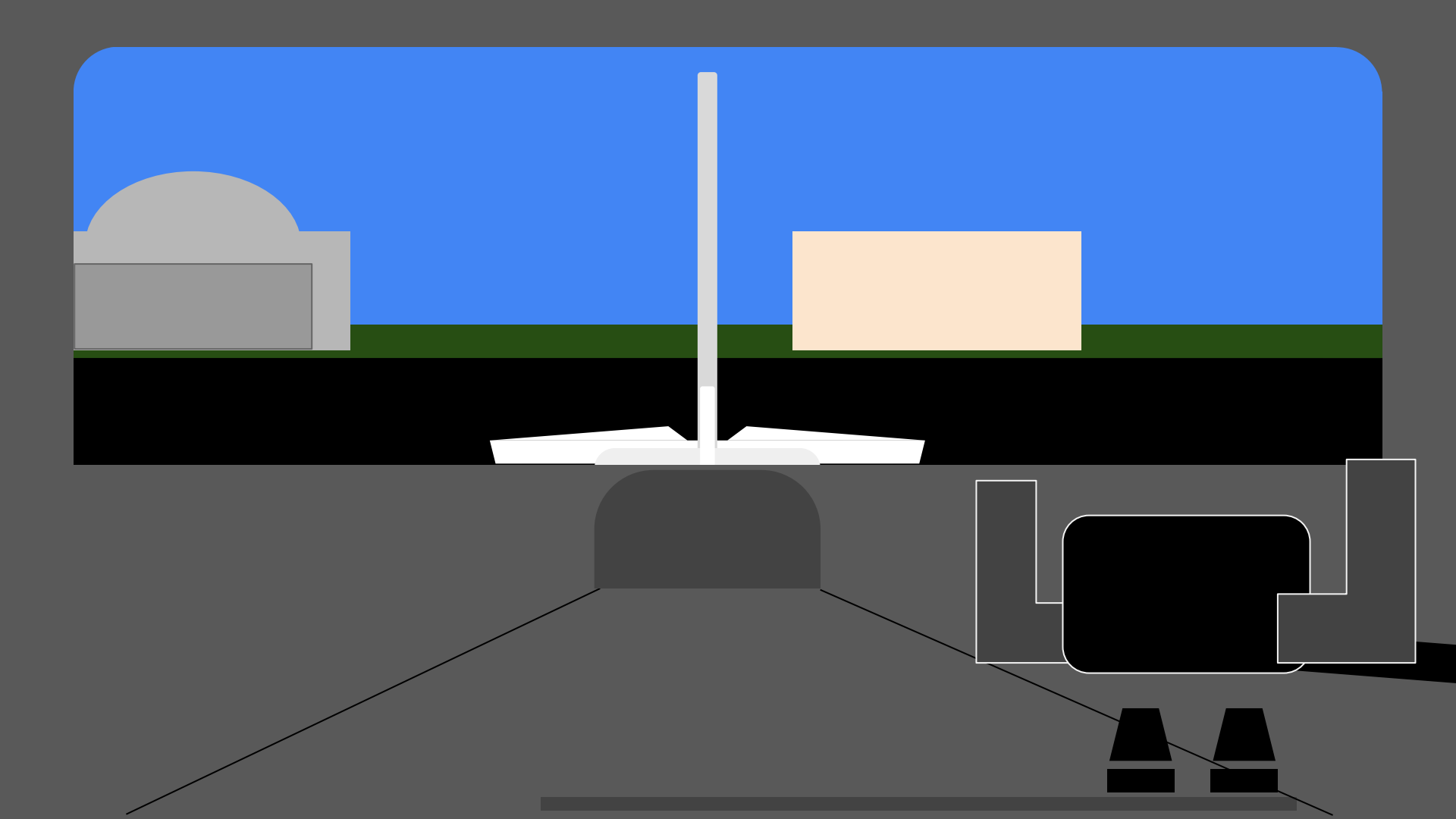

APPROVED

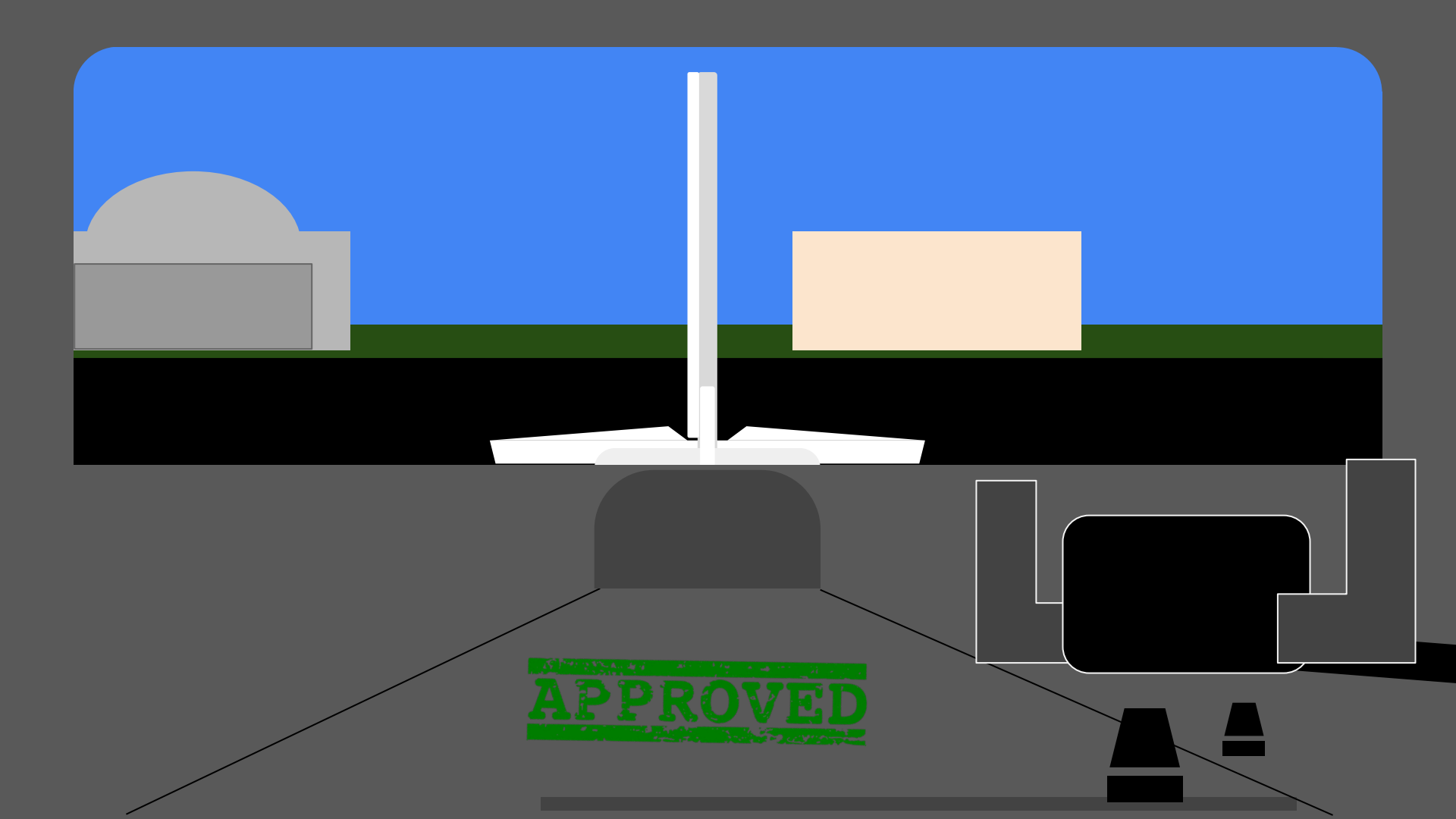


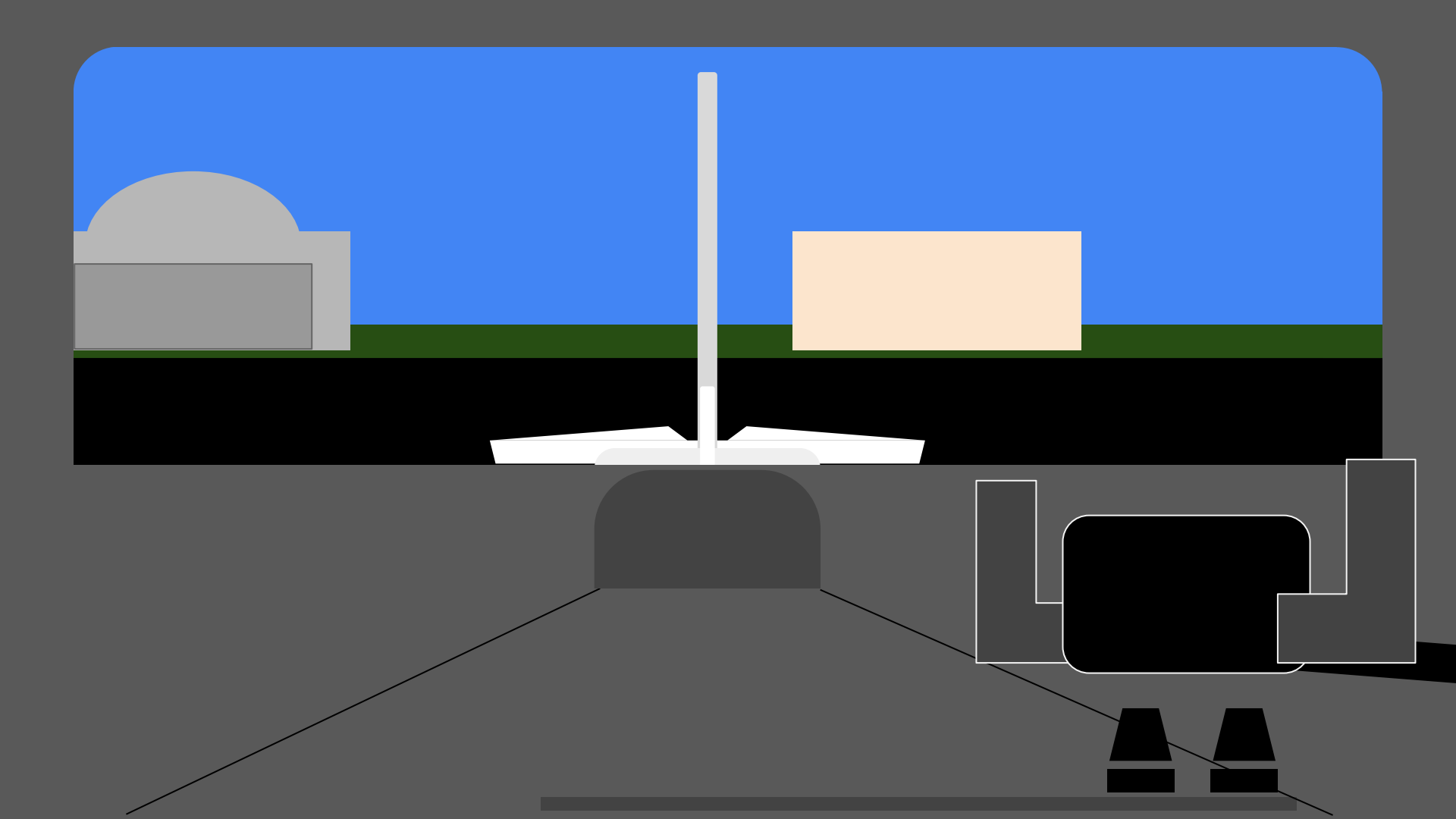

APPROVED

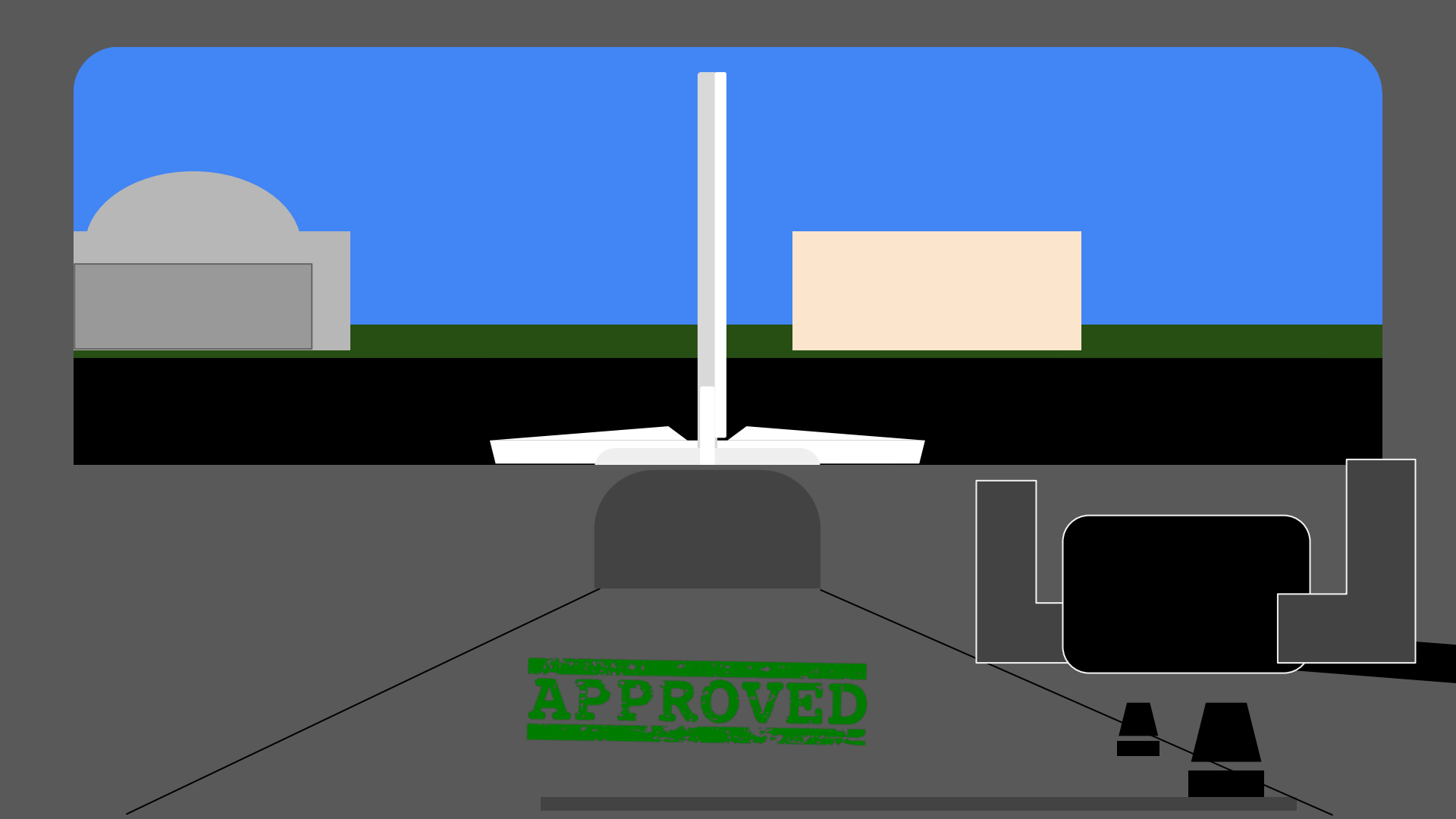


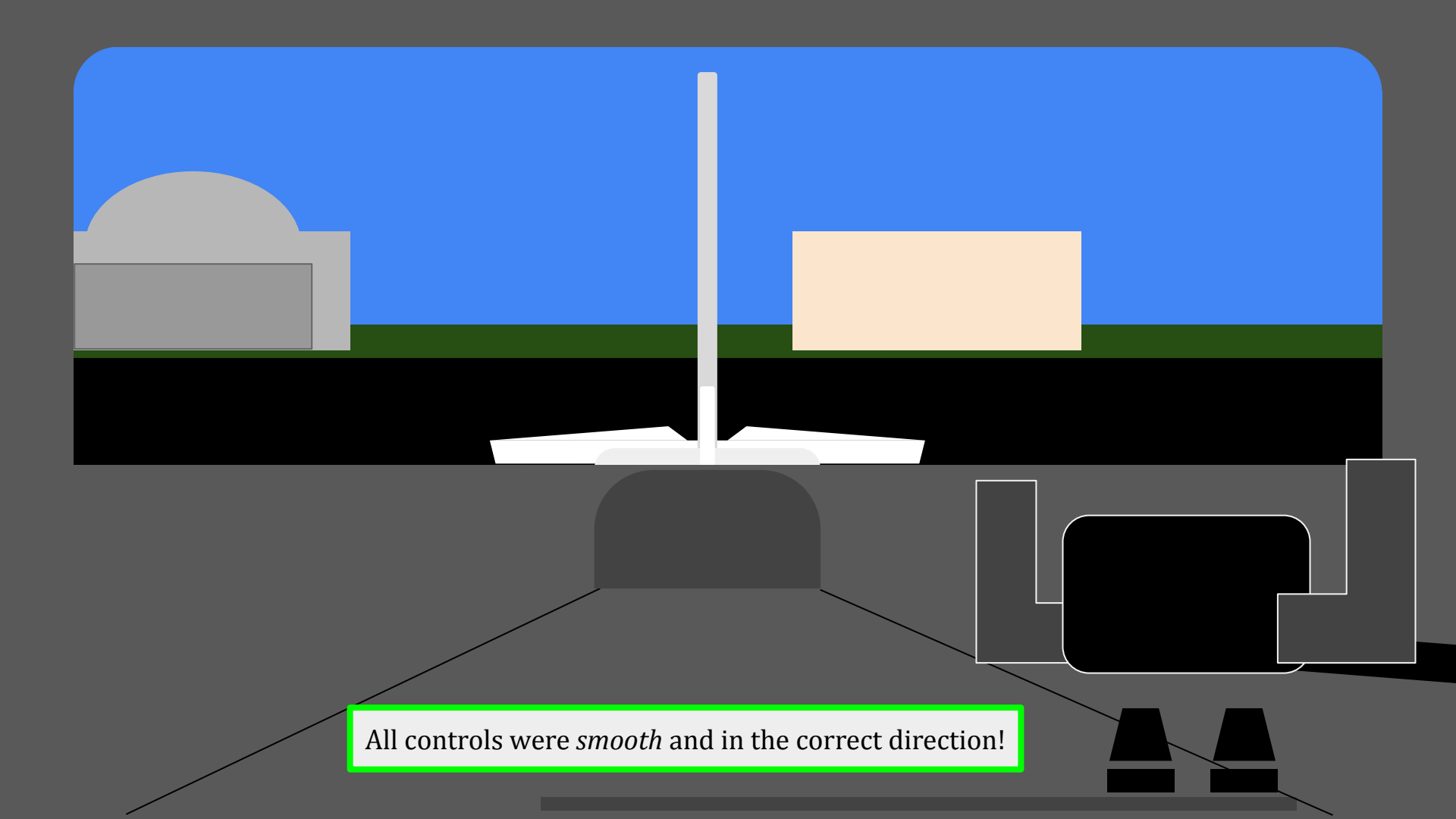

APPROVED

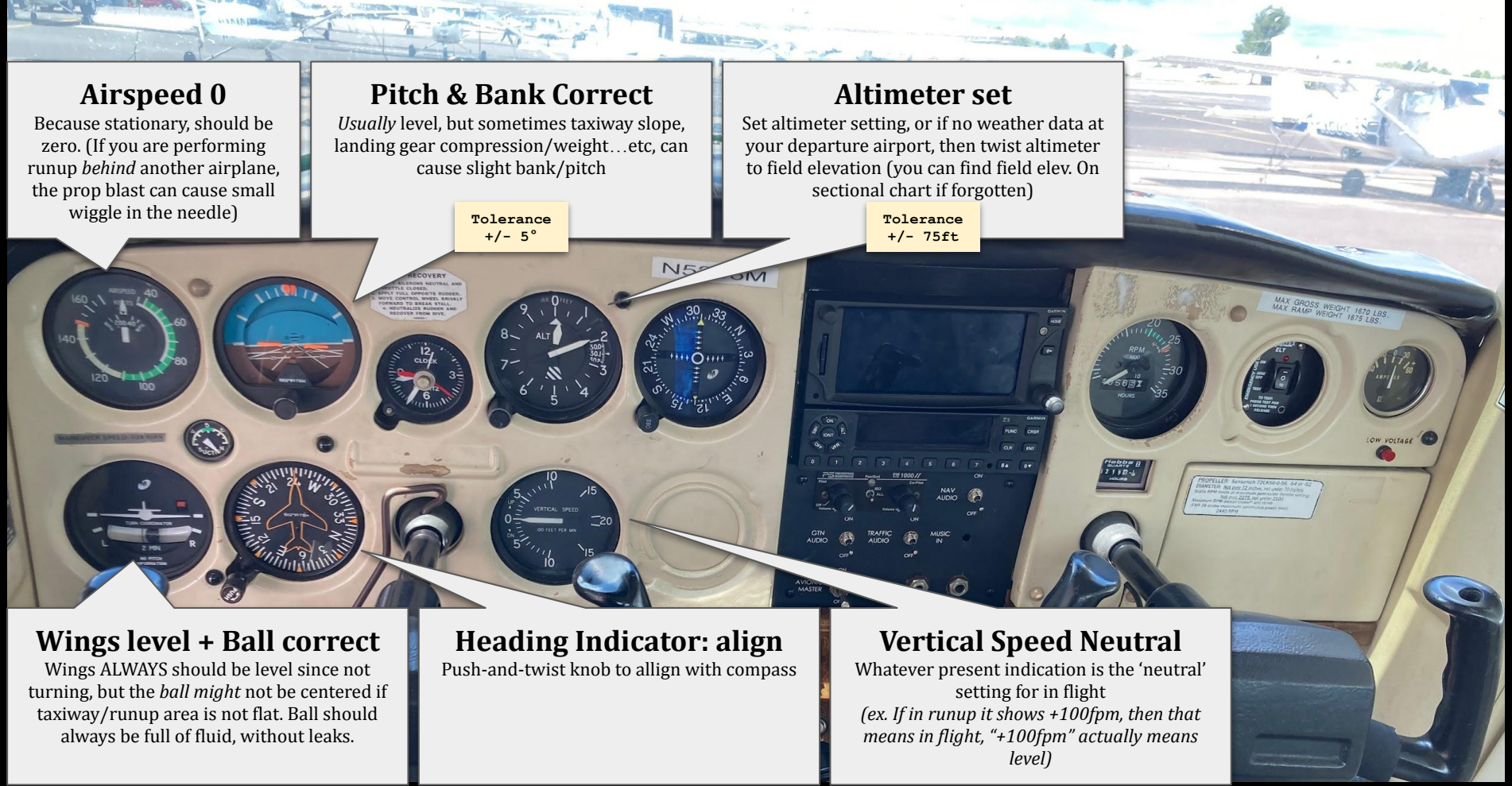



APPROVED




APPROVED


All controls were *smooth* and in the correct direction!



Airspeed 0

Because stationary, should be zero. (If you are performing runup *behind* another airplane, the prop blast can cause small wiggle in the needle)

Pitch & Bank Correct

Usually level, but sometimes taxiway slope, landing gear compression/weight…etc, can cause slight bank/pitch

Tolerance
+/- 5°

Altimeter set

Set altimeter setting, or if no weather data at your departure airport, then twist altimeter to field elevation (you can find field elev. On sectional chart if forgotten)

Tolerance
+/- 75ft

Wings level + Ball correct

Wings ALWAYS should be level since not turning, but the *ball might* not be centered if taxiway/runup area is not flat. Ball should always be full of fluid, without leaks.

Heading Indicator: align

Push-and-twist knob to allign with compass

Vertical Speed Neutral

Whatever present indication is the 'neutral' setting for in flight

(ex. If in runup it shows +100fpm, then that means in flight, "+100fpm" actually means level)

Radios and Avionics

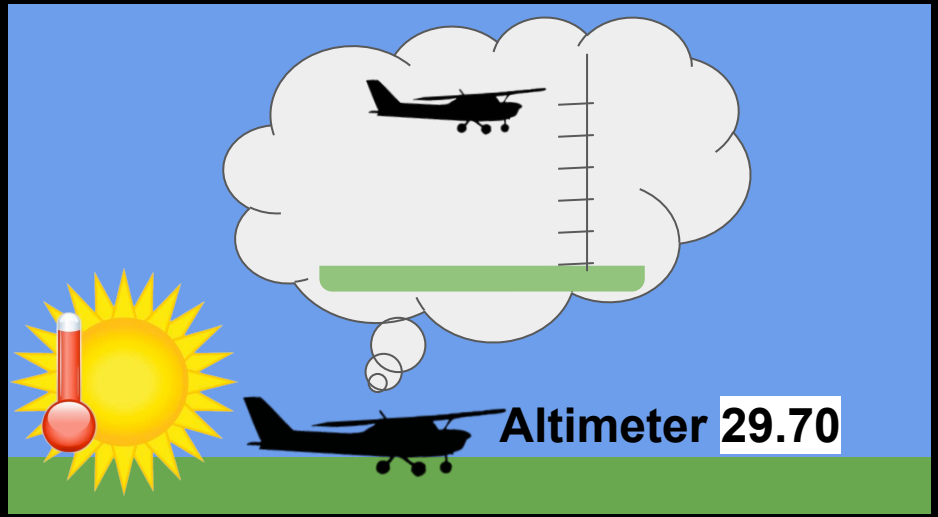
6-PACK + G650	VFR AVIONICS CHECKLIST
Flight Instruments	……CHECK, SET
COM FREQ.'s	…… SET
NAV FREQ.'s	…… SET
Fuel Qty.	…… SET
Ipad	……... Connect if Desired
Flight Plan	…… Input if XC
CDI mode	……..NAV or GPS?
OBS	…… COURSE
Timer	…….. Trip Timer-> "CLR"
GPS page	……..Map or Traffic Page

Write your own or download here:

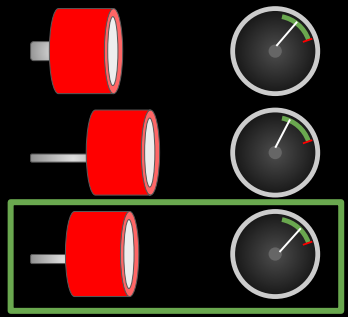
http://flyernotes.org/wp-content/uploads/2026/04/AvionicsChecklistVFR.pdf

Begin Runup -> set Mixture and RPM

1. Set Mixture “for elevation”
2. Set RPM as per POH
   Ex. C152 is 1700RPM for runup



Wait, what does “for elevation” mean?



Density Altitude BELOW 3,000

Just full rich

Density Altitude ABOVE 3,000

Set full power
Lean until you see rpm drop
Now enrich only until rpm rises to highest position
THIS is your proper mixture setting. It must be discovered every flight.

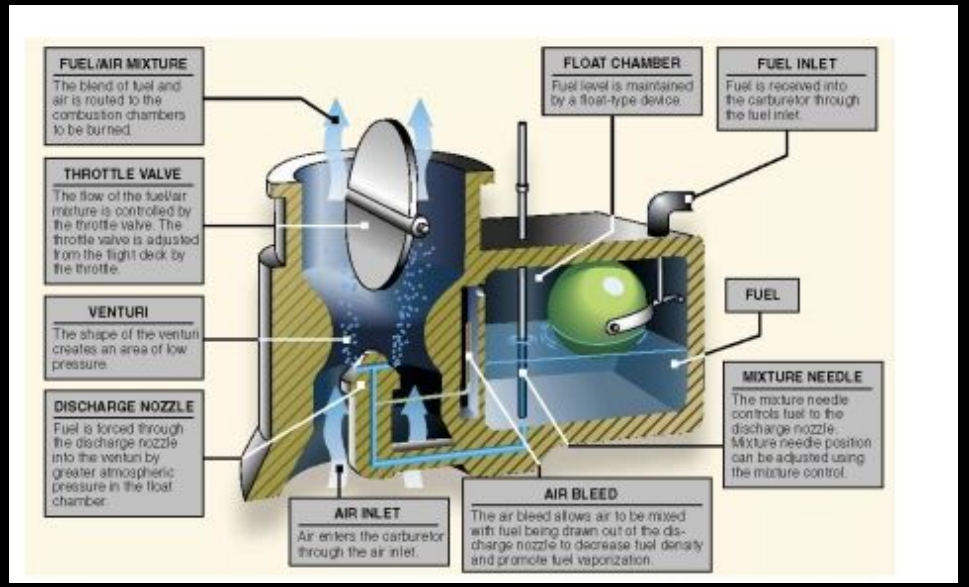
Carb Heat Check

Recall from ground school: The Carburetor adds air and fuel together, then sends the mixture to the cylinders.

If hot air enters (carb heat on), air density will decrease and rpm will decrease.

THEREFORE:

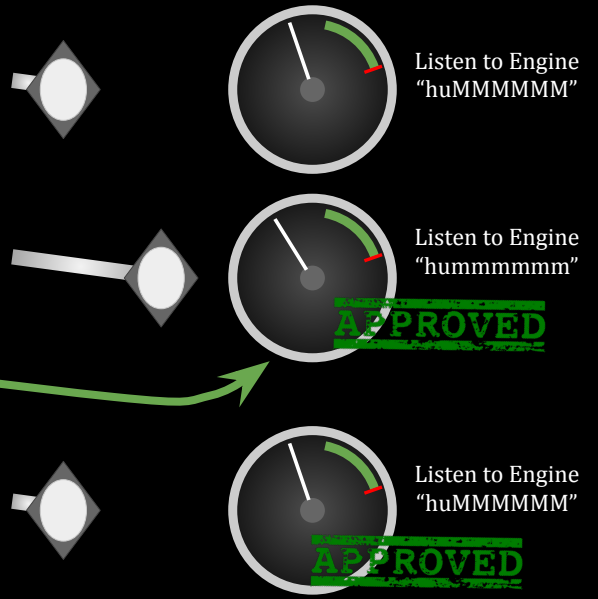
If you want to make sure your carb heat is *really on*, you could check that your RPM decreases when you turn it on.



Carb Heat Check

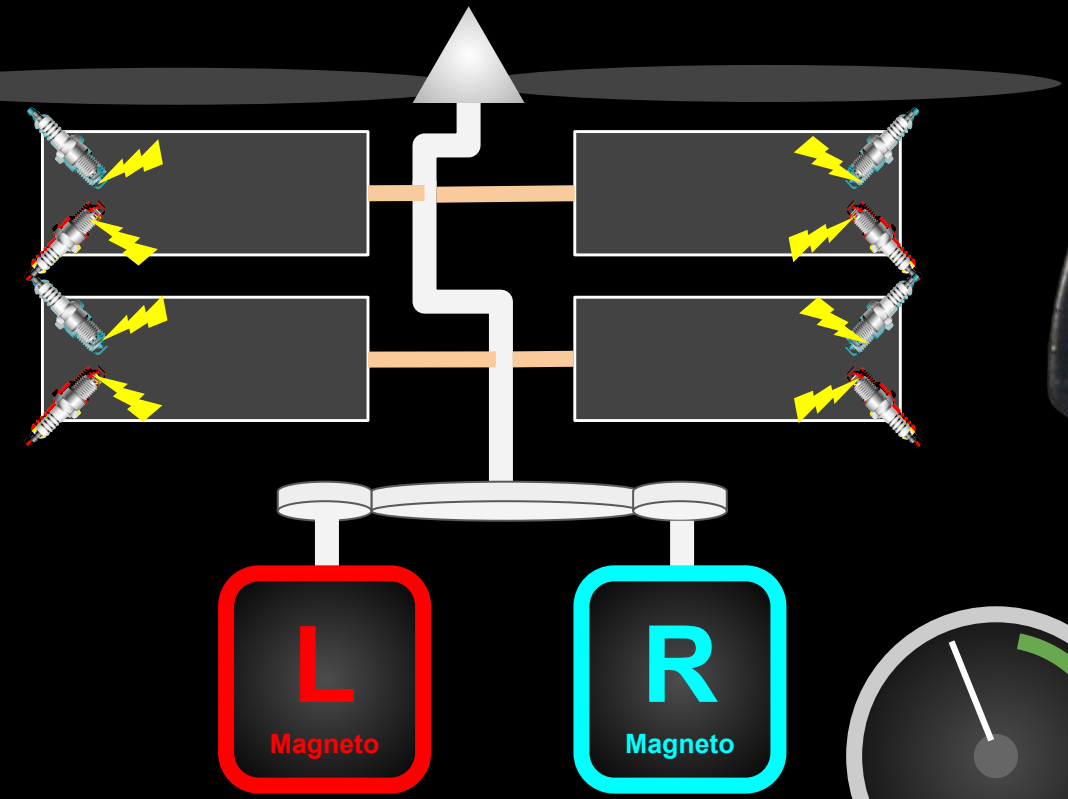
In runup, we'll check. . .

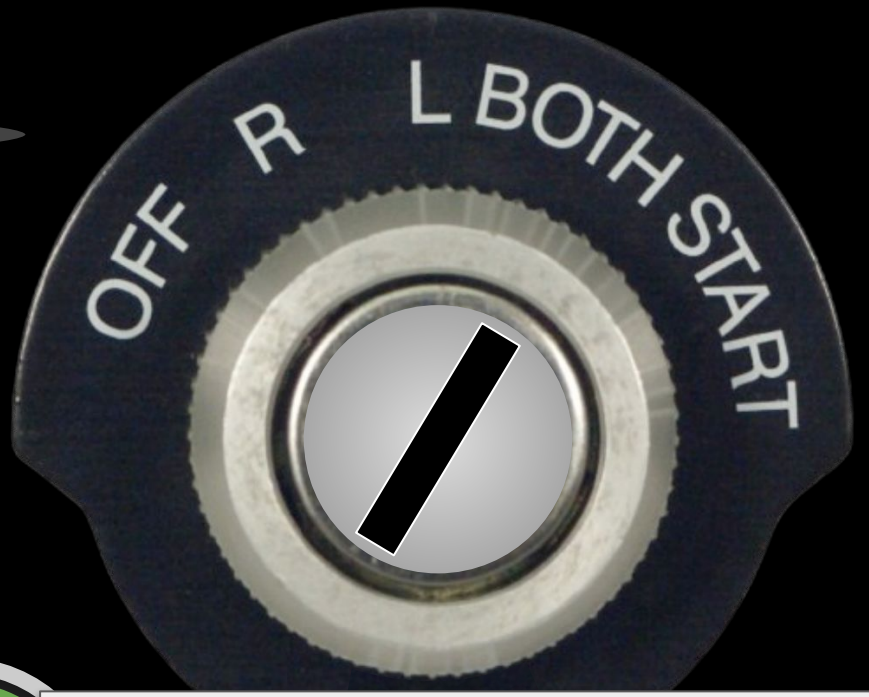
1. Turn the carb. Ht. on (pull out)
2. Verify visually and hear RPM decrease
3. Turn carb. Ht OFF (push in)
4. Verify RPM Returns to normal



We keep Carb Heat off while taxiing, since the air is unfiltered. Taxiing close to the ground can bring dust and particles into the engine, no good!

Magneto Check - Normal

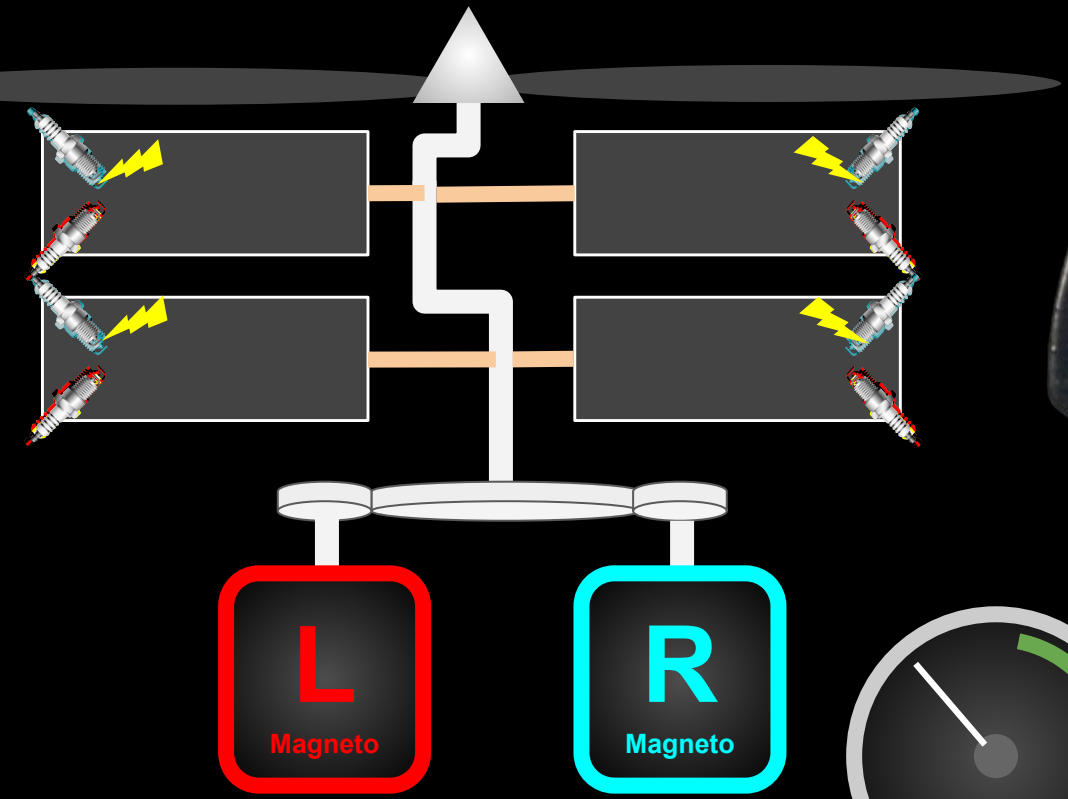


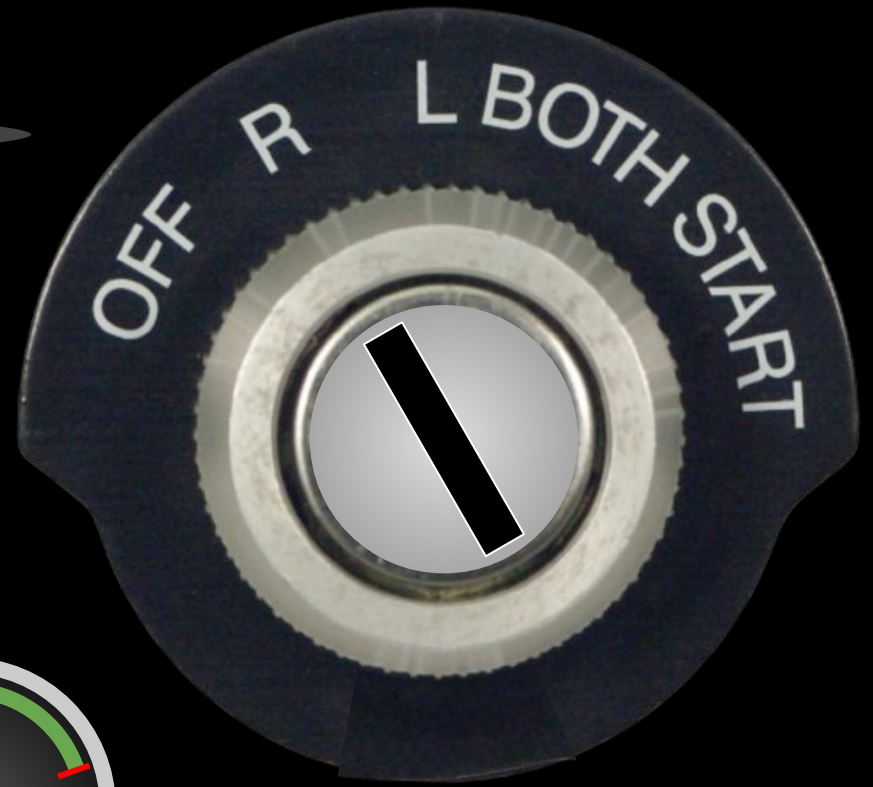


Listen to Engine
"HuMMMMMMMM"

This is the normal setting. Each cylander in the engine has 2 spark plugs, each plug powered by a *different magneto (L or R, as pictured RED or BLUE)*. When we check just one side or the other, we verify that if operated alone, it can still operate safely.

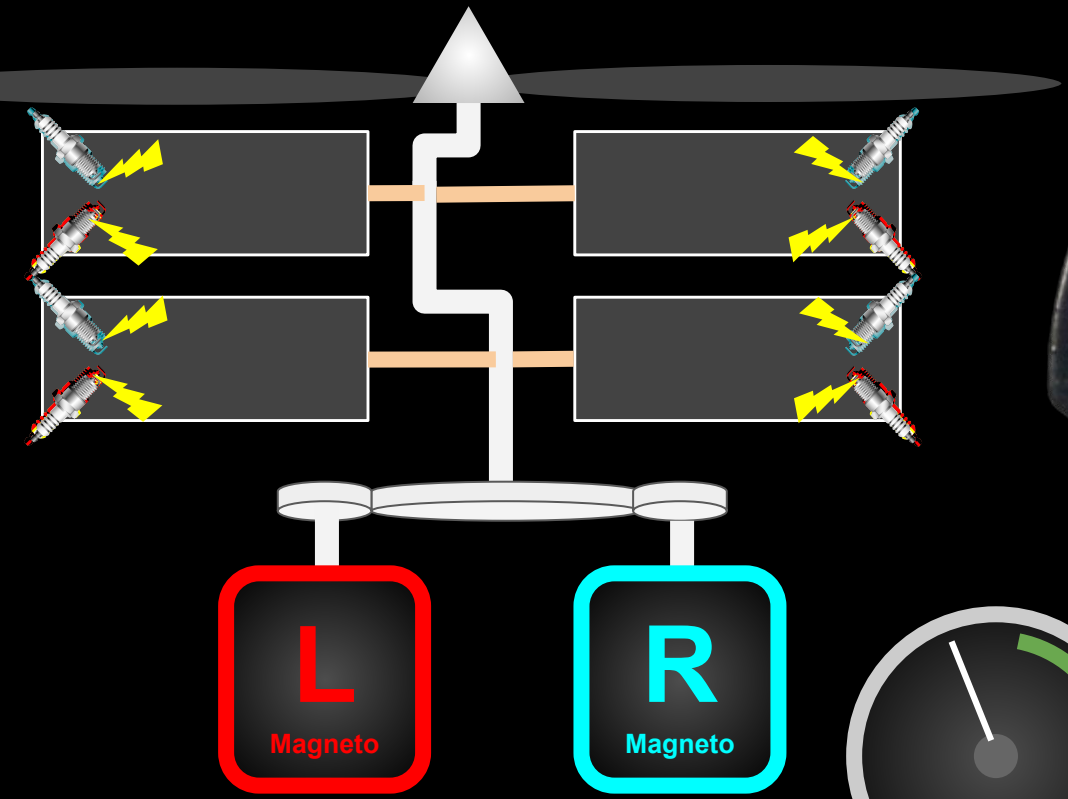
Magneto Check - RIGHT

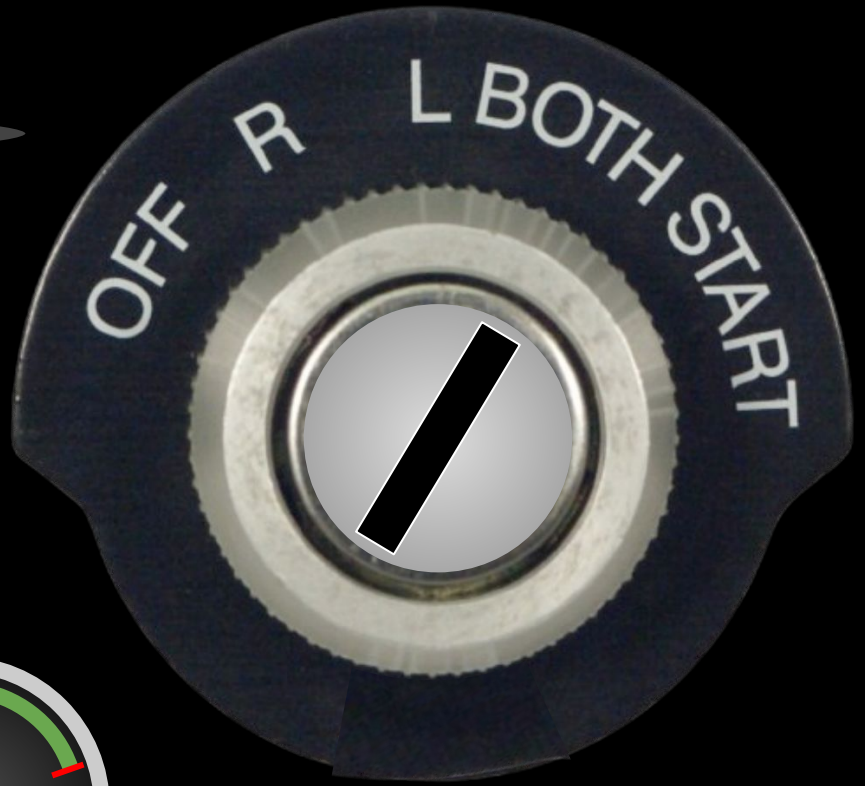




Listen to Engine
“hummmmmmm”

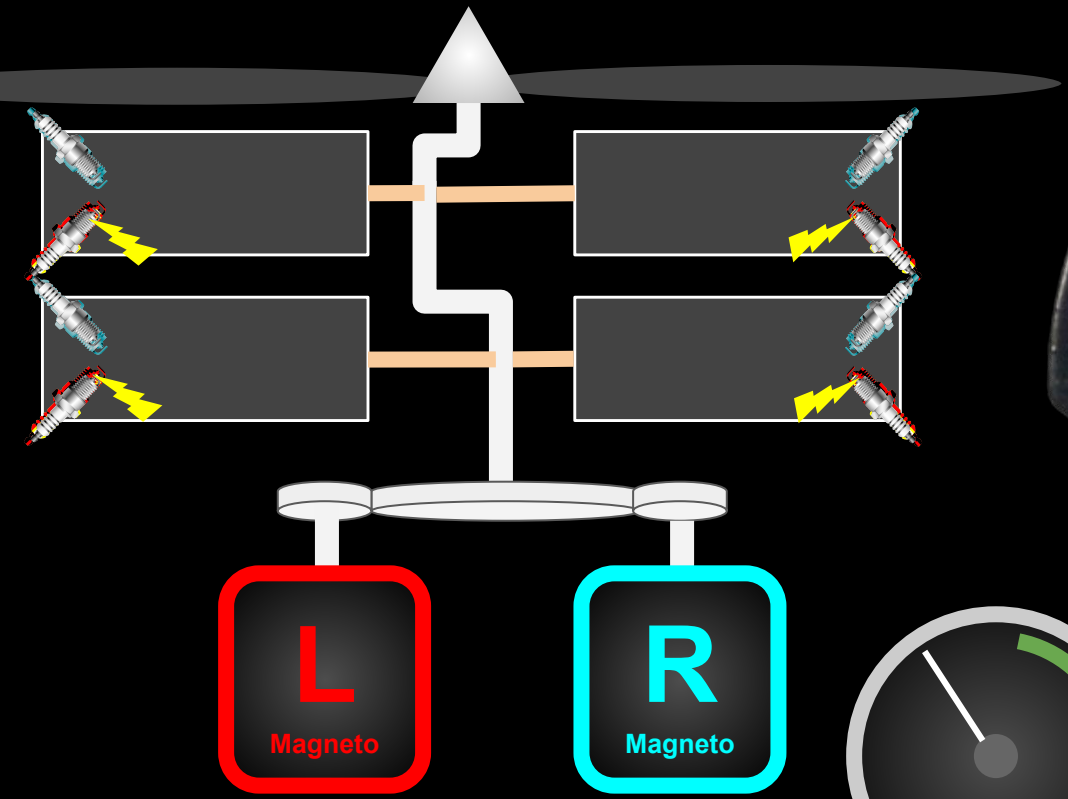
Magneto Check - Back to both

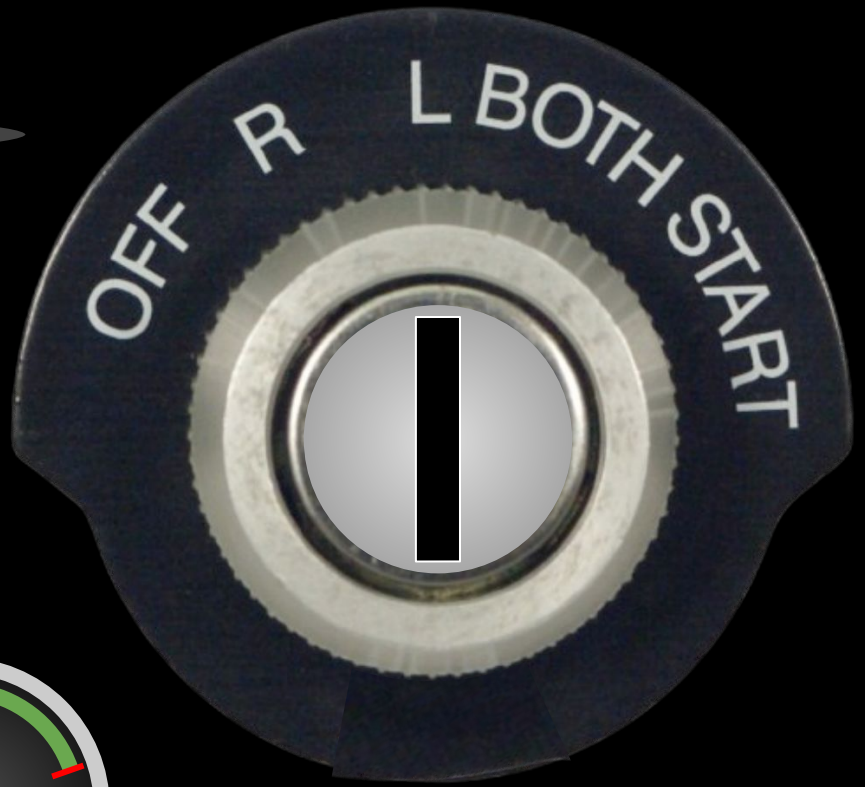




Listen to Engine
"HuMMMMMMMM"

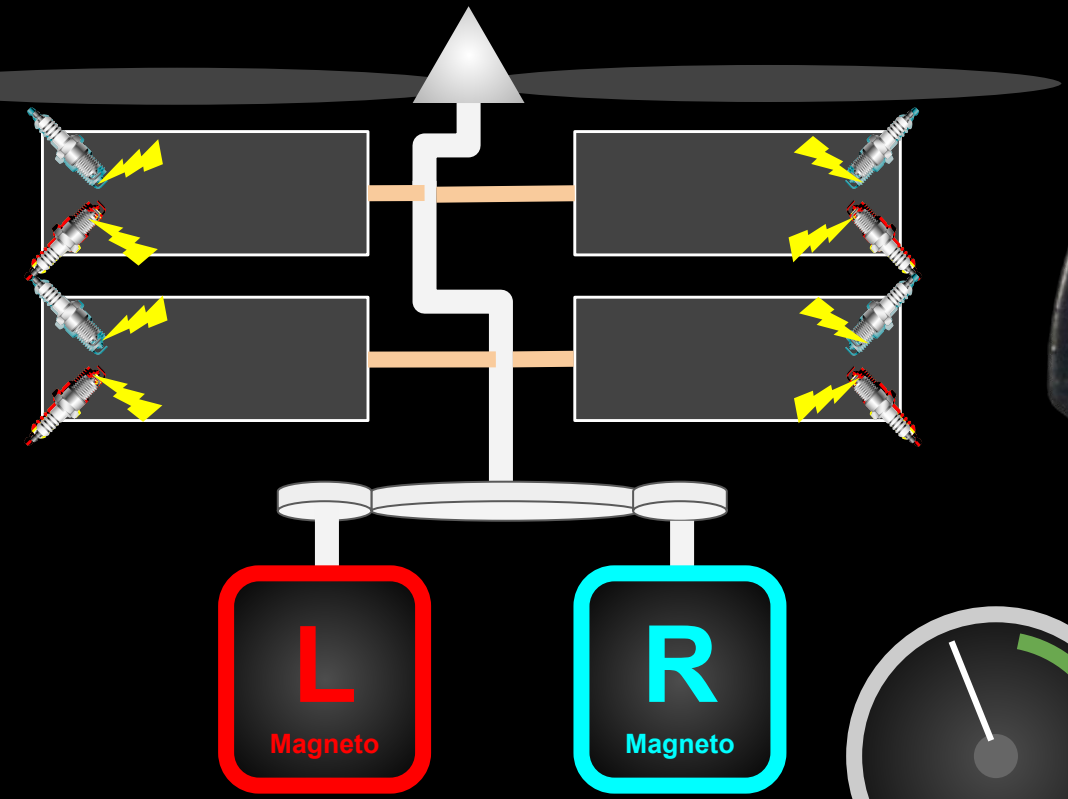
Magneto Check - LEFT

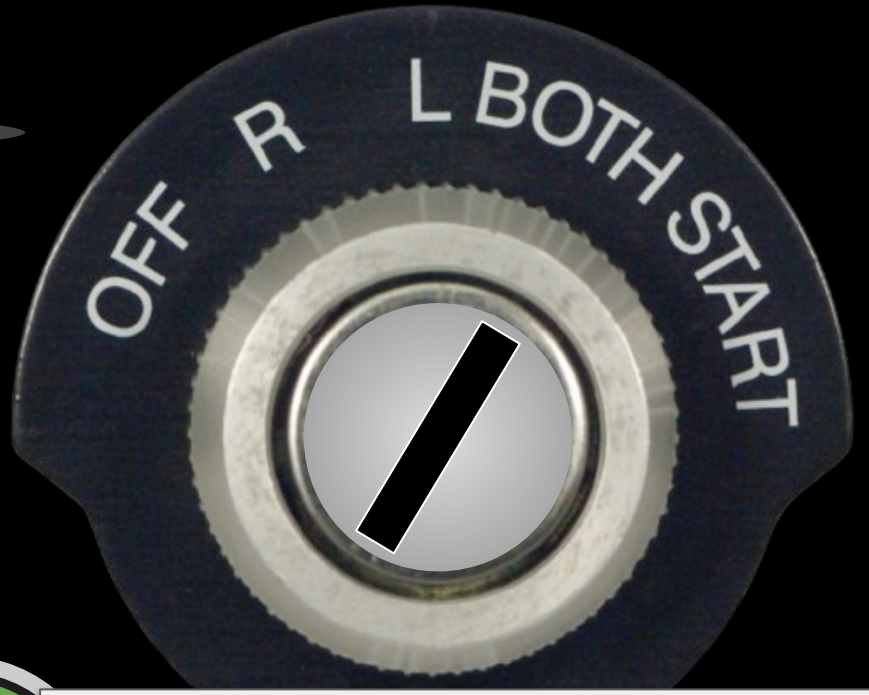




Listen to Engine
“hummmmmmm”

Magneto Check - Back to both





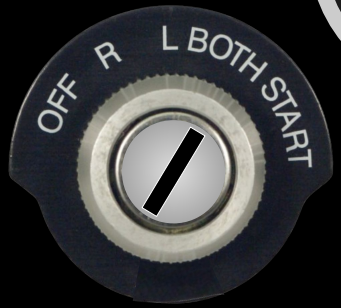
Listen to Engin
"HuMMMMMMM

Verify that EACH side (Left and Right side) were both WITHIN RPM DROP LIMITS of YOUR POH *and* that the engine ran smoothly.

If rpm drop was outside limits or engine was not running smoothly (felt vibration), then you need to do the magneto clearing procedure!

Magneto Check - UNSATISFACTORY?

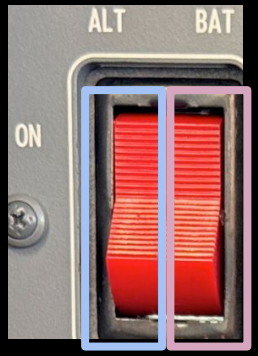
If rpm drop was outside limits or engine was not running smoothly (felt vibration), then you need to do the magneto clearing procedure!



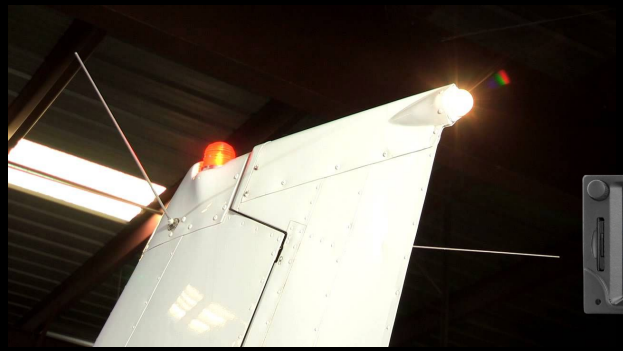
1. Set max power (remember to hold brakes!)
2. Lean mixture until small rpm drop (keep the drop, <u>do not</u> enrich)
3. Wait ~30 seconds
4. Set mixture back for elevation
   (rich ↓3,000ft DA. If ↑3,000ft DA, then lean slightly)
5. Set RPM back to runup setting and re-check magnetos

If magneto check is *still* unsatisfactory, speak to maintenance

Ammeter -> Normal indication

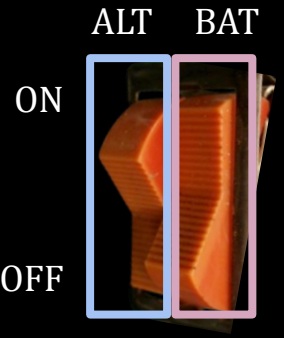


battery



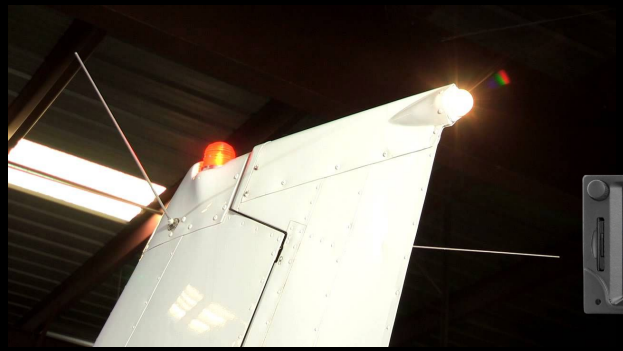
Ammeter Check

1. Turn LEFT SIDE ONLY of the master switch off
2. Verify Ammeter shows discharge
3. Turn Alternator back on (L side of master)
4. Verify neutral or positive Ammeter indication



Draining battery power!

battery



Ammeter Check

1. Turn LEFT SIDE ONLY of the master switch off

2. Verify Ammeter shows discharge

3. Turn Alternator back on (L side of master)

4. Verify neutral or positive Ammeter indication

Engine Instruments

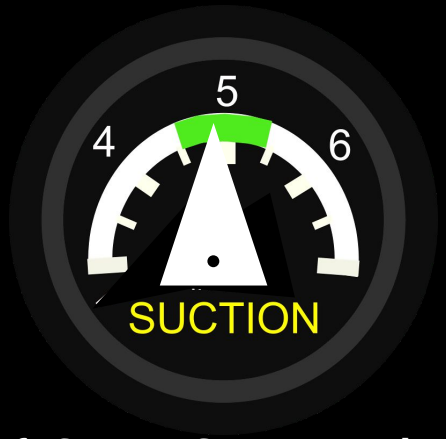
APPROVED

On a cold morning flight, it is normal to see low oil temps, since it's very cold outside!
-> in this case, continue with checklists & just verify before taking off that oil temp is in the green

Engine Instruments

Verify fuel Qty. is approximately correct.

We verify *visually* of course, but this is a good time to mentally verify we actually did look, and it roughly aligns with what out gauges show.



Verify Suction Gauge is in-the-green

Your Attitude & Heading indicators rely on *spinning gyros* to function. Air gets sucked over the gyros to spin them.
No suction = no gyro spin
↓
No gyro spin = Att+Hdg wont work

Red flag visible on att. Indicator = inop! →