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ENHANCED AUTOROTATION PROCEDURES (cont'd)Minimum Rate of Descent Configuration

The minimum rate of descent configuration is 53 kts/90% rotor RPM in the R22. The purpose of practicing this maneuver is not only to autorotate at the slowest descent rate, but also, to practice performing another procedure such as an air restart or mayday call while still flying the helicopter in autorotation. Enter the autorotation at 1500–2000 feet. After establishing an autorotative glide simultaneously apply aft cyclic to slow the helicopter to the appropriate airspeed and increase the collective to bring the rotor RPM down to 90%. Realize that these two control inputs compete with each other, in that the aft cyclic tends to increase the RPM while the pilot is trying to reduce the RPM with the collective. First, build proficiency establishing and maintaining the minimum rate of descent configuration then add performing a simulated air restart or mayday call into the autorotation. Return to the normal airspeed and rotor RPM prior to descending below 500 ft AGL.

HOVER OUT-OF-GROUND EFFECT (OGE)

PURPOSE:

To hover the helicopter out-of-ground effect (OGE), perform 90° hovering turns and properly descend to an in-ground-effect hover (IGE) over a predetermined spot. Recommended minimum OGE hover altitude for training is 50 feet.

DESCRIPTION:

NOTE

It is recommended this maneuver only be performed with an instructor at one set of controls.

The OGE hover can be initiated from the ground or at the termination of an approach. In both cases, proper performance planning needs to be accomplished to insure OGE capability by using the OGE Hover Ceiling vs Gross Weight chart in the Pilot's Operating Handbook and the IGE hover check referenced below.

From the Ground:

Headed into the wind, select at least two outside visual reference points (trees, poles etc.) that will aid in controlling aircraft drift during the maneuver; one point at the 12 o'clock position and one approximately 90° in the direction of the intended turn. These points should be a minimum distance from the helicopter of at least twice the intended hover altitude. Any additional reference points that are available can be used to fine tune position over the ground. Perform a takeoff to a 2 foot IGE hover and complete a hover check to confirm available power. The maneuver should not be attempted unless the IGE hover manifold pressure is 2 inches below the maximum takeoff power (5 minute) limit or 2 inches below full throttle at higher altitudes.

Begin the ascent to an OGE hover by increasing the collective, maintain heading with the pedals and crosscheck both reference points. The lateral reference is especially important to control the common tendency of forward drift during the ascent and descent. Once established at an OGE hover, check power and effects of any difference in wind speed or direction. Use the outside reference points to control drift over the ground and altitude.

It is recommended to begin with a left pedal turn to evaluate the amount of tail rotor thrust available. Since it takes more thrust to stop a right pedal turn, do not attempt a right pedal turn if thrust during the left turn appears marginal. Prior to beginning the turn, clear the area in both directions and anticipate the effect of the wind during the turn. Begin the turn with the appropriate pedal and maintain a slow, steady turning rate. Avoid high turn rates especially with right pedal turns. Stop the turn at the 90° point, stabilize the hover using the reference points then slowly begin a turn in the opposite direction terminating at the original position (heading).

Begin the descent by lowering the collective, maintaining position over the ground with the cyclic. Again, avoid the tendency to drift forward during the descent. Using outside references, maintain a slow, steady descent rate. (cont'd)

HOVER OUT-OF-GROUND EFFECT (OGE) (cont'd)

Terminate the descent at an IGE hover over a predetermined spot or continue to the ground.

From an approach:

On final insure the aircraft is headed into the wind then establish a 5° shallow approach angle to a predetermined spot on the ground. During the last 200 feet begin to slow the closure rate to lose ETL while avoiding a descent rate greater than 300 ft/min. Prior to establishing an OGE hover over the predetermined spot, select the forward and lateral reference points. It is recommended that initially the student be familiar with the predetermined spot on the ground and the reference points and then move to unfamiliar areas.

Once established in an OGE hover over the predetermined spot, proceed as explained in "From the Ground".

CAUTION

Throughout the maneuver avoid gripping the throttle tightly which can override the governor and cause a low RPM condition.

Once proficiency in the above conditions is achieved, demonstration/student practice at altitudes above 500 feet AGL will reinforce the importance of proper reference and aircraft control.

RISK MANAGEMENT:

- Understand the risk of operating in the shaded area of the height/velocity diagram.
- Avoid excessive descent rates to prevent entry into the vortex ring state.
- Focus on the need for left pedal to anticipate the loss of tail rotor effectiveness (LTE)
- Be aware of operations near full throttle to avoid a low RPM condition.
- Monitor engine temperature, pressure and power limits to avoid an exceedance.
- Avoid unnecessary distractions during the maneuver.

PERFORMANCE STANDARDS:

	Private	Commercial
Position over ground	No FAA Private Pilot standards established. RHC recommends training to Commercial standards.	± 10 ft
OGE hover altitude		± 5 feet
Heading		± 5°
Descent Rate		Safe

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HOVER OUT-OF-GROUND EFFECT (OGE)

PURPOSE:

To hover the helicopter out-of-ground effect (OGE), perform 90° hovering turns and properly descend to an in-ground-effect hover (IGE) over a predetermined spot. Recommended minimum OGE hover altitude for training is 50 feet.

DESCRIPTION:

NOTE

It is recommended this maneuver only be performed with an instructor at one set of controls.

The OGE hover can be initiated from the ground or at the termination of an approach. In both cases, proper performance planning needs to be accomplished to insure OGE capability by using the OGE Hover Ceiling vs Gross Weight chart in the Pilot's Operating Handbook and the IGE hover check referenced below.

From the Ground:

Headed into the wind, select at least two outside visual reference points (trees, poles etc.) that will aid in controlling aircraft drift during the maneuver; one point at the 12 o'clock position and one approximately 90° in the direction of the intended turn. These points should be a minimum distance from the helicopter of at least twice the intended hover altitude. Any additional reference points that are available can be used to fine tune position over the ground. Perform a takeoff to a 2 foot IGE hover and complete a hover check to confirm available power. The maneuver should not be attempted unless the IGE hover manifold pressure is 2 inches below the maximum takeoff power (5 minute) limit or 2 inches below full throttle at higher altitudes.

Begin the ascent to an OGE hover by increasing the collective, maintain heading with the pedals and crosscheck both reference points. The lateral reference is especially important to control the common tendency of forward drift during the ascent and descent. Once established at an OGE hover, check power and effects of any difference in wind speed or direction. Use the outside reference points to control drift over the ground and altitude.

It is recommended to begin with a left pedal turn to evaluate the amount of tail rotor thrust available. Since it takes more thrust to stop a right pedal turn, do not attempt a right pedal turn if thrust during the left turn appears marginal. Prior to beginning the turn, clear the area in both directions and anticipate the effect of the wind during the turn. Begin the turn with the appropriate pedal and maintain a slow, steady turning rate. Avoid high turn rates especially with right pedal turns. Stop the turn at the 90° point, stabilize the hover using the reference points then slowly begin a turn in the opposite direction terminating at the original position (heading).

Begin the descent by lowering the collective, maintaining position over the ground with the cyclic. Again, avoid the tendency to drift forward during the descent. Using outside references, maintain a slow, steady descent rate. (cont'd)

HOVER OUT-OF-GROUND EFFECT (OGE) (cont'd)

Terminate the descent at an IGE hover over a predetermined spot or continue to the ground.

From an approach:

On final insure the aircraft is headed into the wind then establish a 5° shallow approach angle to a predetermined spot on the ground. During the last 200 feet begin to slow the closure rate to lose ETL while avoiding a descent rate greater than 300 ft/min. Prior to establishing an OGE hover over the predetermined spot, select the forward and lateral reference points. It is recommended that initially the student be familiar with the predetermined spot on the ground and the reference points and then move to unfamiliar areas.

Once established in an OGE hover over the predetermined spot, proceed as explained in "From the Ground".

CAUTION

Throughout the maneuver avoid gripping the throttle tightly which can override the governor and cause a low RPM condition.

Once proficiency in the above conditions is achieved, demonstration/student practice at altitudes above 500 feet AGL will reinforce the importance of proper reference and aircraft control.

RISK MANAGEMENT:

- Understand the risk of operating in the shaded area of the height/velocity diagram.
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- Focus on the need for left pedal to anticipate the loss of tail rotor effectiveness (LTE)
- Be aware of operations near full throttle to avoid a low RPM condition.
- Monitor engine temperature, pressure and power limits to avoid an exceedance.
- Avoid unnecessary distractions during the maneuver.

PERFORMANCE STANDARDS:

	Private	Commercial
Position over ground	No FAA Private Pilot standards established. RHC recommends training to Commercial standards.	± 10 ft
OGE hover altitude		± 5 feet
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Begin the ascent to an OGE hover by increasing the collective, maintain heading with the pedals and crosscheck both reference points. The lateral reference is especially important to control the common tendency of forward drift during the ascent and descent. Once established at an OGE hover, check power and effects of any difference in wind speed or direction. Use the outside reference points to control drift over the ground and altitude.

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REVISION LOG

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The Flight Training Guide list of effective pages and effective dates are given below. If a previously issued page is not listed below, it is no longer an effective page and must be discarded. The issue or revision date is in bold at the top of each revision log page.

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