

PRIVATE PILOT GROUND SCHOOL

MODULE 2-5 — AIRSPACE APPLIED: CHARTS, ENTRY, VFR MINIMUMS

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FACTS TO REMEMBER

KNOW THESE COLD

- Class B draws as solid blue rings; each shelf is labeled ceiling-over-floor in hundreds of feet MSL (100/40 = 10,000 over 4,000).

Source: PHAK ch. 15; Chart User's Guide

- Class C dimensions: typically a 5-NM-radius surface core and a 10-NM shelf from about 1,200 to 4,000 ft above the airport.

Source: PHAK ch. 15

- The boxed Class D ceiling figure reads in hundreds of feet MSL; the airspace typically runs up to 2,500 ft above the field.

Source: PHAK ch. 15

- Class E to the surface draws as a dashed magenta circle around the airport.

Source: PHAK ch. 15

- Inside magenta vignette (shading), Class E begins at 700 ft AGL; outside it, Class E generally begins at 1,200 ft AGL.

Source: PHAK ch. 15

- Below the Class E floor is Class G — a thin layer at most airports, thicker in the mountain West.

Source: PHAK ch. 15

- Class A begins at 18,000 ft MSL everywhere: IFR clearance and instrument rating territory, with no VFR operations.

Source: PHAK ch. 15

- Airport symbol color is the tower key: blue airports have (or share) an operating control tower, magenta airports do not.

Source: Chart User's Guide

- Class G carries no ATC communication requirement; self-announcing on CTAF is procedure and good sense, not a legal entry gate.

Source: 14 CFR 91.126; AIM 4-1-9

- Class E en route has no communication requirement for VFR aircraft.

Source: 14 CFR 91.127

- Class D entry requires two-way radio communications established BEFORE entering, and maintained inside.

Source: 14 CFR 91.129(c)

- Class C entry takes the same established-communications test as D, plus an altitude-reporting transponder and ADS-B Out.

Source: 14 CFR 91.130(c); 91.215; 91.225

- Class B entry requires an explicit ATC clearance into the Class B — hearing your callsign is not enough.

Source: 14 CFR 91.131(a)

- Class B requires at least a private pilot certificate, or a student pilot with the specific ground and flight training and a logbook endorsement under 61.95, dated within the preceding 90 days and naming that Class B.

Source: 14 CFR 91.131(b); 61.95

- An altitude-reporting (Mode C) transponder and ADS-B Out are required in Class A, B, and C, and at and above 10,000 ft MSL except at and below 2,500 ft AGL.

Source: 14 CFR 91.215(b); 91.225

- The Mode C veil: within 30 NM of a listed Class B primary airport, surface to 10,000 ft MSL, transponder-with-altitude and ADS-B Out are required even under or outside the shelves.

Source: 14 CFR 91.215(b)(2); 91.225(d)(2)

- The speed cap below 10,000 ft MSL is 250 KIAS.

Source: 14 CFR 91.117(a)

- At or below 2,500 ft AGL within 4 NM of a Class C or D primary airport, the cap is 200 KIAS (does not apply inside Class B).

Source: 14 CFR 91.117(b)

- Under a Class B shelf or in a VFR corridor through Class B, the cap is 200 KIAS.

Source: 14 CFR 91.117(c)

- The everyday minimums ("3-152s"): Class C, D, and E below 10,000 ft MSL take 3 SM visibility and 500 below, 1,000 above, 2,000 ft horizontal from clouds.

Source: 14 CFR 91.155(a)

- Class B takes 3 SM and CLEAR of clouds — the exception that works because everyone inside holds an ATC clearance.

Source: 14 CFR 91.155(a)

- Class G in the daytime, at or below 1,200 ft AGL: 1 SM and clear of clouds.

Source: 14 CFR 91.155(a)

- Class G at night takes 3 SM and 500/1,000/2,000 — darkness strips away the Class G discount.

Source: 14 CFR 91.155(a)

- When the ceiling is under 1,000 ft, VFR flight beneath it is prohibited within the lateral boundaries of controlled airspace designated to the surface for an airport.

Source: 14 CFR 91.155(c)

- To take off, land, or enter the pattern inside a B/C/D/E surface area under VFR, ground visibility must be at least 3 SM (flight visibility 3 SM if ground visibility is not reported).

Source: 14 CFR 91.155(d)

- The preflight use of 91.155: destination METAR/TAF ceiling and visibility against the surface-area rule — 1,000 and 3 is the pair that decides whether the field is legally enterable VFR.

Source: 14 CFR 91.155(c)-(d)

- Cloud clearance buffers exist for see-and-avoid: an IFR aircraft can appear out of that cloud, and 500/1,000/2,000 is your reaction time.

Source: PHAK ch. 15

- Special use airspace prints on the sectional with hatched borders and an R-, P-, A-, or MOA label; the chart-edge panel gives its altitudes, times, and controlling agency — identify and check, with the operating rules in 3-5.

Source: Chart User's Guide; PHAK ch. 15

- TFRs never print on the sectional: they live in NOTAMs and current EFB overlays, which is why the NOTAM check is an airspace check.

Source: 14 CFR 91.103; AIM 3-5

- Shelf floors and ceilings on the chart are MSL numbers: convert against local terrain before ducking under a

shelf that is lower above the ground than it looks.

Source: PHAK ch. 15

– The Class E floor is a minimums boundary too: below the vignette you hold G minimums (1 SM clear, day); climbing through 700 or 1,200 AGL the 3–152s attach.

Source: 14 CFR 91.155; PHAK ch. 15

– Airspace risk is a position problem: the ring only bites if you don't know you're in it — boundaries are fixed to landmarks and GPS overlays before flight.

Source: PHAK ch. 15

GOING DEEPER

– A minus sign before the boxed Class D figure means "up to but not including" that altitude.

Source: Chart User's Guide

– Communications are established when the controller says your callsign: "N123AB, standby" is established; "aircraft calling, standby" is not.

Source: AIM 3-2-1

– The Class B words matter: without "cleared into the Class Bravo," you stay out — vectors, a squawk, or flight following do not open the door.

Source: AIM 3-2-3

– A short list of the busiest Class B airports prohibits student-pilot operations entirely, endorsement or not.

Source: 14 CFR 91.131; pt. 91 app. D §4

– Above the ceiling of Class B or C, up to 10,000 ft MSL within their lateral boundaries, the transponder and ADS-B requirements still apply.

Source: 14 CFR 91.215(b)(4); 91.225(d)(3)

– ADS-B Out mirrors the transponder airspace and adds Class E at and above 10,000 ft MSL (minus the 2,500-AGL cushion) and 3,000+ MSL over the Gulf within 12 NM of the coast.

Source: 14 CFR 91.225(d)

– Flying into rule airspace without the equipment takes an ATC authorization arranged in advance (ADAPT for ADS-B) — not a request made airborne at the boundary.

Source: 14 CFR 91.215(d); 91.225(g)

– At and above 10,000 ft MSL the minimums jump to 5 SM and 1,000/1,000/1 SM, because the 250-knot cap is gone and closure rates double.

Source: 14 CFR 91.155(a); 91.117(a)

– After a possible airspace deviation: fly the airplane, comply with ATC, and file a NASA ASRS report within 10 days — the safety system's learning channel, with sanction protection attached.

Source: AC 00-46

THE REGULATIONS BEHIND THIS MODULE

14 CFR 91.131 – Operations in Class B airspace

No person may operate an aircraft in Class B airspace without an ATC clearance from the facility having jurisdiction, and the pilot in command must hold at least a private pilot certificate or be an endorsed student.

Where it goes deeper: This module, in the Class B Leg.

14 CFR 91.155 – Basic VFR weather minimums

No person may operate under VFR with less flight visibility, or closer to clouds, than the table for the airspace class and altitude. Inside a surface area, VFR flight beneath a ceiling under 1,000 feet is prohibited. Ground

visibility of 3 miles is required to take off, land, or enter the pattern.

Where it goes deeper: This module, in the minimums Legs.