I · REG

Flight review interval?

Every 24 calendar months — 1 hr ground + 1 hr flight + endorsement (61.56).

I · REG

Day passenger recency?

3 takeoffs & 3 landings in the same category/class within 90 days (61.57(a)).

I · REG

Night passenger recency?

3 takeoffs & landings to a full stop at night within 90 days (61.57(b)).

I · MED

BasicMed renewal timing?

Physician exam every 48 months; online medical course every 24 months.

I · MED

Current vs. proficient?

Current = met the legal recency boxes; proficient = actually competent. Aim above the minimum.

I · DOCS

What documents must be aboard? (ARROW)

Airworthiness cert, Registration, Radio license (intl), Operating limitations/POH, Weight & balance.

I · DOCS

Inspection mnemonic for required inspections?

AV1ATE — Annual, VOR(IFR), 100-hr, Altimeter/static, Transponder, ELT. Confirm which apply.

I · WX

What raises density altitude (hurts performance)?

High elevation, high temperature, high humidity, low pressure — “high, hot, humid.”

I · WX

Two core aviation weather text products?

METAR (current observation) and TAF (terminal forecast).

I · XC

Two things to always check before a cross-country?

NOTAMs and TFRs (plus fuel, alternates, and weather).

I · NAS

Which airspace classes require an operable transponder/equipment most strictly?

Classes A, B, C (and Mode C veil). Confirm helicopter-specific exceptions.

I · PERF

HIGE vs. HOGE?

Hover In Ground Effect (easier, more lift) vs. Hover Out of Ground Effect (more power required).

I · PERF

Where do you get takeoff/hover performance numbers?

The R44 POH performance charts — never a generic figure.

I · SYS

What enables autorotation mechanically?

The sprag (one-way) clutch lets the rotor freewheel if the engine stops.

I · SYS

Purpose of the pre-takeoff hydraulic check?

Confirm the hydraulic system works and feel the control forces of a failure.

I · SYS

When do you sump the fuel?

Before the first flight of the day and after every refuel — water, sediment, correct grade/color.

I · HF

What does IMSAFE stand for?

Illness, Medication, Stress, Alcohol, Fatigue, Emotion/Eating.

I · HF

Rapid breathing under stress → tingling, lightheaded. Cause & fix?

Hyperventilation — slow the breathing rate; it reverses quickly.

I · HF

Spatial disorientation — what do you trust?

The flight instruments, not your inner-ear sensations.

I · HF

PAVE risk buckets?

Pilot, Aircraft, enVironment, External pressures.

I · HF

Five hazardous attitudes?

Anti-authority, Impulsivity, Invulnerability, Macho, Resignation.

II · PREFLT

What is the authoritative source for the preflight flow?

The R44 POH checklist — same path every time, no distractions.

II · PREFLT

Interrupted mid-walkaround — what do you do?

Back up several items and re-check that section.

II · RISK

PAVE risk buckets?

Pilot, Aircraft, enVironment, External pressures.

II · RISK

After identifying a risk with PAVE, what's the next step?

Mitigate it — delay, reroute, add fuel, or decline; not just note it.

II · BRIEF

What does SAFETY stand for in a passenger briefing?

Seatbelts, Air/environment, Fire/exits, Emergency/equipment, Traffic/talking, Your questions.

II · BRIEF

From which directions may passengers approach/leave a running helicopter?

Front or sides, in the pilot's view — never the rear (tail rotor).

II · BRIEF

How should passengers carry items near the rotor?

Stay low; never raise arms or objects overhead near the main rotor.

II · BRIEF

On sloping ground, which side do passengers approach from?

The downslope side (more rotor clearance).

II · BRIEF

When is the passenger briefing given?

On the ground, engine off, before start.

II · START

What do you call and confirm before start and rotor engagement?

“CLEAR” — area visually clear of people and FOD.

II · START

First gauge to confirm right after engine start?

Oil pressure rising promptly; if not, shut down.

II · START

What indicates the belt actuator is tensioning during engagement?

The clutch light is on; confirm rotor spins up smoothly.

II · RUNUP

What does the governor check confirm?

It holds engine/rotor RPM in the green as the collective changes.

II · RUNUP

What does the pre-takeoff hydraulic check confirm?

The hydraulic system works — and the feel of the controls after a failure.

II · RUNUP

Before-takeoff items (short list)?

Gauges in limits, governor on, hydraulics checked, controls free/correct, area clear, briefing done.

II · START

Abnormal gauge, light, or noise on start — response?

Shut down and investigate; never “watch it and go.”

III · COMMS

Four parts of a standard radio call?

Who you're calling · who you are · where you are · what you want.

III · COMMS

Where do you self-announce at a non-towered field?

On the CTAF; listen and look for other traffic.

III · COMMS

Which instructions must always be read back?

Hold-short and runway/clearance instructions (verbatim).

III · LIGHT

Steady GREEN — in flight vs. on ground?

In flight: cleared to land. On ground: cleared for takeoff.

III · LIGHT

Flashing GREEN — in flight vs. on ground?

In flight: return for landing (steady green follows). On ground: cleared to taxi.

III · LIGHT

Steady RED — in flight vs. on ground?

In flight: give way / continue circling. On ground: stop.

III · LIGHT

Flashing RED — in flight vs. on ground?

In flight: airport unsafe, do not land. On ground: taxi clear of the runway in use.

III · LIGHT

Flashing WHITE (on ground)?

Return to starting point on the airport.

III · LIGHT

Alternating RED & GREEN?

Exercise extreme caution (air or ground).

III · LOSTCOM

VFR radio failure — squawk?

7600; watch for light-gun signals and proceed per the AIM.

III · MARK

Runway markings color vs. taxiway markings color?

Runway = white; taxiway = yellow.

III · MARK

Solid double-yellow line means?

Holding-position (hold-short) marking — don't cross without a clearance.

III · MARK

Mandatory sign color scheme?

Red background, white text (e.g., runway holding position).

III · MARK

Location sign vs. direction sign colors?

Location = black w/ yellow text; direction/destination = yellow w/ black text.

III · HELI

TLOF vs. FATO?

TLOF = touchdown & lift-off area; FATO = final approach & takeoff area (surrounds the TLOF).

III · PATTERN

How does a helicopter pattern differ from the airplane pattern?

Lower & tighter; terminates to a spot other than the active runway; often opposite direction.

III · PATTERN

Typical helicopter pattern altitude (general guidance)?

~500–1,000 ft AGL (general). No single number — look up the field in ForeFlight (Chart Supplement/sectional).

III · PATTERN

Why are helicopter patterns often flown opposite the airplane direction?

Right-seat pilot visibility and to stay clear of fixed-wing flow.

III · RISK

Dominant pattern hazard and primary defense?

Traffic conflict with faster airplanes — be predictable, self-announce, scan, brief a go-around.

III · RISK

Two ways the ground hurts you in airport ops?

Missed/misread hold-short (runway incursion) and downwash on people/objects.

IV · HOVER

What does the collective do in a hover?

Sets power / height above the surface.

IV · HOVER

What does the cyclic do in a hover?

Controls position over the ground (counters fore/aft & lateral drift).

IV · HOVER

What do the antitorque pedals do in a hover?

Hold heading by balancing main-rotor torque.

IV · HOVER

Where should your eyes be while hovering?

Well ahead — not staring down at the skids; make small anticipatory corrections.

IV · GE

IGE vs. OGE hover power?

In ground effect needs LESS power than out of ground effect.

IV · GE

Roughly how high does ground effect extend?

About one rotor diameter above the surface.

IV · GE

Why does an OGE or high-DA hover matter for planning?

A hover you can hold low/IGE may be impossible OGE or at high density altitude.

IV · TAXI

Hover taxi — regime, height, use?

In ground effect (IGE), slow, below ~25 ft AGL; short repositioning. High fuel burn, strong downwash.

IV · TAXI

Air taxi — regime, height, use?

Out of ground effect (OGE), typically ~40 ft AGL (AIM ceiling 100 ft); greater distances; may exceed ~20 kt.

IV · TAXI

Surface (ground) taxi — when?

On the surface via taxiways; mainly wheel-equipped helicopters. Least fuel/downwash.

IV · TAXI

Which taxi burns the most fuel / makes the most downwash?

Hover taxi.

IV · TAXI

Pick a taxi type based on what factors?

Distance, surface, traffic, and density altitude.

IV · RISK

Primary close-to-ground hover hazard?

Dynamic rollover — pivot about a ground-contacting skid.

IV · RISK

If a dynamic-rollover pivot begins, what's the recovery input?

Smoothly lower the collective; keep the aircraft level & drift-free.

IV · RISK

Before any air taxi, what must you do?

Clear the path AND the area your rotor-wash reaches; avoid people, vehicles, parked aircraft.

IV · PERF

Why can an air taxi be unsafe on a hot/high day?

It's low, slow flight near OGE limits; rising power demand (e.g., downwind) can exceed power available.

V · TAKEOFF

Normal takeoff sequence?

From a stable IGE hover, forward cyclic to accelerate through ETL (~16–24 kt), then establish a coordinated climb.

V · TAKEOFF

Source of R44 climb airspeed?

The R44 POH — not a generic rule; it varies with weight & density altitude.

V · TAKEOFF

Why fly a consistent takeoff/climb profile?

To stay clear of the Height-Velocity 'avoid' zones.

V · APPROACH

Stabilized normal approach =

Constant angle to a chosen aim point with a steadily decreasing rate of closure.

V · APPROACH

Aim point moving UP in the windscreen means?

You're undershooting (sinking below path). Moving down = too steep. Keep the picture constant.

V · APPROACH

Bottom of the approach — what to expect?

Loss of ETL; add power smoothly to arrive at a stationary hover.

V · APPROACH

Approach setup that invites VRS?

Low airspeed + high power + high rate of descent (steep/slow) — go around instead.

V · SLOPE

Slope landing — which skid first?

Upslope skid first: cyclic toward the slope while smoothly lowering collective; hold heading with pedals.

V · SLOPE

Out of cyclic before downslope skid is down?

Slope too steep — ABORT (dynamic-rollover risk).

V · CONFINED

Confined-area must-haves before committing?

High & low recon, chosen approach/landing point, an escape/go-around path, and a power check.

V · CROSSWIND

Crosswind hover technique?

Tilt disc slightly into the wind with cyclic; hold heading with pedal; anticipate weathervaning.

V · GO-AROUND

When to go around?

Any unstable approach, unsafe spot, gust, or sink you can't comfortably arrest — decided EARLY.

V · GO-AROUND

Go-around hazard?

The late, low, slow go-around — especially at high DA where power is marginal. Don't over-pull (low RPM).

V · REJECT

Rejected takeoff logic?

If the departure isn't working, stop and reposition rather than press a marginal climb.

V · H-V

Most dangerous takeoff segment?

Low-and-slow (the H-V 'avoid' corner) — keep a forced-landing option until you have airspeed & altitude.

V · RISK

Steep + slow + high power + high sink =

Settling with power (VRS) recipe — keep approaches stabilized; go around early.

VI · 4 FORCES

The four forces on a helicopter?

Lift, weight, thrust, drag — balanced by rotor disc tilt and collective pitch.

VI · CONTROLS

Collective / cyclic / pedals do what?

Collective = power/height (all blades together); cyclic = disc tilt/direction; pedals = antitorque/heading.

VI · TORQUE

Why a tail rotor?

To counter main-rotor torque (Newton's 3rd law) and control heading.

VI · DRIFT

Translating tendency?

Tail-rotor thrust drifts the aircraft sideways; corrected with cyclic (and rigging).

VI · DISSYM

Dissymmetry of lift?

Advancing blade makes more lift than retreating blade in forward flight.

VI · FLAP

How is dissymmetry equalized?

Blade flapping: advancing flaps up (less AoA), retreating flaps down (more AoA).

VI · ETL

Effective translational lift occurs around?

~16–24 kt; rotor reaches clean air, gains efficiency; nose pitches up — anticipate with cyclic.

VI · ETL

Cues of ETL?

Tendency to climb, slight pitch/roll change, vibration smooths out.

VI · XFLOW

Transverse flow effect?

Airflow difference front-to-back of the disc near ~10–20 kt; contributes to vibration/roll in transition.

VI · PRECESS

Gyroscopic precession?

Rotor reacts ~90° after the point of input — designed into control rigging.

VI · DA

Density altitude rises with?

Heat, altitude, humidity, low pressure — performance drops as DA rises.

VI · DA

Effect of high DA on engine/rotor?

Less power and less rotor thrust — margins shrink (worst OGE/heavy).

VI · DA

Where do R44 hover/takeoff numbers come from?

R44 POH Section 5 charts for the actual conditions — never estimated.

VI · GE

IGE vs OGE power?

In ground effect needs LESS power than out of ground effect (~1 rotor diameter).

VI · RISK

Why is high DA dangerous?

It's invisible — the runway looks the same; an OGE hover/takeoff may be impossible hot & high.

VII · QUICKSTOP

What is a rapid deceleration (quick stop)?

A smooth, coordinated maneuver to slow quickly and terminate to a stationary hover.

VII · QUICKSTOP

Cyclic input to decelerate?

Aft cyclic to raise the nose and slow.

VII · QUICKSTOP

Collective during deceleration?

Lower it to prevent ballooning; raise it at the end to arrest the descent into the hover.

VII · QUICKSTOP

Pedal role?

Keep the nose straight as torque/power changes.

VII · QUICKSTOP

Throttle/governor role?

Hold rotor RPM in the green throughout.

VII · QUICKSTOP

Why teach the quick stop?

Builds coordination & energy management used in approaches, confined areas, and the autorotation flare.

VII · RISK

Hazard 1 — too much nose-up too low?

Tail-rotor / tail-boom strike.

VII · RISK

Hazard 2 — mismanaged collective?

Ballooning or low rotor RPM.

VII · SAFETY

Entry parameters?

Conservative height & airspeed per the NCHF training standard, with room to recover.

VII · PRINCIPLE

Despite the name, the maneuver is flown how?

Smoothly and with coordination — emphasis on control coordination, not abruptness.

VII · LINK

Which emergency maneuver shares the flare feel?

The autorotation flare — quick stops build that energy-management skill.

VII · LIMITS

RPM/limits during the maneuver?

Keep within R44 POH Section 2 ranges at all times.

VIII · PILOTAGE

Pilotage =

Navigating by visual reference to landmarks matched to the sectional chart.

VIII · DR

Dead reckoning =

Computing position from time, airspeed, distance, and heading (corrected for wind).

VIII · METHOD

How do pilotage & DR work together?

Fly the computed DR heading; confirm with pilotage checkpoints; cross-check both with GPS.

VIII · CHART

Sectional chart scale?

1:500,000; updated every 56 days — use the current chart / ForeFlight.

VIII · FF

VFR flight following is?

Optional, workload-permitting ATC radar traffic advisory service — you still see-and-avoid.

VIII · FF

How to request flight following?

Give position, altitude, type, destination; receive a discrete transponder squawk.

VIII · ADSB

ADS-B Out does what?

Broadcasts your position to ATC & nearby aircraft — improves traffic awareness.

VIII · VOR

VOR vs GPS?

VOR = ground-based bearing system (good backup); GPS = satellite position/track (needs current database).

VIII · DIVERT

First diversion action?

Turn toward a suitable alternate, THEN refine heading/time/fuel.

VIII · LOST

Lost-procedure C's?

Climb, Communicate, Confess, Comply, Conserve.

VIII · LOST

Why climb when lost/unsure?

Improves visibility, radio range, and radar coverage.

VIII · RISK

Top modern nav risk?

Over-reliance on GPS / automation complacency — keep a backup and cross-check.

VIII · RISK

Decision hazard behind late diversions?

Get-there-itis — decide early, protect fuel reserve, ask for help.

VIII · FUEL

Before committing to an alternate?

Verify fuel to the alternate against actual burn and required reserve.

IX · PRIORITY

Universal first action in any malfunction?

Fly the aircraft — protect rotor RPM & airspeed, pick a landing area; then diagnose & run the POH.

IX · ENGINE

Complete power loss is handled by?

Autorotation (Lesson 28).

IX · HYD

Hydraulic failure feels like?

Increased control forces — maintain control, follow the POH.

IX · AUTO

Two things to protect when the engine quits?

Airspeed and rotor RPM.

IX · AUTO

Three rotor-disc regions in autorotation?

Driven (tip), driving/autorotative (mid-blade, sustains RPM), stall (hub).

IX · VRS

Three conditions for VRS / settling with power?

High descent rate + airspeed below ETL + significant power applied.

IX · VRS

VRS recovery?

Reduce collective + forward cyclic to gain airspeed (fly to clean air); some teach Vuichard. Costs altitude — prevent it.

IX · LOWRPM

Low-rotor-RPM recovery?

Lower collective + roll on throttle (aft cyclic in forward flight) — instant reflex.

IX · LOWRPM

Why so dangerous near the ground?

Can progress to unrecoverable rotor stall in seconds.

IX · ROLLOVER

Dynamic rollover needs?

A pivot point + rolling moment past the critical angle — recover by smoothly lowering collective.

IX · RESON

Ground resonance trigger?

Hard / one-skid uneven touchdown disturbing rotor lead-lag; act per POH (lift off or shut down).

IX · LTE

LTE / unanticipated yaw caused by?

Wind (not a failure) — worst at low airspeed, high power, OGE. Apply pedal + gain airspeed.

IX · TRFAIL

True tail-rotor failure handled by?

POH Section 3 procedures — establish airspeed for weathervaning; running landing or autorotation per failure.

IX · EQUIP

Commonly required emergency equipment?

An ELT; plus 91.205 instruments/equipment; carry route-appropriate survival gear.

IX · SURVIVAL

Survival gear chosen by?

Route, terrain, season; keep it accessible and know how to use it; brief passengers.

IX · RISK

Two emergency-handling killers?

Misdiagnosis and delay — fly first, then diagnose, then act with the correct POH procedure.

X · EYE

Rods vs cones?

Cones = color/detail/day; rods = low-light/peripheral/motion.

X · EYE

Night blind spot?

Center of vision (fovea) is poor at night — use off-center viewing (5–10° off).

X · ADAPT

Dark adaptation time?

~30 minutes; protect with dim red/low light; avoid bright white light.

X · ILLUSION

Autokinesis?

A fixed light appears to move when stared at — keep scanning, cross-check instruments.

X · ILLUSION

False horizon?

Sloping clouds/ground lights mimic the horizon — trust instruments.

X · ILLUSION

Black-hole approach?

Unlit terrain on approach makes you fly low — back up with instruments/glidepath.

X · LIGHT

Why a red-lens flashlight?

Preserves dark adaptation while reading checklists.

X · EQUIP

Night equipment to confirm?

Position, anti-collision, and instrument lighting working; backup flashlight; extra fuel.

X · CURRENCY

Night currency to carry passengers?

Required recent night takeoffs/landings — verify before the flight.

X · PLAN

Night fuel planning?

Plan extra fuel/reserve; weather/ceilings matter more at night.

X · SCAN

Night traffic scan technique?

Slow, off-center scan using peripheral (rod) vision.

X · RISK

Core night hazard?

Illusions & reduced visual cues over dark terrain — cross-check instruments, stay current.

XI · SHUTDOWN

After-landing/shutdown source?

The R44 POH after-landing & shutdown checklist — in order, no rushing.

XI · COOLDOWN

Why not rush shutdown?

Many engines need a cool-down; the rotor needs time to stop.

XI · SECURE

Securing the aircraft?

Blade tie-downs/covers + control locks per the manufacturer; tie to mooring points, anti-slip knots.

XI · CRITICAL

Tie-downs/covers must be?

Removed before the next start — a blade tie-down left on can cause severe damage.

XI · PARK

Where to park?

Clear of other aircraft and downwash-sensitive areas.

XI · HAZARD

Postflight hazards while rotor turns?

People approaching too soon, hot engine/exhaust, FOD from downwash.

XI · POSTFLT

Postflight walk-around looks for?

New leaks, cracks, loose/missing hardware, blade & tail-rotor condition, FOD/bird damage, fluids.

XI · RECORDS

Record after each flight?

Accurate flight time and any discrepancy (squawk), clearly written.

XI · AIRWORTHY

Open unaddressed squawk means?

Aircraft may not be airworthy until resolved/deferred properly.

XI · RISK

Cultural hazard in records?

Normalizing defects ('it's been like that') & not reporting squawks — write it up honestly.

XI · CHAIN

Why postflight matters?

Catches problems early — protects the next pilot and keeps the aircraft airworthy.

XI · SOP

Grounding/deferring items?

Follow NCHF procedures; when in doubt, write it up and ground it.