



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## Introduction

These are my rough notes/memory aids for the applicable Areas of Operation from the FAA ATP Helicopter Practical Test Standards as of September 2016 R44 Raven 2 specific notes added. I didn't fully proof-read the notes before sharing, so let me know of any issues/errors etc. Good luck!

## I. PREFLIGHT PREPARATION

### A. TASK: EQUIPMENT EXAMINATION

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

1. Knowledge appropriate to the helicopter; of systems/components; normal and emergency procedures; and uses the correct terminology for the following—
  - a. Skid-type landing gear
    - Impacts absorbed elastically until cross tube yields (limit is **30"** tail skid clearance)
    - Abrasion-resistant wear shoes (minimum **0.06"** or **1.5 mm**)
    - Can fly with or without aerodynamic fairings
  - b. Lycoming **IO-540-AE1A5** Powerplant
    - **6** cylinder, horizontally-opposed, overhead-valve, air-cooled, fuel-injected with wet sump oil system.
    - Starter, alternator, shielded ignition, two magnetos, muffler, 2 oil coolers & induction air filter
    - Direct drive squirrel cage cooling fan cools cylinders & oil coolers
    - Induction air via opening in side of fuselage with radial-flow air filter & spring-loaded blockage bypass (unfiltered from inside engine bay - expect some power loss)
    - RPM governor active above **80%** engine RPM - may not prevent over/under speed, especially at high DA or aggressive maneuvers. Switch on collective to disable.
    - Correlator has overtravel spring (detent) to disable
    - Throttle, correlator & governor less effective (and may be wide open) above **6,000'** - slow & smooth
    - MCP **205 BHP**, 5 min TOP **245 BHP**
  - c. Fuel system
    - Main (**29.5** usable) and auxiliary (**17** gal usable) bladdered tanks - cross feed
    - Shutoff valve between seats, vents in mast (with accident rollover valves), gascolator
    - Engine-driven pump & auxiliary electric pump (priming and then on when oil pressure & clutch engaged) - engine will run normally with either pump
    - Drain/sample valves on each tank and gascolator
    - **100LL** or **100/130**
    - **15 gal/hr**
    - Low fuel light = **3 gal (10 mins)**



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

- d. Oil system
  - 7 to 9 qts
  - Oil pressure & temp gauges & low pressure warning light
  - Engine driven oil pump, filter, wet sump, two coolers
- e. Hydraulic system
  - 450 to 500 psi gearbox driven pump, three servos, reservoir with filter, pressure relief valve & pilot controlled shutoff valve
  - Shutoff solenoid requires electrical power to shut off. Circuit break disables switch, not the system
- f. Electrical system—alternator, battery, circuit breakers and protection devices, controls, indicators, and external and auxiliary power sources and ratings.
  - 28 volt DC system with 28 volt **70/64 continuous** amp alternator & sealed 24 volt lead-acid battery, ammeter, ALT warning light & circuit breakers
  - Alternator send power through battery to protect against voltage spikes (POH suggests not turning master off with alternator on)
  - ACU - regulates alternator output (~**28.5**), warn low voltage (**24-26** volts), shut off alternator if **32+** volts
  - If CHT reads zero - probably caution light breaker popped
  - If test caution panel & MGB Temp doesn't illuminate, probably gauges breaker popped
  - Map light on separate circuit to instrument illumination
  - Landing lights only work with clutch engaged
  - Engine & Rotor tachs on separate circuits & fed by battery with bypass circuit (stays on if master & alternator OFF & clutch engaged). The rotor pickup is on MGB & engine via magneto
  - Fuses on firewall protects bypass circuit to clock and tachs via clutch switch
  - Clutch fuse to maintain clutch warning light on and protect against over tension & motor burn out (also 0.25 sec delay)
- g. environmental systems—heating, cooling, ventilation, controls, indicators, and regulating devices.
  - Fresh air vents in nose & doors. Heating via muffler heat shroud & control valve at firewall
  - AC(optional extra)
    - Compressor, belt driven, left engine compartment, engaged when fan set to low or high. Auto disengage if:
      - evaporator temp below zero
      - leakage occurs
      - pressure excessive
      - close to full throttle.
    - Evaporator back cabin draws in warm air via fan & blows into cabin vents & drains water from belly
    - Condenser left side engine, cooled by squirrel cage
    - Own circuit breaker
    - R-134a refrigerant



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## h. avionics and communications

- Garmin 430W (WASS capable) LPV & LNAV/VNAV- check database up to date (28 day cycle) maybe used to substitute VOR, DME, NDB, LOM or LMM for navigation position (but NOT a IAP requiring VOR or NDB equipment in IAP title)
- HSI & GPS Nav radio for VOR - required tests for IFR use:
  - Past **30** days - date, place, error & signature
  - Ground test signal (VOT) or radio repair signal +/- **4** degrees
  - Ground VOR checkpoint +/- **4** degrees
  - Airborne VOR check point +/- **4** degrees
  - Own landmark along airway (pref **20**+NM from station) +/- **6** degrees
  - Dual VOR comparison +/- **4** degrees
- Marker beacons
- Sensitive & adjustable altimeter - tested in the last **24** months
- Mode C Transponder - tested in last **24** months
- Optional autopilot:
  - Stability Augmentation System (SAS) mode maintains steady attitude via cyclic. No pedal or collective inputs.
  - Also heading hold( HDG - follows bug), altitude hold (ALT set by TRIM button), navigation (NAV- follows CDI), vertical navigation (VRT) tracks glideslope & backcourse mode (BC - reverse CDI sensing - set CDI to front course)
  - NAV mode will follow HDG if set until course incept, else will select 45 degree intercept angle.
  - Limitations - min **ALT** mode AGL **200'**, min **VRT** on approaches **50'** AGL. Pilot must hold cyclic during engage/disengage & if **<50** KIAS when **<500'** AGL. TRIM limited to 6 degrees up, 11 down and 10 bank.
  - Will automatically disengage if fault detected (four beeps in headset), else failure recognized by erratic cyclic motion or abnormal cyclic forces or deviation in pitch/roll - manual disengage using **AP OFF**
  - Two electric servomotors, flight control computer (under pilot seat), control panel & buttons on cyclic. Roll servo under pilot seat, pitch servo ahead of cyclic stick - connected to cyclic via electromagnetic clutches. Also requires an onboard attitude source like AHRS. Has own circuit breaker but NOT on the avionics master switch.
  - All modes (except SAS) disengage below **44** KIAS or above **130** KIAS
- ELT - not required for helicopters, but if installed:
  - Replace batteries if used **1** cumulative hour or **50%** used
  - Inspection within **12** months
- i. ice protection—none, but heated pitot optional extra
- j. crewmember and passenger equipment—fire extinguisher (use on all types)



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## k. Main/tail rotor systems

- **33'** semi-rigid underslung main rotor, free to teeter (as one unit) & cone, rigid in plane
- Min rotor blades **10"** to **10.6"** chord, **-6** washout, steel leading edge, aluminium honeycomb core & new blades have aluminum skin and no bond line issues
- **4' 10"** semi-rigid tail rotor, free to teeter, rigid in plane with delta hinge & **1** degree precone & **5.1"** chord
- Upper and lower sheave with 4 vee-belts & clutch for tension
- Upper sheave houses over-running (freewheel/sprag) clutch
- Flex couplings either side of the upper sheave and at tail gearbox & lightly-loaded damper bearing on tail rotor drive shaft
- Main gearbox single-stage spiral-bevel gear set, splash lubricated, air cooling ducting underneath
- Tail gearbox splash lubricated spiral bevel gear set. Oil must be visible in sight glass, fill to middle
- Wait **30** sec from engine cut off, **10** lbs pull (should take more than **20** secs to stop)
- Power on **101** to **102%**
- Power off **90** to **108%**
- Low RPM warning **97%** & below

## l. pitot-static system

- Pitot on mast (heated optional) & two static either side behind doors.
- Water drain plugs under forward inspection panel.

2. Exhibits adequate knowledge of the contents of the Pilot's Operating Handbook or RFM with regard to the systems and components listed in paragraph 1 (above); the Minimum Equipment List (**MEL**), if appropriate; and the Operations Specifications, if applicable.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## B. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: Parts 1, 61, 91; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of performance and limitations, including a thorough knowledge of the adverse effects of exceeding any limitation.
2. Demonstrates proficient use of (as appropriate to the helicopter) performance charts, tables, graphs, or other data relating to items such as—
  - takeoff performance— **55** KIAS  $V_y$ , see HV diagram POH 5-6
  - climb performance— **55** KIAS  $V_y$
  - service ceiling **14,000** DA or **9,000** AGL (landing within **5** mins for fire EP)
  - cruise performance - max range **100** KIAS
  - fuel consumption **15** gal/hr. Range @ 100 KIAS = **250** NM with reserve. Endurance @ **55** KIAS = **2.5** hrs with reserve.
  - MGW, standard day HIGE = **9,000'** HOGE = **4,500'** charts POH 5-4 & 5-5
  - other performance data (appropriate to the helicopter).
3. Describes (as appropriate to the helicopter) the performance airspeeds -
  - Takeoff & climb = **60** KIAS
  - Max rate of climb ( $V_y$ ) **55** KIAS
  - Autorotation **70** KIAS
  - Above MCP or any door off or max range = **100** KIAS
  - $V_{ne}$  **130** KIAS, **120** KIAS if above **2,200** lbs below **3,000'**
  - $V_{ne}$  auto **100** KIAS below **3,000'**
  - $V_{ne}$  above **3,000** DA - see placard/chart POH2-9
4. Describes the effects of meteorological conditions upon performance
  - FAA recommends add margin of **10%** for high humidity above 80% humidity).
  - Rule of thumb for DA **+1000'** per **8C** above standard
5. **Computes the center-of-gravity** location for a specific load condition (as specified by the examiner), including adding, removing, or shifting weight ((weight shifted x distance) / total weight = CG change).
6. Determines if the computed center of gravity is within the forward, aft, and lateral (if applicable) center-of-gravity **limits** for takeoff and landing.
  - Max gross weight **2,500**lbs
  - Min gross weight **1,600** lbs
  - Max per seat **300** lbs, including max **50** lbs in baggage compartment
7. Demonstrates good planning and knowledge of procedures in applying operational factors affecting helicopter performance.
  - Grass vs black top, slopes, water, wind, etc
  - Robinson 2008 Safety Alert regarding flickering Aux Pump light & subsequent engine failure in high temp (100F+)
  - Turbulence speed 60-70 KIAS



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## II. PREFLIGHT PROCEDURES

### A. TASK: PREFLIGHT INSPECTION

REFERENCES: Parts 61, 91; Pilot's Operating Handbook, RFM.

1. Preflight inspection procedures, while explaining briefly—
  - a. the purpose of inspecting the items which must be checked.
  - b. how to detect possible defects.
  - c. the corrective action to take.
2. Operational status of the helicopter by locating and explaining **documents** such as—
  - a. airworthiness and registration certificates.
  - b. operating limitations, handbooks, and manuals.
  - c. minimum equipment list (MEL) (if appropriate).
  - d. weight and balance data.
  - e. maintenance requirements, tests, and appropriate records applicable to the proposed flight or operation; and **maintenance that may be performed by the pilot** or other designated crewmember.
    - Inspections:
      - 50 hr Robinson (part 135)
      - 100 hr if for hire
      - Life limited parts (blades etc)
      - Annual
      - ADs, etc
      - SBs from Robinson - like the rotor RPM sender magnet failure (Araon Vane), or tail rotor cracks (replace with new blade the) and the main rotor blade modification at extended chordline
    - VOR Pitot, Transponder, ELT Etc
3. Uses approved preflight **checklist**
4. Verifies the helicopter is safe for flight and explain the purpose of inspecting items such as—
  - a. powerplant, including controls and indicators.
  - b. fuel quantity, grade, type, contamination safeguards, and servicing procedures.
  - c. oil quantity, grade, and type.
  - d. hydraulic fluid quantity, grade, type, and servicing procedures.
  - e. oxygen quantity, pressures, servicing procedures, and associated systems and equipment for crew and passengers. FAA-S-8081-20 2-2
  - f. skid tubes or landing gear, brakes, and steering system, where applicable.
  - g. tires for condition, inflation, and correct mounting, where applicable.
  - h. fire protection/detection systems for proper operation, servicing, pressures, and discharge indications.
  - i. pneumatic system pressures and servicing.
  - j. ground environmental systems for proper servicing and operation.
  - k. auxiliary power unit (APU) for servicing and operation.
  - l. flight control systems including trim, rotor blades, and associated components.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

- m. main rotor and anti-torque systems.
- n. anti-ice, deice systems, servicing, and operation.
- 5. Coordinates with ground crew and ensures adequate clearance prior to moving any devices such as doors or hatches.
- 6. Complies with the provisions of the appropriate Operations Specifications, if applicable, as they pertain to the particular helicopter and operation.
- 7. Demonstrates proper operation and verification of all helicopter systems.
- 8. Notes any discrepancies, determines if the helicopter is airworthy and safe for flight, or takes the proper corrective action.
- 9. Checks the general area around the helicopter for hazards to the safety of the helicopter and personnel.

## B. TASK: POWERPLANT START

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

- 1. Correct powerplant start procedures including the use of an external power source, starting under various atmospheric conditions, normal and abnormal starting limitations, and the proper action required in the event of a malfunction (STARTER EP & fire on start EP).
- 2. Ensures the ground safety procedures are followed during the before-start, start, and after-start phases.
- 3. Ensures the use of appropriate ground crew personnel during the start procedures.
- 4. Performs all items of the start procedures by systematically following the approved **checklist** items for the before-start, start, and after-start phases.
- 5. Demonstrates sound judgment and operating practices in those instances where specific instructions or checklist items are not published.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## C. TASK: TAXIING

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of safe and appropriate taxi procedures.
2. Demonstrates proficiency by maintaining correct and positive helicopter control such as hover height (when within **10** feet of the surface, maintains  $\pm\frac{1}{2}$  of the hover altitude; when above 10 feet, maintains  $\pm 5$  feet of the hovering altitude), turns, and speed. This includes hovering taxi (maintains within **2** feet of desired track), air taxiing (maintains altitude within 10 feet of desired); and in helicopters with wheels, includes ground taxiing. In helicopters equipped with float devices, this includes water taxiing, approaching a buoy, and docking.
3. Maintains proper spacing on other aircraft and persons taking into consideration rotorwash and flying debris. Avoids conditions that may cause loss of tail rotor/antitorque effectiveness (**LTE**).
4. Accomplishes the applicable checklist items and performs recommended procedures.
5. Maintains desired and appropriate track and speed. FAA-S-8081-20 2-4
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting.
8. Maintains constant vigilance and control of the helicopter during taxi operation.

## D. TASK: PRETAKEOFF CHECKS

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of the pretakeoff checks by stating the reason for checking the items outlined on the approved checklist and explaining how to detect possible malfunctions.
2. Divides attention inside and outside cockpit.
3. Ensures that all systems are within their normal operating range prior to beginning, during the performance of, and at the completion of those checks required by the approved checklist.
4. Explains, as may be requested by the examiner, any normal or abnormal system operating characteristic or limitation; and the corrective action for a specific malfunction.
5. Determines if the helicopter is safe for the proposed flight or requires maintenance.
6. Determines the helicopter's takeoff performance, considering such factors as wind, density altitude, helicopter weight, temperature, pressure altitude, and departure route or routing.
7. Determines airspeeds/V-speeds and properly sets all instrument references, flight director and autopilot controls, and navigation and communications equipment.
8. Reviews procedures for emergency and abnormal situations which may be encountered during takeoff, and states the corrective action required of the pilot in command and other concerned crewmembers.
9. Obtains and correctly interprets the takeoff and departure clearance as issued by ATC.





# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## III. TAKEOFF AND DEPARTURE PHASE

### A. TASK: NORMAL AND CROSSWIND TAKEOFF

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of normal and crosswind takeoffs and climbs including (as appropriate to the helicopter) airspeeds, configurations, and emergency/ abnormal procedures. Performs all required pretakeoff checks as required by the appropriate checklist items.
2. Adjusts the powerplant controls as recommended by the FAA-approved guidance for the existing conditions.
3. Notes any obstructions or other hazards in the takeoff path.
4. Verifies and correctly applies the existing wind component to the takeoff performance.
5. Completes required checks prior to starting takeoff to verify the expected powerplant performance.
6. Aligns the helicopter on the runway centerline, or with the takeoff path.
7. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway or intended flightpath, prior to initiating and during the takeoff.
8. Sets power smoothly and positively to a predetermined value.
9. Monitors powerplant controls, settings, and instruments during takeoff to ensure all predetermined parameters are met.
10. Accelerates through effective translational lift to normal climb speed.
11. Uses the applicable noise abatement and wake turbulence avoidance procedures, as required.
12. Accomplishes the appropriate checklist items.
13. Maintains the appropriate climb segment airspeed/Vspeeds.
14. Maintains the desired heading within  $\pm 5^\circ$  and the desired airspeed/V-speed within  $\pm 5$  knots.

FAA-S-8081-20 2-6



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## B. TASK: INSTRUMENT TAKEOFF

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM.

1. Exhibits adequate knowledge of an instrument takeoff with **instrument meteorological conditions simulated at or before reaching an altitude of 100 feet** (30 meters) AGL. If accomplished in a flight simulator, visibility should be no greater than one-quarter (1/4) mile, or as specified by operator specifications.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety.
3. Accomplishes the appropriate checklist items to ensure that the helicopter systems applicable to the instrument takeoff are operating properly.
4. Sets the applicable flight instruments to the desired setting prior to initiating the takeoff.
5. Transitions smoothly and accurately from visual meteorological conditions to actual or simulated instrument meteorological conditions.
6. Maintains the appropriate climb attitude.
7. Maintains desired heading within  $\pm 5^\circ$  and desired airspeeds within  $\pm 5$  knots.
8. Complies with ATC clearances and instructions issued by ATC (or the examiner simulating ATC).

## C. TASK: POWERPLANT FAILURE DURING TAKEOFF

REFERENCES: Part 61; AC 61-13, AC 120-62; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of the procedures used during powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety. 2-7 FAA-S-8081-20
3. Maintains the helicopter aligned with the runway heading or takeoff path appropriate for climb performance and terrain clearance when powerplant failure occurs.
4. Single-Engine Helicopters: Establishes a power-off descent approximately straight-ahead, if the powerplant failure occurs after becoming airborne. The **failure of the powerplant should be simulated during a normal takeoff (no lower than 500 feet or 150 meters AGL).**



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## D. TASK: REJECTED TAKEOFF

REFERENCES: Part 61; AC 61-13, AC 120-62; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of the technique and procedure for accomplishing a rejected takeoff after powerplant/system(s) failure/warnings, including related safety factors.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety.
3. Aligns the helicopter on the runway centerline or takeoff path.
4. Performs all required pretakeoff checks as required by the appropriate checklist items.  
FAA-S-8081-20 2-8
5. Increases power smoothly and positively, if appropriate to the helicopter, to a predetermined value based on existing conditions.
6. Maintains directional control on the runway heading or takeoff path.
7. Aborts the takeoff if, in a single-engine helicopter, the powerplant (or other) failure occurs prior to becoming airborne; or in a multiengine helicopter, the powerplant (or other) failure occurs at a point during the takeoff where the abort procedure can be initiated and the helicopter can be safely landed and stopped.
8. Reduces the power smoothly and promptly, if appropriate to the helicopter, when powerplant failure is simulated. In a wheeled helicopter, the failure will be simulated at a reasonable airspeed determined after giving due consideration to the helicopter's characteristics, Height Velocity Diagram, length of landing area, surface conditions, wind direction and velocity, and any other factors that may adversely affect safety.
9. Maintains positive control, and accomplishes the appropriate powerplant failure procedures as recommended by the appropriate checklist.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## E. TASK: INSTRUMENT DEPARTURE

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM.

1. In actual or simulated instrument conditions, exhibits adequate knowledge of SIDs, En Route **Low and High Altitude Charts**, STARs, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communications frequencies, and **selects and identifies the navigation aids** associated with the proposed flight.
4. Performs the appropriate checklist items.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all instructions and airspace restrictions.
7. Exhibits adequate knowledge of **two-way radio communications failure procedures**. 2-9  
FAA-S-8081-20 8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, clearance, or as directed by the examiner.
8. Maintains the appropriate airspeed within **±10** knots, headings within **±10°**, altitude within **±100 feet** (30 meters); and accurately tracks a course, radial, or bearing.
9. Conducts the departure phase to a point where, in the opinion of the examiner, the transition to the en route environment is complete.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## IV. INFLIGHT MANEUVERS

### A. TASK: STEEP TURNS

REFERENCES: Part 61; AC 61-27; FSB Report; Pilot's Operating Handbook, RFM.

1. In actual or simulated instrument conditions, exhibits adequate knowledge of steep turns (if applicable to helicopter) and the factors associated with performance; and, if applicable, angle of bank, and pitch and power requirements.
2. Selects an altitude recommended by the manufacturer, training syllabus, or other training directive.
3. Establishes the recommended entry airspeed.
4. Rolls into a coordinated turn of 180° or 360° with a bank as appropriate, not to exceed 30°. Maintains the bank angle within  $\pm 5^\circ$  while in smooth, stabilized flight.
5. Applies smooth coordinated pitch, bank, and power to maintain the specified altitude within  **$\pm 100$  feet** (30 meters) and the desired airspeed within  **$\pm 10$  knots**.
6. Rolls out of the turn (at approximately the same rate as used to roll into the turn) within  $\pm 10^\circ$  of the entry or specified heading, stabilizes the helicopter in a straight and level attitude or, at the discretion of the examiner, reverses the direction of turn and repeats the maneuver in the opposite direction.
7. Avoids any indication of abnormal flight attitude, or exceeding any structural, rotor, or operating limitation during any part of the maneuver. 2-11 FAA-S-8081-20

### C. TASK: POWERPLANT FAILURE—SINGLE-ENGINE HELICOPTER

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

NOTE: No simulated powerplant failure shall be given by the examiner in a helicopter when an actual touchdown could not be safely completed should it become necessary, nor when an autorotative descent might constitute a violation of the CFR's. The examiner shall direct the applicant to terminate this TASK in a power recovery at an altitude high enough to assure that a safe touchdown could be accomplished in the event an actual powerplant failure should occur during recovery procedures.

1. Exhibits adequate knowledge of the flight characteristics, approach and forced (emergency) landing procedures, and related procedures to use in the event of a powerplant failure (as appropriate to the helicopter).
2. Enters autorotation promptly when the examiner simulates a powerplant failure by— a. lowering the collective as necessary to maintain rotor RPM within acceptable limits, b. establishing and maintaining the recommended autorotation airspeed within  $\pm 5$  knots, and c. maintaining proper longitudinal trim.
3. Selects a suitable airport or landing area which is within the performance capability of the helicopter.
4. Establishes a proper flight pattern to the selected airport or landing area, taking into account altitude, wind, terrain, obstructions, and other pertinent operational factors. Avoids undershooting or overshooting the selected landing area.
5. Determines the cause for the simulated powerplant failure (if altitude permits) and if a restart is a viable option.
6. Performs the emergency memory checklist items appropriate to the helicopter.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

7. Maintains positive helicopter control throughout the maneuver. 2-13 FAA-S-8081-20
8. Uses helicopter configuration devices (such as landing gear) in a manner recommended by the manufacturer and/or approved by the FAA.
9. Terminates the autorotation by performing a power recovery, at a safe altitude or as briefed by the examiner, prior to the flight.

## D. TASK: RECOVERY FROM UNUSUAL ATTITUDES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, Flight Manual.

1. In actual or simulated instrument conditions, exhibits adequate knowledge of recovery from unusual attitudes.
2. Recovers from both nose-high and nose-low unusual attitudes, using proper pitch, bank, and power techniques.

## E. TASK: SETTLING-WITH-POWER

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, Flight Manual.

1. Exhibits adequate knowledge of the conditions which contribute to, and may result in, "settling-with-power."
2. Describes the relationship of gross weight, RPM, and density altitude to the severity of the vertical rate of descent.
3. At an altitude above **1,500** feet (450 meters) AGL or as recommended by the manufacturer if it is higher, demonstrates entry into "settling-with-power," using the recommended procedures in the correct sequence.
4. Recovers immediately at the first indication of "settling with-power," using the recommended procedures in the correct sequence.
5. Demonstrates smooth, positive helicopter control and prompt recovery techniques.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## V. INSTRUMENT PROCEDURES

### A. TASK: INSTRUMENT ARRIVAL

REFERENCES: Part 61; Pilot's Operating Handbook, RFM, AIM; En Route Low and High Altitude Charts, Profile Descent Charts, STARs, Instrument Approach Procedure Charts.

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of En Route Low and High Altitude Charts, STARs, Instrument Approach Procedure Charts, and related pilot and controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and correctly identifies the appropriate navigation frequencies and facilities associated with the area arrival.
4. Performs the helicopter checklist items appropriate to the area arrival.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all ATC clearances, instructions, and restrictions.
7. Exhibits adequate knowledge of two-way communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, ATC clearance, or as directed by the examiner.
9. Adheres to airspeed restrictions and adjustments required by regulations, ATC, the RFM, or the examiner.
10. Establishes, where appropriate, a rate of descent consistent with the helicopter operating characteristics and safety.
11. Maintains the appropriate airspeed/V-speed within  $\pm 10$  knots; heading  $\pm 10^\circ$ ; altitude within  $\pm 100$  feet (30 meters); and accurately tracks radials, courses, and bearings.
12. Complies with the provisions of the Profile Descent, STAR, and other arrival procedures, as appropriate. 2-15 FAA-S-8081-20



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## B. TASK: HOLDING

REFERENCES: Part 61; Pilot's Operating Handbook, RFM, AIM; En Route Low and High Altitude Charts, STARs, Instrument Approach Procedure Charts

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of holding procedures for standard and non-standard, published and non-published holding patterns. If appropriate, demonstrates adequate knowledge of holding endurance, including, but not necessarily limited to, **fuel on board, fuel flow while holding, fuel required to alternate, etc.**
2. **Changes to the recommended holding airspeed** appropriate for the helicopter and holding altitude, so as to cross the holding fix at or below maximum holding airspeed.
3. Recognizes arrival at the clearance limit or holding fix.
4. Remains within protected airspace.
5. Complies with **ATC reporting** requirements.
6. Uses the proper timing criteria required by the holding altitude and ATC or examiner's instructions.
7. Complies with the holding pattern leg length when a DME distance is specified.
8. Arrives over the holding fix as close as possible to the "expect further clearance" time.
9. Maintains the appropriate airspeed/V-speed within  $\pm 10$  knots, altitude within  $\pm 100$  feet (30 meters); headings within  $\pm 10^\circ$ ; and accurately tracks radials, courses, and bearings.

## C. TASK: PRECISION INSTRUMENT APPROACHES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: **Two precision approaches** must be accomplished in actual or simulated instrument conditions.

1. Exhibits adequate knowledge of the precision instrument approach procedures with all engines operating, and with one engine inoperative.
2. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses the proper communications phraseology and techniques.
3. Accomplishes the appropriate precision instrument approach procedure as selected by the examiner.
4. Complies, in a timely manner, with all clearances, instructions, and procedures.
5. Advises ATC anytime the helicopter is unable to comply with a clearance.
6. Establishes the appropriate helicopter configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
7. Completes the helicopter checklist items appropriate to the phase of flight or approach segment.
8. Prior to beginning the final approach segment, maintains the desired altitude  $\pm 100$  feet (30 meters), the desired airspeed within  $\pm 10$  knots, the desired heading within  $\pm 5^\circ$ ; and accurately tracks radials, courses, and bearings.
9. Selects, **tunes, identifies**, and monitors the operational status of ground and helicopter navigation equipment used for the approach.
10. Applies the necessary adjustments to the published Decision Height and visibility criteria for the helicopter approach category as required, such as— a. FDC and Class II **NOTAMs**. b. Inoperative





# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

- helicopter and ground navigation equipment. c. Inoperative visual aids associated with the landing environment. d. National Weather Service (NWS) reporting factors and criteria. 2-17 FAA-S-8081-20
11. Establishes a predetermined rate of descent at the point where the electronic glide slope begins which approximates that required for the helicopter to follow the glide slope.
  12. Maintains a stabilized final approach, **arriving at Decision Height with no more than one-quarter scale deflection of the localizer, or the glide slope indicators** and the airspeed/V-speed within **±5** knots of that desired.
  13. Avoids descent below the Decision Height before initiating a missed approach procedure or transitioning to a landing.
  14. Initiates immediately the missed approach procedure, when at the Decision Height, and the required visual references for the runway or intended landing area are not distinctly visible and identifiable.
  15. Transitions to a normal landing approach only when the helicopter is in a position from which a descent to a landing on the runway or intended landing area can be made at a normal rate of descent using normal maneuvering.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## D. TASK: NONPRECISION INSTRUMENT APPROACHES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: The applicant must accomplish at least **two nonprecision approaches (one of which must include a procedure turn)** in simulated or actual weather conditions approach using two different approach systems. At least **one nonprecision approach must be flown manually without receiving radar vectors**. The examiner will select nonprecision approaches that are representative of that which the applicant is likely to use. The choices must utilize two different systems; i.e., NDB and one of the following: VOR, LOC, LDA, GPS, or LORAN.

1. Exhibits adequate knowledge of nonprecision approach procedures representative of those the applicant is likely to use.
2. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses proper communications phraseology and techniques.
3. Accomplishes the nonprecision instrument approach procedures selected by the examiner.
4. Complies with all clearances issued by ATC. FAA-S-8081-20 2-18
5. Advises ATC or the examiner any time the helicopter is unable to comply with a clearance.
6. Establishes the appropriate helicopter configuration and airspeed, and completes all applicable checklist items.
7. Maintains, prior to beginning the final approach segment, the desired altitude  **$\pm 100$**  feet (30 meters), the desired airspeed  **$\pm 10$**  knots, the desired heading  **$\pm 5^\circ$** ; and accurately tracks radials, courses, and bearings.
8. Selects, **tunes, identifies**, and monitors the operational status of ground and helicopter navigation equipment used for the approach.
9. Applies the necessary adjustments to the published Minimum Descent Altitude and visibility criteria for the helicopter approach category when required, such as— a. Notices to Airmen, including Flight Data Center Procedural NOTAMs. b. Inoperative helicopter and ground navigation equipment. c. Inoperative visual aids associated with the landing environment. d. National Weather Service (NWS) reporting factors and criteria.
10. Establishes a rate of descent that will ensure arrival at the Minimum Descent Altitude with the helicopter in a position from which a descent to a landing on the intended runway or landing area can be made at a normal rate using normal maneuvering.
11. Allows, while on the **final approach segment, not more than quarter-scale deflection** of the Course Deviation Indicator (CDI) or  **$\pm 5^\circ$**  in the case of the RMI or bearing pointer, and maintains airspeed within  **$\pm 5$**  knots of that desired.
12. Maintains the Minimum Descent Altitude, when reached, within **-0, +50 feet** (-0, +15 meters) to the missed approach point.
13. Executes the missed approach procedure if the required visual references for the intended runway are not distinctly visible and identifiable at the missed approach point.
14. Executes a **normal landing from a straight-in approach**.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## E. TASK: MISSED APPROACH

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: The applicant must be required to perform at least **two missed approach procedures with at least one missed approach from a precision approach** (ILS, MLS, or GPS). **A complete approved missed approach procedure must be accomplished at least once** and a simulated powerplant failure (in a multiengine helicopter) will be required during one of the missed approaches. Going below the MDA or DH, as appropriate, prior to the initiation of the missed approach procedure shall be considered unsatisfactory performance, except in those instances where the required visual references for the runway or intended landing area are distinctly visible and identifiable at the MDA or DH.

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of missed approach procedures associated with standard instrument approaches.
2. Initiates the missed approach procedure promptly by the timely application of power, establishes the proper climb attitude, and reduces drag in accordance with the approved procedures.
3. Reports to ATC, beginning the missed approach procedure.
4. Complies with the appropriate missed approach procedure or ATC clearance.
5. Advises ATC any time the helicopter is unable to comply with a clearance.
6. Follows the recommended helicopter checklist items appropriate to the go-around procedure for the helicopter used. FAA-S-8081-20 2-20
7. Requests clearance, if appropriate, to the alternate airport, another approach, a holding fix, or as directed by the examiner.
8. Maintains the desired altitudes **±100** feet (30 meters), airspeed **±5** knots, heading **±5°**, and accurately tracks courses, radials, and bearings.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## VI. LANDINGS AND APPROACHES TO LANDINGS

NOTE: Notwithstanding the authorizations for the combining of maneuvers and for the waiver of maneuvers, the applicant must make at least **four landings to a hover** or to the ground. These landings must include the types listed in this AREA OF OPERATION; however, more than one type may be combined where appropriate (i.e., crosswind and landing from a precision approach or landing with simulated powerplant failure, etc.).

### A. TASK: NORMAL AND CROSSWIND APPROACHES AND LANDINGS

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of normal and crosswind approaches and landings including recommended approach angles, airspeeds, V-speeds, configurations, performance limitations, wake turbulence, and safety factors (as appropriate to the helicopter).
2. Establishes the approach and landing configuration appropriate for the runway or designated landing area and meteorological conditions, and adjusts the powerplant controls as required.
3. Maintains a ground track, within  $\pm 5^\circ$ , that ensures the desired traffic pattern will be flown, taking into account any obstructions and ATC or examiner instructions.
4. Verifies existing wind conditions, makes proper correction for drift, and maintains a precise ground track.
5. Maintains a normal approach angle and recommended airspeed and a normal rate of closure to the point of transition to a hover or touchdown.
6. Terminates the approach in a smooth transition to a hover or to a touchdown within **2 feet** (.6 meter) of the designated point. (If a hover termination is specified, it will be within  $\pm 2$  feet (.6 meter) of recommended hovering altitude.)
7. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer. FAA-S-8081-20 2-22



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## C. TASK: REJECTED LANDING

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM; FSB Report.

NOTE: The maneuver may be combined with instrument or missed approach procedures, but **instrument conditions need not be simulated below 100 feet** (30 meters) above the runway or landing area. This maneuver should be **initiated approximately 50 feet** (15 meters) above the runway and approximately over the runway threshold or as recommended by the FSB Report.

1. Exhibits adequate knowledge of a rejected landing procedure, including the conditions that dictate a rejected landing, the importance of a timely decision, the recommended airspeed/V-speeds, and also the applicable "clean-up" procedure.
2. Makes a timely decision to reject the landing for actual or simulated circumstances.
3. Applies the appropriate power setting for the flight condition and establishes a pitch attitude necessary to obtain the desired performance.
4. Adjusts helicopter configuration and retracts the landing gear, if appropriate, in the correct sequence and at a safe altitude, establishes a positive rate of climb and the appropriate airspeed/V-speed within **±5** knots.
5. Trims the helicopter as necessary, and maintains the proper ground track, within **±5°**, during the rejected landing procedure.
6. Accomplishes the appropriate checklist items in a timely manner in accordance with approved procedures.

## VII. NORMAL AND ABNORMAL PROCEDURES

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

1. Possesses adequate knowledge of the normal and abnormal procedures of the systems, subsystems, and devices relative to the helicopter type (as may be determined by the examiner).
2. Demonstrates the proper use of the helicopter's systems, subsystems, and devices (as may be determined by the examiner) appropriate to the helicopter, such as— a. powerplant. b. fuel system. c. electrical system. d. hydraulic system. e. environmental system. f. fire detection and extinguishing systems. g. navigation and avionics systems. h. automatic flight control system, electronic flight instrument system, and related subsystems. i. flight control systems. j. anti-ice and deice systems. k. helicopter and personal emergency equipment. l. loss of tail rotor effectiveness. m. other systems, subsystems, and devices specific to the type helicopter.



# ATP Practical Test Prep R44 Raven 2

[www.HelicopterTrainingVideos.com](http://www.HelicopterTrainingVideos.com)

## VIII. EMERGENCY PROCEDURES

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

1. Possesses adequate knowledge of the emergency procedures (as may be determined by the examiner) relating to the particular helicopter type.
2. **Demonstrates the proper emergency procedures** (as must be determined by the examiner) relating to the particular helicopter type, including— a. **inflight fire** and smoke removal. b. **emergency descent**. c. **autorotation, with a power recovery**. d. ditching. e. emergency evacuation.
3. Demonstrates the proper procedure for any other emergency outlined (as must be determined by the examiner) in the appropriate approved helicopter RFM.

## IX. POSTFLIGHT PROCEDURES

### A. TASK: AFTER-LANDING PROCEDURES

REFERENCES: Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of safe after-landing/taxi procedures (as appropriate to the helicopter).
2. Demonstrates proficiency by maintaining correct and positive helicopter control. This includes hovering taxi, air taxiing; and in helicopters with wheels, includes ground taxiing. In helicopters equipped with float devices, this includes water taxiing, approaching a buoy, and docking.
3. Maintains proper spacing on other helicopter, obstructions, and persons.
4. Accomplishes the applicable checklist items and performs the recommended procedures.
5. Maintains the desired track and speed.
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting.
8. Maintains constant vigilance and control of the helicopter during the taxi operation.

### B. TASK: PARKING AND SECURING

REFERENCES: Pilot's Operating Handbook, RFM.

1. Exhibits adequate knowledge of the parking and the securing helicopter procedures.
2. Demonstrates adequate knowledge of the helicopter forms/logs to record the flight time/discrepancies.