



Middle Georgia State University

PIPER SEMINOLE PA44 MANEUVER GUIDE

VERSION 2024

Commercial Pilot Maneuver Guide Contents

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Checklists and Briefings

Takeoff Briefing

Takeoffs are briefed so that the pilots have a clear understanding of the runway environment, emergency actions that may be required during the ground roll, initial takeoff and departure.

Procedure:

1. Determine which pilot will be PIC in case of emergency.
2. Brief will be conducted (from memory) in the runup area prior to call for departure and crossing the hold short line. The Brief consists of four areas of concentration
 - Runway Information
 - Engine Failure / Emergency During Ground Roll
 - Engine Failure with Gear Down or Runway Remaining
 - Engine Failure with Gear Up or No Runway Remaining

Briefing Script:

- “This will be a _____ takeoff from Runway ____ by the pilot in the _____ seat.”
- “If we have an **ENGINE FAILURE/OTHER EMERGENCY DURING THE GROUND ROLL**, I will apply brakes, bring throttle to idle, and exit the runway if able. I will announce “abort takeoff” after positive aircraft control is maintained.”
- “If we have an **ENGINE FAILURE WITH GEAR DOWN AND RUNWAY REMAINING**, we will bring the throttles to idle, land on the remaining runway and apply brakes.
- “If we have an **ENGINE FAILURE WITH GEAR UP OR IN TRANSIT**, we will maintain directional control, pitch for blue line, full mixture, full props, full throttle, gear up, flaps up, identify, verify, feather, and cut the mixture of the inoperative engine. We will then declare an emergency. If we have sufficient single engine climb rate we will climb to the traffic pattern altitude and return to the runway. If we do not have a sufficient single engine climb rate we will pick an suitable area within 30° of the runway and prepare for an emergency landing.

Pre-Maneuver Checklist

The Pre-Maneuver Checklist is performed before each training maneuver. This checklist serves as a baseline for aircraft prior to configuration for the maneuver.

Procedure:

LOCATE nearest field for landing in case of emergency.

GUMPS Check

- 1) Gas - Adequate
- 2) Undercarriage – Select for maneuver
- 3) Mixtures - FULL RICH
- 4) Props - As required for maneuver
- 5) Switches - Lights, Recogs, and Fuel Pumps ON

CLEARING Turns

(Coordinate with any traffic on Dispatch frequency (123.300) if they are within 3 to 4 miles.)

Performance Maneuvers

Steep Turns

The objective of a steep turn is to develop a pilot's skill in flight control coordination and smoothness, awareness of outside reference points, and constant need to scan for hazards.

Procedure:

1. Pre-Maneuver Checklist.
2. Select outside visual reference, bug heading, Altitude above 3000 AGL.
3. Enter at **~120 knots, approximately 20" MP, 2,400 RPM.**
4. Begin a coordinated turn to a **50°** bank angle. Add trim and power if necessary to maintain speed and altitude
5. Smoothly roll out on your original heading and immediately to the other direction. Power may be left in as the rollout and roll in to the opposite turn should be equal and smooth. Apply forward pressure to overcome trim while transitioning from one direction to the other
6. Roll out on original heading (at the same rate as the others) and reset power and trim.

Airman Certification Standards:

- Altitude: +/- 100 feet
- Airspeed: +/- 10 Knots
- Heading: +/- 10 Degrees from Entry
- Bank Angle: +/- 5 Degrees

Common Errors:

- Failure to clear the area
- Inadequate pitch control
- Gain or loss of altitude
- Failure to maintain constant bank angle
- Poor coordination
- Premature rollout / Rollout after reference point
- Ineffective use of trim

Slow Flight and Stalls

Maneuvering During Slow Flight

The objective of slow flight is to understand the flight characteristics and how the airplane's flight controls feel when operating in a near-stall condition, with gear and flaps extended.

Procedure:

1. Pre-Maneuver Checklist.
2. Select outside visual reference, bug reference heading.
3. Reduce power to **~15" MP**.
4. Below **140 KIAS**, gear down.
5. Below **111 KIAS**, flaps in sequence to full.
6. Maintain **60-65 knots**, power as needed to maintain altitude.
7. **On recovery**, full power, retract flaps to 25°.
8. Call out "Positive rate **gear up**"
9. Flaps in sequence to **0°**.
10. Maintain altitude and heading.

Airman Certification Standards:

- Altitude: +/- 50 feet
- Airspeed: + 5, -0 Knots
- Heading: +/- 10 Degrees
- AOB: +/- 10 Degrees

Common Errors:

- Failure to clear the area
- Inadequate back pressure to maintain attitude resulting in altitude loss
- Excessive elevator resulting in climb
- Insufficient right rudder
- Inadequate power management
- Failure to respond to stall warning

Maneuvering During Slow Flight (Clean Configuration)

The objective of slow flight is to understand the flight characteristics and how the airplane's flight controls feel when operating in a near-stall condition, *without* gear and flaps extended.

Procedure:

1. Pre-Maneuver Checklist.
2. Select outside visual reference, bug reference heading.
3. Reduce power to **~15" MP**.
4. Maintain 65 knots, power as needed to maintain altitude.
5. **On recovery**, add full power.
6. Maintain altitude and heading.

Airman Certification Standards:

- Altitude: +/- 50 feet
- Airspeed: + 5, -0 Knots
- Heading: +/- 10 Degrees
- AOB: +/- 10 Degrees

Common Errors:

- Failure to clear the area
- Inadequate back pressure to maintain attitude resulting in altitude loss
- Excessive elevator resulting in climb
- Insufficient right rudder
- Inadequate power management
- Failure to respond to stall warning

Accelerated Stall

The objective of the accelerated stall maneuver is to demonstrate a stall at airspeeds greater than 1+G. Accelerated stalls are performed with 45° of bank, to demonstrate how bank angle and airspeed affect stall characteristics.

Procedure:

1. Pre-Maneuver Checklist.
2. Select altitude for task to be completed no lower than **3,000 feet AGL**
3. Select outside visual reference, set heading bug.
4. Reduce power to **~15" MP**, slow to 100 knots *maintain heading and altitude*.
5. Upon reaching 100 knots, bring power to **idle**, enter **45° bank** turn.
6. Maintain altitude and apply backpressure.
7. At **first indication** of stall (buffet or stall horn, whichever occurs first), initiate recovery
8. **Recover** by *simultaneously* reducing angle of attack, adding **FULL POWER**, and leveling wings, return to entry heading or heading assigned by evaluator.

Airman Certification Standards:

- Heading: Return to heading as designated by evaluator
- Altitude: Return to altitude as designated by evaluator
- Airspeed: Return to airspeed as designated by evaluator
- AOB: 45° coordinated

Common Errors:

- Failure to clear the area
- Inability to recognize impending stall
- Poor coordination
- Inadvertent secondary stall
- Recovery prior to entering stalled condition.

Power-Off Stall

The objective of the power off stall maneuver is to simulate and recover from a stall on approach to land.

Procedure:

1. Pre-Maneuver Checklist.
2. Select altitude for task to be completed no lower than **3,000 feet AGL**.
3. Select outside visual reference.
4. Reduce power to **~15"**.
5. Below **140 KIAS**, gear down.
6. Below **111 KIAS**, flaps in sequence to full.
7. Begin descent at **75 knots** to simulate final approach, then power to **idle**.
8. Pitch up to simulate a flare, at **first indication** of stall (buffet or stall horn, whichever occurs first) initiate recovery (UNLESS instructed by evaluator to induce full stall)
9. Recover by *simultaneously* reducing angle of attack, adding **FULL POWER**, then retracting **flaps to 25°**.
10. Callout "Positive rate, **gear up**".
11. Retract flaps in sequence to **0°**.

Airman Certification Standards:

- Heading: +/- 10 Degrees (if straight and level)
- AOB: Not to exceed 20 Degrees +/-5 if in a turn

Common Errors:

- Failure to clear the area
- Inability to recognize impending stall
- Poor coordination
- Failure to establish descent
- Inadvertent secondary stall
- Recovery prior to entering stalled condition.

Power-On Stall Departure Configuration

The objective of a power-on stall is to practice recognizing, and recovering from a stall during climb, or go-around. The departure configuration is used to simulate a power on stall while in a departure climb.

Procedure:

1. Pre-Maneuver Checklist.
2. Select altitude for task to be completed no lower than **3,000 feet AGL**.
3. Select outside visual reference.
4. Reduce power to **~15"**, *maintain heading and altitude*.
5. Reaching **80 knots**, *simultaneously* increase pitch (Slowly), and apply **Approximately 75% POWER**.
6. Slowly increase pitch for first indication of stall (buffet or stall horn, whichever occurs first) **UNLESS** instructed by evaluator to induce full stall.
7. Upon reaching imminent stall condition, **recover** by reducing the angle of attack, Full throttles, and then pitch for climb.
8. Level off and return to cruise flight.

Airman Certification Standards:

- Heading: +/- 10 Degrees (if straight and level)
- AOB: Not to exceed 20 Degrees +/-10 if in a turn

Common Errors:

- Failure to clear the area
- Inability to recognize impending stall
- Poor coordination
- Inadvertent secondary stall
- Recovery prior to entering stalled condition.

Power-On Stall Take Off Configuration

The objective of a power-on stall is to practice recognizing, and recovering from a stall during climb, or go-around. The departure configuration is used to simulate a power on stall while in a departure climb.

Procedure:

1. Pre-Maneuver Checklist.
2. Select altitude for task to be completed no lower than **3,000 feet AGL**.
3. Select outside visual reference.
4. Reduce power to **~15"**, *maintain heading and altitude*.
5. Below **140 KIAS**, gear down.
6. Reaching **80 knots**, *simultaneously* increase pitch (Slowly), and apply **Approximately 75% power**
7. Slowly increase pitch for **first indication** of stall (buffet or stall horn, whichever occurs first) (UNLESS instructed by evaluator to induce full stall).
8. **Recover** by reducing the angle of attack, apply full throttles, then pitch for climb.
9. Callout "Positive rate, **gear up.**"
10. Level off and return to cruise flight.

Airman Certification Standards:

- Heading: +/- 10 Degrees (if straight and level)
- AOB: Not to exceed 20 Degrees +/-10 if in a turn

Common Errors:

- Failure to clear the area
- Inability to recognize impending stall
- Poor coordination
- Inadvertent secondary stall

Takeoffs and Landings

Traffic Pattern

Upwind

- Climb at **V_y (88 KIAS) or better**, **Retract gear** when no available runway is remaining.

Crosswind

- Climb to at least **700 AGL** before turning crosswind
- Check for aircraft entering the downwind

Downwind

- Set Power to approximately 18 - 20" and 2400 rpms (**~110 KIAS**)
- At midfield, Below 140 **Gear down**, and **GUMPS** check.

Abeam Point

- Reduce power to 15" to 17", below 111 extend **10° flaps**, begin your decent

Base

- **GUMPS** check, **Extend flaps to 25°**, **props smoothly forward**
- Speed approximately 100 KIAS and check for straight in traffic on final.

Final

- After wings level, Extend **flaps to full (if desired)**
- Slow to **88 KIAS** (until landing is assured)
- Check Gear Down and Call out "**Gear Down, Stabilized**" as you cross the approach lighting
- Continue with normal or short field landing technique

Normal Takeoff

The objective of a normal takeoff is to perform a takeoff under standard conditions.

Procedure:

1. Complete Before take-off Checklist and Take-off Briefing.
2. Verify flaps set to 0°. Once clearance is obtained to take-off, visually check final for traffic.
3. Line up on the runway, Callout “Runway ____ verified”.
4. Hold brakes and advance throttle to ~ **1700 RPM**.
5. Check all engine instruments in the **GREEN**.
6. Release brakes and smoothly advance throttle to **FULL POWER**. Callout, “airspeed alive.”
7. Accelerate to V_r (~75 knots), announce “rotate” and smoothly apply backpressure.
8. Pitch for 7°-10° and climb out at V_y **88 Knots or better**
9. Once there is no runway remaining, **GEAR UP**.
10. Maintain runway centerline using wind drift correction.
11. At 1,000' AGL, Set **throttles to 25” and Props to 2500 rpm**
12. At 1,000' AGL, transition to cruise climb speed of ~**105 knots**

Airman Certification Standards:

- Maintain V_y : +10 Knots / -5 Knots to safe maneuvering altitude

Common Errors:

- Failure to maintain runway centerline
- Rotating at too low or too high airspeeds
- Failure to adequately clear for traffic

Normal Landing

The objective of a normal landing is to maintain positive control of the airplane in normal configuration.

Procedure:

1. Perform the Before Landing Checklist.
2. Enter downwind on a 45° angle at midfield.
3. **Downwind**- reduce power and slow to **110 knots**.
4. **Midfield** – Below 140 **Gear Down**, Callout **GUMPS**
5. **Abeam** – Throttles **~15" to 17"**, Below 111 **Flaps 10°**
6. **Base**- Callout **GUMPS**, props slowly full forward, maintain **~100 knots. Flaps 25°**
7. **Final- Full Flaps (if desired)**. Speed **88 knots (add gust factor if desired)**, Callout "**Gear down, stabilized**". Aim for 1000 ft markers
8. **When Landing is assured**- Pitch for **80 knots (or 85 with gusts)** and use power to control descent rate.
9. Flare so that the main tires touchdown first, closing throttles as you flare
10. **Flaps smoothly to 0°** and use brakes as necessary.

Airman Certification Standards:

- Maintain crosswind correction and directional control throughout approach and landing.
- Touch down at proper pitch attitude.
- Touch down within 200 feet of a specified point.
- Touch down with airplane's longitudinal axis aligned with and over centerline.

Common Errors:

- Failure to maintain stabilized approach
- Failure to apply wind correction
- Sideloaded the aircraft
- Landing off centerline

Go Around

Utilize the go-around procedure if the landing environment is fowled or unsafe, a stabilized approach cannot be achieved, or the landing / touchdown is unsafe.

Procedure:

1. **FULL POWER, PITCH FOR CLIMB. (approximately 10° nose up)**
2. Flaps retract to **25°**.
3. Callout “Positive rate” , **GEAR UP**. (must be below **107 kts** gear up speed)
4. Pitch for **V_Y 88 Knots** and positive rate, retract flaps slowly in sequence to **0°**.
5. If required or instructed, **offset** to side of the runway to clear obstacle or avoid conflicting traffic.
6. **Announce** to tower that you are going around.
7. Fly normal pattern or amended pattern if instructed.

Airman Certification Standards:

- Apply takeoff (Full) power immediately and transition to climb pitch attitude for **V_X** or **V_Y** as appropriate +10 Knots / -5 Knots.
- Maintain **V_Y** to safe maneuvering altitude.

Common Errors:

- Failure to add full power and pitch for a climb.
- Failure to Retract flaps as required
- Retracting the gear before a positive climb rate is established

Touch-and-Go Procedures

- After touchdown, CFI calls “**Retract Flaps**”
- Student calls “**Retract Flaps**” and then smoothly retracts flaps to **0°**
- CFI calls “**Add Power**”
- Student calls “**Add Power**” and advances throttles to full power, while maintaining directional control
- When no runway remains, CFI will call out “**Gear up**”
- Student calls “**Gear Up**” and moves the gear selector into the **up** position

Short Field Takeoff

The objective of a short field takeoff is to simulate taking off from a short runway, with obstacles.

Procedure:

1. Complete Before Take-off Checklist and Take-off Briefing.
2. Verify flaps set to **0°**.
3. Use all available runway, Callout “Runway ___ verified”,
4. Apply brakes firmly, and apply **FULL POWER** slowly.
5. Check all engine instruments in the **GREEN**.
6. Release brakes, Call out “airspeed alive” and smoothly accelerate to **V_R (70 knots)**
7. Rotate with authority and pitch **for ~12° nose up**
8. Call out “Positive rate, **GEAR UP**”
9. Climb out at **V_x 82 Knots**
10. Once clear of 50 ft. obstacle, lower the nose and accelerate to **V_y 88**.
11. Maintain runway centerline using appropriate rudder inputs.
12. Climb out normally

Airman Certification Standards:

- Rotate and lift off at **V_x**: +/-5 Knots
- Maintain pitch attitude that will maintain **V_x** until obstacle is cleared by 50 feet.
- After clearing obstacle maintain **V_y**: + / -5 Knots (until safe maneuvering altitude)

Common Errors:

- Failure to adequately apply brakes
- Failure to utilize all of the runway
- Rotating at too high or too low airspeeds
- Failure to maintain **V_x** until obstacle cleared
- Failure to maintain **V_y** during climb out

Short Field Landing

The objective of a short field landing is to simulate landing on a short runway.

Procedure:

1. Perform the Before Landing Checklist
2. Select intended touchdown point.
3. **Downwind**- reduce power and slow to **110 knots**.
4. **Midfield** – Below 140 **Gear Down**, Callout **GUMPS**
5. **Abeam** – Throttles **~15" to 17"**, Below 111 **Flaps 10°**
6. **Base**- Callout **GUMPS**, props slowly full forward, maintain **~100 knots. Flaps 25°**
7. **Final- Full Flaps**. Speed **88 knots**, Callout "**Gear down, stabilized**".
8. **When Landing is assured**- Pitch for **75 knots** and use power to control descent rate.
9. **Flare and close throttle** to touchdown with **little to no float**. Touch down within **100 ft** of intended touchdown point
10. Smoothly retract flaps, yoke full aft, and carefully use maximum braking without skidding the tires. Maintain centerline and wind corrections.
11. Taxi clear of runway and perform "after landing" checklist.

Airman Certification Standards:

- Land on designated touchdown point: +100 feet / -0 feet.
- Speeds on final +/- 5 knots

Common Errors:

- Touching down prior to designated landing point
- Landing too far past the touch down point
- Failure to maintain runway centerline
- Sideloading the airplane

Multi-Engine Operations

V_{mc} Demonstration

Procedure:

1. Pre-Maneuver Checklist, select an altitude **above 4000' AGL**
2. Reduce left throttle smoothly to **idle**, maintain directional control and altitude
3. Smoothly increase right throttle to **full power**. Mixture and props **full forward**
4. Establish a **zero sideslip condition** and allow the airplane to slow.
5. At **88** knots, announce "I am beginning the maneuver". Pitch up at **1kt per second**.
6. Increase rudder pressure and roll input to maintain heading and sideslip condition.
7. At first indication of a stall (horn, buffet) **OR** loss of direction control **OR** controls reaching their stops, right throttle to **idle**, pitch nose **down**, and **reduce rudder** as necessary.
8. Maintain directional control and smoothly increase right throttle to **full**. Add rudder as necessary.
9. Pitch for **88** knots
10. Once **88** knots is reestablished, the maneuver has ended.
11. Return to normal cruise settings and altitude.

Airman Certification Standards:

- Establish a single-engine climb attitude with the airspeed at approximately 10 knots above $V_{Y_{1}}$.
- Establish a bank angle not to exceed 5° toward the operating engine.
- Increase the pitch attitude slowly while applying rudder pressure to maintain directional control until full rudder is applied.
- Recognize indications of loss of directional control, stall warning, or buffet.
- Recover within 20° of entry heading.
- Advance power smoothly on the operating engine and accelerate to V_Y , ± 5 knots during recovery.

Common Errors:

- Improper entry procedures, including pitch attitude, bank attitude, and airspeed
- Failure to recognize imminent loss of directional control
- Failure to use proper recovery procedure

Instrument Approach and Landing with an Engine Inoperative (Simulated)

Procedure:

1. Complete Approach Checklist for the instrument approach in your clearance
2. Upon losing an engine:
 - a. **Maintain directional control** and pitch for **88** knots (Blue Line)
 - b. Mixture – **full forward**
 - c. Props- **Full Forward**
 - d. Throttles- **Full Forward**
 - e. **Flaps- Up, Gear- UP**
 - f. **Identify** (dead foot, dead engine)
 - g. **Verify** by reducing the inoperative engine's throttle to idle
 - h. Continue the approach. If within 3.0 miles of FAF go immediately to Feather and Secure
 - i. If time and distance permits, attempt to restart
 - j. If **restart unsuccessful, OR within 3.0 miles of FAF - Feather-** SIMULATE bringing the inoperative engine's propeller to feather
 - k. SECURE the engine as time permits
 - l. SIMULATE declaring an emergency

3. Maintain **~110 KIAS** for the approach (or, if unable, then best speed)
4. At FAF, check speed and **gear down** (if struggling to maintain altitude, consider delaying)

Note: Flaps at the FAF would be pilots discretion however MGA does NOT use flaps for single engine approaches.

5. Once visual, descend normally to land, using only the throttle for the operating engine. (Dead engine remains at 10"-12" zero thrust to simulate a feathered prop)
6. Flare and land, compensating for the yaw caused by the zero thrust prop.
7. **After** landing, close **both** throttles and brake normally

NOTE: Single engine go-arounds are discouraged in the POH and will not be attempted in a simulated condition. If you need to go-around, use BOTH engines.

Airman Certification Standards:

- Promptly recognize engine failure and maintain positive airplane control.
- Set engine controls, reduce drag, identify and verify inoperative engine.
- Maintain altitude ± 100 feet, airspeed ± 10 knots, heading $\pm 10^\circ$.
- On final approach maintain vertical (as applicable) and lateral guidance within $\frac{3}{4}$ -scale deflection.

Common Errors:

- Failure to recognize and configure aircraft for engine failure
- Failure to maintain airspeed, altitude, heading, and course

Situational / Emergency Maneuvers

Emergency Descent

An emergency descent is practiced simulating emergency situations that require a rapid descent. Two scenarios are often used during check rides are: A hypoxic passenger, and a simulation of an engine/wing fire. **NOTE: This procedure was removed from the CMEL Additional Category Rating ACS-7A, change 1 (June 2018.)**

Procedure:

1. Pre-Maneuver checklist complete
2. ENSURE AREA BELOW IS CLEAR
3. Select appropriate landing area
4. Power – Idle
5. Below 140 KIAS, Gear-Down
6. Bank 30 – 45 degrees
7. Pitch for 130 to 135 Knots while turning
8. Level off at desired altitude, below 109 KIAS, Gear-Up
9. Prepare for simulated on/off field landing

Engine Failure During Takeoff Before V_r (Simulated)

The objective is to practice, recognize, and successfully react to an engine failure before reaching V_r .

Procedure:

1. Maintain directional control with rudder
2. Throttles – Idle
3. Brakes – Apply until aircraft comes to a stop

Airman Certification Standards:

- Close the throttles smoothly and promptly when a simulated engine failure occurs.
- Maintain directional control and apply brakes as necessary

Common Errors:

- Failure to follow prescribed emergency procedure
- Failure to promptly recognize engine failure
- Failure to promptly close throttles following engine failure
- Faulty directional control and use of brakes

Engine Failure After Liftoff (Simulated)(at low altitudes)

The objective is to practice, recognize, and successfully react to an engine failure after liftoff.

Procedure:

1. Upon losing an engine:
 - a. **Maintain directional control** and pitch for **88** knots (Blue Line)
 - b. Mixtures- **Full Rich**
 - c. Props- **Full Forward**
 - d. Throttles- **Full Forward**
 - e. Flaps- **Up**
 - f. Gear- **UP**
 - g. **Identify** (dead foot, dead engine)
 - h. **Verify** by reducing the inoperative engine's throttle to idle
 - i. **Feather**- SIMULATE by touching prop level and announcing the feather (Instructor will apply zero thrust setting to the throttle to simulate the feathered prop)
 - j. **Declare**- SIMULATE declaring an emergency
 - k. **Secure**- SIMULATE **securing** the inoperative engine
2. Continue as instructed by MEI or DPE, or see procedure for landing with inoperative engine.

Airman Certification Standards:

- Promptly recognize an engine failure, maintain control, and utilize appropriate emergency procedures.
- Establish V_x , if obstructions are present, until obstructions are cleared. Then transition to V_y
- Simulate securing the inoperative engine.
- Maintain heading $\pm 10^\circ$ and airspeed ± 5 knots.
- Complete the appropriate checklist.

Common Errors:

- Failure to follow prescribed emergency checklist
- Failure to properly identify and verify the inoperative engine
- Failure to properly adjust engine controls and reduce drag
- Failure to maintain directional control
- Failure to establish and maintain a pitch attitude that will result in best engine inoperative airspeed considering the height of obstructions
- Failure to establish and maintain proper bank for best performance

Approach and Landing with an Inoperative Engine (Simulated)(Visual)

The objective is to practice, recognize, and successfully react to an engine failure after liftoff. **NOTE: Go-Arounds with one engine inoperative are NOT recommended by the POH.**

Procedure:

1. Maintain **90 KIAS** or better during traffic pattern operations.
2. Abeam intended touchdown point; **GUMPS**, below **140** knots, **GEAR DOWN**. Flaps **AS NEEDED**.
3. **Base** – **GUMPS**, Maintain **90 - 100** knots,
4. **Final** - **GUMPS**, Flaps **AS NEEDED**, maintain **88** knots or better until landing is assured.
5. Descend normally to land, using only the throttle for the operating engine. (Dead engine remains at 10"-12" zero thrust to simulate a feathered prop)
6. Flare and land, compensating for the yaw caused by the zero thrust prop.
7. **After** landing, close **both** throttles and brake normally

NOTE: Single engine go-arounds are dangerous and not recommended by the POH. Do not attempt in a simulated condition. If you need to go-around, use BOTH engines.

8. Smoothly apply brakes and taxi clear of runway, perform After Landing checklist.

Airman Certification Standards:

- Promptly recognize an engine failure and maintain positive aircraft control.
- Maintain the manufacturer's recommended approach airspeed ± 5 knots in the landing configuration with a stabilized approach, until landing is assured.
- Make smooth, timely, and correct control application before, during, and after round out.

Common Errors:

- Failure to follow prescribed emergency checklist
- Failure to properly identify and verify the inoperative engine
- Failure to establish and maintain best engine inoperative airspeed

Engine Failure During Flight (Simulated)

The objective is to practice, recognize, and successfully react to an engine failure during flight.

Procedure:

3. Upon losing an engine: (instructor will simulate by pulling a throttle back to idle)
 - a. **Maintain directional control and establish a zero sideslip condition**
 - b. Mixtures- **Full Rich**
 - c. Props- **Full Forward**
 - d. Throttles- **Full Forward** (Leave the 'dead' engines throttle back for the simulation)
 - e. Flaps- **Up**, Gear **UP**
 - f. **Identify** (dead foot, dead engine)
 - g. **Verify** by reducing the inoperative engine's throttle to idle
 - h. **Decide Fix or Feather/Secure**
4. **FIX:**
 - a. **Inoperative engine**
 - Fuel selector to **x-feed**
 - Cowl flap **closed**
 - Carb Heat **ON**
 - **Verify** Fuel Pump, Magnetos **ON**
 - If no restart proceed to FEATHER/SECURE ENGINE
5. **FEATHER/SECURE ENGINE:**
 - a. **Feather**- SIMULATE by touching prop level and announcing the feather (Instructor will apply zero thrust setting to the throttle to simulate the feathered prop)
 - b. **Mixture** – SIMULATE idle cut off
 - c. **Inoperative Engine:**
 - **Fuel Selector OFF**
 - **Cowl Flap CLOSED**
 - **Carb Heat OFF**
 - **Fuel Pump OFF**
 - **Magnetos OFF**
 - **Alternator OFF**
 - d. **Operative Engine**
 - **Power as required to maintain 88 knots or better**
 - **Cowl Flap CLOSED**
 - **Fuel selector to XFEED when necessary**

Engine Failure During Flight (Simulated) (Continued)

Airman Certification Standards:

- Promptly recognize an engine failure, maintain control, and utilize appropriate emergency procedures.
- Simulate securing the inoperative engine.
- Maintain heading $\pm 10^\circ$ and airspeed ± 5 knots.
- Complete **memory items** and then use the appropriate checklist to verify

Common Errors:

- Failure to properly identify and verify the inoperative engine
- Failure to properly adjust engine controls and reduce drag
- Failure to maintain directional control
- Failure to establish and maintain a pitch attitude that will result in holding altitude or minimal sink rate
- Failure to establish and maintain proper zero sideslip condition

Engine Failure During Flight (Actual)

The actual engine shutdown and feather follows the same procedures as the simulated list above with the following exceptions:

- Must be done **above 4000' AGL**
- The shutdown is initiated by the MEI killing the engine with Mixture, or Fuel Selector.
- It may also be initiated as a scenario requiring the student to deliberately shutdown and engine. (Such as 'high oil temp and losing oil pressure, shut down to preserve the engine)
- If a scenario, the student will pull their own **throttle to idle**, then perform the immediate action procedures in paragraph 3 above.
- The **FIX** procedures listed above may be skipped, or simulated as directed
- The **FEATHER/SECURE** procedures will **NOT be simulated, they are actually performed**
 - If a scenario, the student should use the SECURING portion in their checklist as they do so.
 - If MEI initiated, the student may **secure** with memory items then verify with checklist.
- The student may be required to maneuver with one engine feathered.
- When the task is completed, the student **will** use the AIRSTART checklist (step by step, **NOT** from memory)

Multi Engine Instructor Guidelines

1. Take off Roll:
 - a. Fail with Mixture (right or left)
 - b. Only pull mixture enough to initiate yaw then return to full rich
 - c. Allow the student to recover and stop
 - d. Ensure both engines are operating normally before next takeoff attempt

2. After Take off:
 - a. Fail with the throttle (ABOVE 400 ft AGL)
 - b. Allow student to perform immediate action items
 - c. Student will touch and announce to feather (Do NOT feather)
 - d. Student will touch and announce cut off mixture (Do NOT cut off)
 - e. Simulate feather by bringing the failed engine to ~11" to 12" MP

3. Simulated Engine Failures:
 - a. Fail with throttle
 - b. Allow student to perform immediate action items
 - c. Allow student to troubleshoot
 - d. Student will touch and announce to feather (Do NOT feather)
 - e. Student will touch and announce cut off mixture (Do NOT cut off)
 - f. Simulate feather by bringing the failed engine to ~11" to 12" MP

4. Actual Engine Shutdown and Feather (*Must be done in the vicinity of an airport*)
 - a. Fail with mixture, fuel selector, or use an intentional engine shutdown scenario.
 - b. Allow student to perform immediate action items (if you failed with mixture do not allow them to move it forward)
 - c. Student **may** simulate troubleshooting procedures, if required
 - d. Feather the propeller
 - e. Mixture to Cut off
 - f. Have the student perform Securing procedures. Not simulated.
 - g. For Air start – Use step by step method with checklist
 - h. Set cold engine to 13 to 15" MP until CHT temps are back in the green
 - i. Reset both throttles to normal and resume normal flight

Drag Demo

- Pre-maneuver checklist
- Begin in clean configuration above 3000 AGL
- Mixtures & Props **full forward**, Fuel Pumps **On**
- Slow to **88 knots**
- Extend gear.
- Add power to maintain **88 knots** and altitude.
- Extend **flaps 10°**.
- Add power to maintain 88 knots and altitude.
- Extend **flaps 25°**.
- Add power to maintain 88 knots and altitude.
- Extend **flaps 40°**.
- Add power to maintain **88 knots** and altitude.

Above steps are for knowledge of drag to required power relationships

PTS-Required Tasks Below

- Retard **left** throttle to **idle** (critical engine)
- Add **full** power to **right** throttle, establish **zero sideslip condition** and allow the plane to slow to **88 knots**. (Note VSI when established.)
- Cowl Flaps **OPEN**
- **Flaps up**, maintain **88 knots**. (Note VSI.)
- **Gear up**, maintain **88 knots**. (Note VSI.)
- Left throttle to **11"-12" MP** simulated feather power, maintain **88 knots**. (Note VSI.)
- Pitch for **82 knots**. (Note VSI.)
- Pitch for **88 knots**. (Note VSI.)
- Pitch for a speed **above 88 knots**. (Note VSI.)
- Bring throttles slowly together to **20" MP**.
- "Cruise Checklist."