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| Simula-ted Auto-rotation | 1 | Throttle idle to simulate engine failure<br><br>**Additional Information:** To simulate engine failure, you can also switch off the main fuel switch located on the center pedestal. However, in real life training the throttle is set to idle, so when things go wrong there is still time to throttle up and avoid a mishap. | PageDown |
| | 2 | Immediately lower collective lever full down to enter autorotation<br><br>→ Note these two changes immediately taking effect:<br>• Immediate yaw to the left because of the loss of torque<br>• Nose drop because of change in airflow over tailboom<br><br>**Additional Information:** The fact that the engine does not longer power the rotor can be observed when the N2 (ENGINE) and NR (ROTOR RPM) needles split on the dual tachometer. The rotor blades only keep turning because of the airflow moving through them. Rotor RPM is determined by the angle of attack of the airflow passing through the blades. | Num– |
| | 3 | Add right pedal to counter left yaw and keep helicopter pointed straight ahead<br><br>**Additional Information:** Right pedal is necessary because in autorotation the engine is disengaged and does not produce torque any more. | X |
| | 4 | Establish proper autorotation attitude to maintain rotor RPM within limits.<br><br>Use cyclic pitch to keep rotor RPM in the green range:<br>• Pitch up (raise the nose): Rotor RPM increase<br>• Pitch down (lower the nose): Rotor RPM decrease<br><br>Try to keep the recommended airspeed of ~80 knots during whole autorotation descent.<br><br>**Additional Information:** The increase of rotor RPM after pitching up is caused by an exchange of energy: kinetic energy is transformed into rotational energy of the rotor due to the increase in the angle of attack of the main rotor.<br>80 knots is just an oversimplified, general recommendation. This speed is used as an example in the Autorotational Glide charts of TM 55-1520-210-10 (p. 9-12). On the UH-1H model with composite blades (DCS: UH-1H) the speed for minimum rate of descent (“min RoD”, maximum time to descend) is 59 KIAS while the speed for maximum glide distance is 94 KIAS. While any speed between these two values is suitable for autorotation, a pilot may choose a specific speed depending on many factors.<br>Any extra airspeed above 59 KIAS (but not exceeding 94 KIAS) can be traded for extra rotor RPM (RPM = lift) in the flare. This gives you a lot more options at the bottom if you make a slight mistake on your flare and makes the difference of being able to "do something" or not. Being low on both airspeed and NR (Number of Rotations, main rotor speed) at the bottom, you're out of luck. That's why it's advisable – if conditions (rpm, helicopter weight, density altitude, wind and position of the suitable landing zone) permit – to keep up some extra knots that can be traded for extra rotor energy when needed.<br>Maximum main rotor speed for autorotation is 339 RPM. While this currently has no effect in the sim, in real life speeds in excess of 339 RPM could cause serious damage to the rotor. | |
| | 5 | Search for a suitable landing spot against the wind | |
| | 6 | 200 – 150 ft. AGL: Level off smoothly<br>→ Reduces descent rate | |
| | 7 | Let helicopter continue its descent maintaining a level off attitude | |
| | 8 | 50 ft. AGL: Initiate flare | |
| | 9 | Before ground contact: Raise collective to cushion ground contact, without gaining altitude<br><br>**Additional Information:** If you level the aircraft and begin to cushion at the bottom, but then realise you are still too high (a common occurrence in real life), don't lower the collective again, just hold the collective where it is, allow the aircraft to begin to descend again and then use the remaining collective to cushion before touchdown. In real life at training weights you could easily have 2 or 3 'mistake' cushions before landing and there was enough inertia in those blades to land without damage. | |
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