Middle Georgia State University

PIPER SEMINOLE PA44 PROCEDURE PACKET

VERSION 2025

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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 3,000' AGL
3. Enter at **120 KIAS, approximately 20" MP, 2400 RPM.**
4. Begin a coordinated turn to a **50º** 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'
- Airspeed: +/– 10 Knots
- Heading: +/– 10º from Entry
- Bank Angle: +/– 5º

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 altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, bug reference heading.
4. Reduce power to **15" MP**.
5. Below **140 KIAS**, gear down.
6. Below **111 KIAS,** flaps in sequence to full.
7. Maintain **60-65 KIAS**, power as needed to maintain altitude.
8. **On recovery**, full power, retract flaps to 25º.
9. Call out "Positive rate **gear up**"
10. Flaps in sequence to **0º**.
11. Maintain altitude and heading.

Airman Certification Standards:

- Altitude: +/– 50'
- Airspeed: + 5, -0 Knots
- Heading: +/– 10º
- Bank Angle: +/– 10º

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 altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, bug reference heading.
4. Reduce power to **15" MP**.
5. Maintain 65 KIAS, power as needed to maintain altitude.
6. **On recovery**, add full power.
7. Maintain altitude and heading.

Airman Certification Standards:

- Altitude: +/– 50'
- Airspeed: + 5, -0 Knots
- Heading: +/– 10º
- Bank Angle: +/– 10º

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 45º 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' AGL**
3. Select outside visual reference, set heading bug.
4. Reduce power to **15" MP**, slow to 100 KIAS *maintain heading and altitude.*
5. Upon reaching 100 KIAS, bring power to **idle**, enter **45º 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
- Bank Angle: 45º 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' AGL.**
3. Select outside visual reference.
4. Reduce power to **15" MP**.
5. Below **140 KIAS**, gear down.
6. Below **111 KIAS,** flaps in sequence to full.
7. Begin descent at **75 KIAS** 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 25º**.
10. Callout "Positive rate, **gear up**".
11. Retract flaps in sequence to **0º.**

Airman Certification Standards:

- Heading: +/– 10º (if straight and level)
- Bank Angle: Not to exceed 20º +/- 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' AGL.**
3. Select outside visual reference.
4. Reduce power to **15" MP**, *maintain heading and altitude.*
5. Reaching **80 KIAS**, *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: +/– 10º (if straight and level)
- Bank Angle: Not to exceed 20º +/- 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' AGL.**
3. Select outside visual reference.
4. Reduce power to **15" MP**, *maintain heading and altitude.*
5. Below **140 KIAS**, gear down.
6. Reaching **80 KIAS**, *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: +/– 10º (if straight and level)
- Bank Angle: Not to exceed 20º +/- 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 **Vy (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" MP and 2400 RPM **(110 KIAS**)
- At midfield, Below 140 KIAS **Gear down**, and **GUMPS** check.

Abeam Point

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

Base

- **GUMPS** check, **Extend flaps to 25º, 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

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 10º nose up)**
2. Flaps retract to **25º**.
3. Callout “Positive rate” , **GEAR UP**. (must be below **109 KIAS** gear up speed)
4. Pitch for $\mathbf{V_Y}$ **88 KIAS** and positive rate, retract flaps slowly in sequence to **0º**.
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 $\mathbf{V_X}$ or $\mathbf{V_Y}$ as appropriate +10 Knots / -5 Knots.
- Maintain $\mathbf{V_Y}$ 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 **0º**
- 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

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 0º. 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 KIAS), announce “rotate” and smoothly apply backpressure.
8. Pitch for 7º-10º and climb out at $\mathbf{V_Y}$ **88 KIAS 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” MP and Props to 2500 RPM**
12. At 1,000’ AGL, transition to cruise climb speed of **105 KIAS**

Airman Certification Standards:

- Maintain $\mathbf{V_Y}$**:** +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 traffi

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 45º angle at midfield.
3. **Downwind** – reduce power and slow to **110 KIAS**.
4. **Midfield** – Below 140 **Gear Down,** Callout **GUMPS**
5. **Abeam** – Throttles **15" – 17" MP,** Below 111 **Flaps 10º**
6. **Base** – Callout **GUMPS**, props slowly full forward, maintain **100 KIAS. Flaps 25º**
7. **Final** – **Full Flaps (if desired)**. Speed **88 KIAS (add gust factor if desired)**, Callout "**Gear down, stabilized**". Aim for 1,000 foot markers
8. **When Landing is assured** – Pitch for **80 KIAS (or 85 KIAS 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 0º** 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' 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
- Sideloading the aircraft
- Landing off centerline

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 **0º**.
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 $\mathbf{V_R}$ **(70 KIAS)**
7. Rotate with authority and pitch **for 12º nose up**
8. Call out "Positive rate, **GEAR UP"**
9. Climb out at $\mathbf{V_X}$ **82 KIAS**
10. Once clear of 50 ft. obstacle, lower the nose and accelerate to $\mathbf{V_Y}$ **88 KIAS**.
11. Maintain runway centerline using appropriate rudder inputs.
12. Climb out normally

Airman Certification Standards:

- Rotate and lift off at $\mathbf{V_X}$: +/- 5 KIAS
- Maintain pitch attitude that will maintain $\mathbf{V_X}$ until obstacle is cleared by 50'.
- After clearing obstacle maintain $\mathbf{V_Y}$**:** + / -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 $\mathbf{V_X}$ until obstacle cleared
- Failure to maintain $\mathbf{V_Y}$ 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 KIAS**.
4. **Midfield** – Below 140 **Gear Down,** Callout **GUMPS**
5. **Abeam** – Throttles **15" – 17" MP,** Below 111 **Flaps 10º**
6. **Base** – Callout **GUMPS**, props slowly full forward, maintain **100 KIAS. Flaps 25º**
7. **Final** – **Full Flaps**. Speed **88 KIAS**, Callout "**Gear down, stabilized**".
8. **When Landing is assured** – Pitch for **75 KIAS** and use power to control descent rate.
9. **Flare and close throttle** to touchdown with **little to no float.** Touch down within **100'** 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' / -0'.
- 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 4,000' AGL.**
2. Bug entry heading.
3. Reduce left throttle smoothly to **idle,** maintain directional control and altitude.
4. Mixture and props **full forward** Smoothly increase right throttle to **full power.**
5. Establish a **zero sideslip condition** and allow the airplane to slow**.**
6. At **88** KIAS, announce "I am beginning the maneuver". Pitch up at **1kt per second.**
7. Increase rudder pressure and roll input to maintain heading and sideslip condition.
8. 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.
9. Maintain directional control and smoothly increase right throttle to **full.** Add rudder as necessary**.**
10. Pitch for **88** KIAS
11. Once **88** KIAS is reestablished, the maneuver has ended.
12. 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_{mc}.
- 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** KIAS (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" MP 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', airspeed ± 10 knots, heading ± 10°.
- On final approach maintain vertical (as applicable) and lateral guidance within ¾-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.) and is not required in the latest ACS-7B (April 2024, effective May 31, 2024)**

Procedure:

1. Pre-Maneuver checklist complete
2. ENSURE AREA BELOW IS CLEAR
3. Select an appropriate landing area (if appropriate for the scenario)
4. Mixtures and Propellers – Forward
5. Throttles – Idle
6. Below 140 KIAS, Gear-Down
7. Pitch for 130 KIAS
8. Turn left 30° and 45° so pilot can maintain visibility below
9. Continue to engine out / emergency landing checklist (as appropriate for scenario given)
10. Level off at desired altitude, below 109 KIAS, Gear-Up

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** KIAS (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 Vx, if obstructions are present, until obstructions are cleared. Then transition to Vy
- Simulate securing the inoperative engine.
- Maintain heading ±10° 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** KIAS, **GEAR DOWN.** Flaps **AS NEEDED**.
3. **Base – GUMPS,** Maintain **90 – 100** KIAS,
4. **Final – GUMPS,** Flaps **AS NEEDED**, maintain **88** KIAS 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” MP 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 KIAS 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 ±10° 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 4,000' 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)

Instrument Procedures

Loss of Communications (Instrument)

This procedure is practiced so that the pilot can effectively manage a simulated loss of communication scenario, demonstrating proficiency in recognition, communication re-establishment, decision-making regarding flight continuation or deviation, and appropriate timing for initiating an approach.

Procedure:

1. Recognition and Communication Re-Establishment:
    - Immediately squawk 7600 on the transponder to indicate a loss of communication to ATC.
    - Simulate appropriate actions to re-establish communication, including radio frequency checks, equipment checks, and attempts to contact ATC via alternate means (if available).
    - Determine whether to continue to the flight plan destination or deviate based on the circumstances, terrain, weather, and available navigational aids.
    - Assess the appropriate time to initiate an approach considering factors such as distance, fuel reserves, weather conditions, and terrain clearance.
    - Utilize single-pilot resource management (SRM) or crew resource management (CRM) principles as applicable to ensure effective decision-making and workload management.
2. Determination of Route and Altitude Precedence (in IFR):
    - ***Route to Fly:***
        1. **Assigned:** Follow the route specified in the last clearance received from ATC.
        2. **Vectored:** Proceed direct to the fix specified in any vector clearance received from ATC.
        3. **Expected:** Fly as advised in any further clearance provided by ATC.
        4. **Filed:** Follow the route specified in your filed flight plan.
    - ***Altitude (Highest of the following):***
        1. **Minimum:** Maintain the altitude prescribed for IFR operations.
        2. **Expected:** Ascend or descend as advised in any further clearance provided by ATC.
        3. **Assigned:** Maintain the altitude specified in your last ATC clearance.

Airman Certification Standards:

- Demonstrates the ability to recognize a simulated loss of communication promptly.
- Simulates actions to re-establish communication effectively.
- Determines whether to continue to the flight plan destination or deviate based on comprehensive risk assessment and situational awareness.
- Determines the appropriate time to begin an approach considering various factors influencing flight safety and operational requirements.
- Employs single-pilot resource management (SRM) or crew resource management (CRM) techniques as appropriate to enhance decision-making and operational efficiency.

Common Errors:

- Failure to adhere to the proper route and altitude precedence as outlined by ATC procedures.
- Failure to squawk 7600 to indicate a loss of communication with ATC.
- Inadequate preparation or simulation of actions to re-establish communication with ATC.
- Lack of comprehensive risk assessment and decision-making regarding flight continuation or deviation.
- Failure to initiate an approach at the appropriate time, leading to inefficiencies or compromised safety.

Intercepting and Tracking VOR, GPS Courses, and DME Arcs (Instrument)

The objective of Intercepting and Tracking VOR, GPS Courses, and DME Arcs is to develop proficiency and accuracy in navigating using VOR and GPS guidance systems, and to efficiently execute DME arcs, maintaining compliance with instrument flying standards.

Procedure:

1. Pre-Maneuver Checklist **Set Navigation Source:**

    a. **For VOR Course and DME Arcs (Tune VOR):**

        i. Insert the VOR frequency into the desired NAV receiver (NAV 1, NAV 2).
        ii. Identify the VOR to ensure it is functioning correctly.
        iii. **Additional for DME Arcs:** Ensure that the DME is functioning and correctly displaying distance to the VOR.

    b. **For GPS Course:**

        i. Load the desired course into the GPS system.
        ii. Verify the course details on the GPS to ensure they are correctly programmed and that the system is ready for navigation.

2. **Set and Verify Course:**

    a. **For VOR/GPS Courses:** Set the OBS to the desired course and determine the current radial or track.
    b. **For DME Arcs:** Set the OBS and prepare to track the course leading to the arc initiation point.

3. **Determine and Execute Intercept Angle:**

    a. If the intercept angle is less than 20°, turn 20° towards the desired course.
    b. If the intercept angle is more than 90°, turn 90°.
    c. If the intercept angle is between 20° and 90°, turn double the angular difference.
    d. **For DME Arcs:** Begin turning towards the arc 0.5 NM before reaching the arc distance, usually 90° towards the arc.

4. **Intercept and Track the Course:**

    a. **For VOR/GPS:**

        i. Turn to intercept and as the CDI centers, align with the course heading.
        ii. Maintain course adjustments to keep the CDI centered.

    b. **For DME Arcs:**

        i. Once aligned with the arc, adjust the OBS forward by 10° increments, correcting for wind to maintain the arc distance ±1 NM.
        ii. Prior to reaching the desired radial, turn to intercept the inbound course.

Airman Certification Standards:

- **Altitude:** Maintain within ±100 feet.
- **Airspeed:** Maintain within ±10 knots.
- **Heading:** ±10º from the selected heading (en route), ±5º (arrival or DME arc).
- **Bearing:** Within ¾ scale deflection of the CDI (for VOR/GPS).
- **Distance from Arc:** Maintain within ±1 NM (for DME arcs).

Common Errors:

- Failure to correctly identify the navigation station or input the desired course.
- Overshooting or undershooting the intended radial, course, or DME arc.
- Misinterpreting navigational data or station passage, particularly with VOR.
- Chasing the CDI, which can result in homing rather than tracking.
- Losing situational awareness, especially during DME arc navigation.
- Starting the arc too early or too late, resulting in deviation from the intended arc distance.

Holding (Instrument)

The objective of Holding is to effectively manage holding procedures in air traffic control separations, weather diversions, and procedural turns, demonstrating proficiency in direct, parallel, and teardrop entry methods according to Instrument Flight Rules (IFR) and regulatory standards.

Procedure:

1. **Preparation:**

   a. Tune and identify the navigational system for the hold, if required. Twist OBS to the TO indication for that navigation system to prepare to identify and cross the fix initially.
   b. Consider reducing airspeed to an appropriate holding airspeed to conserve fuel in anticipation of the Expect Further Clearance (EFC) time, starting 2 miles prior to the holding fix.

2. **Entry Into Hold:**

   a. ***Direct Entry:*** Upon crossing the fix, turn immediately to the outbound heading using a standard rate turn.
   b. ***Parallel Entry:*** Upon crossing the fix, turn to parallel the outbound course on the reciprocal of the inbound course for one minute.
   c. ***Teardrop Entry:*** Upon crossing the fix, turn 30° outbound on the holding side for one minute.

   Report altitude and time at holding fix

3. **Manage OBS Settings:**

   a. Initially, fly heading bug to wind corrected track outbound (if appropriate to entry) to cross the holding fix.
   b. Twist OBS to the TO indication to prepare for the inbound course.
   c. After completing the outbound leg, intercept OBS to the TO indication for the inbound course.

4. **Timing and Turns:**

   a. Start timing once wings are level or when the fix is abeam (for VOR holds), whichever occurs later.
   b. Fly the outbound leg for one minute. (unless otherwise specified)
   c. Turn inbound using a standard rate turn, and start timing again once wings are level.

5. **Tracking Inbound and Outbound Legs:**

   a. Track the inbound course to the holding fix.
   b. Upon reaching or crossing the holding fix, prepare to execute the next outbound leg or continue as required.

Airman Certification Standards:

- **Altitude:** Maintain within ±100 feet.
- **Airspeed:** Maintain within ±10 knots.
- **Heading:** ±10º from the selected heading
- **Bearing:** Within ¾ scale deflection of the CDI

Common Errors:

- Failure to properly identify the holding fix or VOR station.
- Overshooting or undershooting radials.
- Misinterpreting station passage.
- Inadequate wind correction, leading to deviation from the intended flight path.
- Not adjusting airspeed appropriately for fuel conservation in anticipation of EFC.
- Neglecting to recalculate fuel reserves following an unanticipated EFC assignment.
- Chasing the CDI, leading to "homing" instead of precise tracking.
- Failure to maintain within ¾ scale deflection of the CDI.

Missed Approach (Instrument)

The objective of a Missed Approach is to execute the missed approach procedure promptly and proficiently in compliance with the current Airman Certification Standards (ACS), ensuring safety and adherence to regulatory guidelines.

Procedure:

1. Promptly Initiate Missed Approach:
    - Immediately apply full power and smoothly initiate a climb upon determining that required visual references for a safe landing are not attainable.
2. Aircraft Configuration and Performance:
    - Confirm positive rate climb and speed (V_{LR}=109 KIAS), Retract gear and adjust flaps to 0° in a positive rate of climb to optimize climb performance and reduce drag.
    - Execute the climb checklist to ensure all necessary items are accomplished for the missed approach scenario.
3. Climb and Navigation:
    - Report the initiation of the missed approach procedure to ATC to maintain situational awareness and facilitate appropriate coordination.
    - Climb to the published altitude if executing a published missed approach procedure, ensuring compliance with altitude restrictions.
    - If conducting a practice approach, climb to the assigned altitude as directed by ATC or the evaluator.
    - Follow the published missed approach course if executing a published missed approach procedure, maintaining course integrity and adherence to lateral navigation guidance.
    - If conducting a practice approach, fly the assigned heading provided by ATC or the evaluator while maintaining situational awareness.

Airman Certification Standards:

- **Altitude:** Maintain altitude within ±100 feet tolerance to ensure compliance with altitude restrictions and maintain vertical separation from other aircraft.
- **Airspeed:** Maintain airspeed within ±10 knots of the recommended speed to ensure adequate climb performance and flight stability during the missed approach.
- **Heading, Course, or Bearing:** Maintain heading, course, or bearing within ±10º to adhere to lateral navigation requirements and ensure accurate tracking along the designated missed approach path.

Common Errors:

- Failure to promptly advise ATC of missed approach intentions, potentially leading to confusion or loss of situational awareness.
- Neglecting to accomplish essential checklist items, compromising aircraft configuration and performance during the missed approach.
- Deviation from published or instructed missed approach procedures, increasing the risk of navigational errors or airspace conflicts.

Non-Precision Instrument Approach (Instrument)

The objective of Non-Precision Instrument Approach is to proficiently execute non-precision approaches using VOR/DME, Localizer, and GPS systems, ensuring compliance with all regulatory and operational guidelines.

Procedure:

1. Pre-Approach Preparation (prior to IAF crossing or final intercept vector):
    - Load the approach procedure into the Flight Management System (FMS) as time and workload allows.
    - Conduct the Instrument Approach Checklist.
    - Comply with ATC assigned altitudes until cleared for the approach.
    - Tune and identify VOR and or Localizer frequencies prior to being cleared for the approach
2. Approach Initiation:
    - Once cleared for the approach, activate the approach in the FMS, comply with published step-down altitudes, and procedure turns (if needed)
    - When established on approach (CDI begins to center), announce “positive course guidance” (VOR/GPS) or “localizer alive” (Localizer).
3. Final Approach:
    - ½ NM prior to the FAF, reduce speed to final approach speed for aircraft **100 KIAS**, ensure approach speed (V_{LE}=140 KIAS) to extend gear and (V_{FE} = 111 KIAS) add 10° of flaps (unless multi-engine in single engine flight-No Flaps, consider gear extension based on conditions).
    - Cross the FAF at the published altitude.
    - Begin a stabilized descent with the CDI centered after crossing the Final Approach Fix (FAF).
    - Cross any intermediate step-down fixes at the published altitude.
    - If you have the runway environment in sight at a Visual Descent Point (VDP) (if applicable), begin a normal descent to the runway. This descent should be executed in a manner that allows for a stabilized landing approach. If you do not have sufficient visual reference by the VDP, you should not descend below MDA.
    - Maintain a stabilized descent until reaching the Minimum Descent Altitude (MDA).
    - Perform altitude callouts at 1,000', 500', 100', and at minimums.
4. Landing or Missed Approach Decision:
    - If the required visual references are in sight, continue descent to land and slow to an airspeed that allows for a stabilized landing.
    - If the runway environment is not in sight, maintain MDA until the Missed Approach Point (MAP).
    - At the MAP, if still not visual, initiate the missed approach procedure and do not descend below MDA.

System-Specific Considerations:

- VOR/DME Approach: Utilize lateral course guidance provided by the VOR/DME. Altitude step-down fixes are identified using radials and DME distances.
- Localizer Approach: This is used when the glideslope of an ILS is inoperative, turning it into a non-precision approach using only the localizer for lateral guidance.
- GPS Approach: Follow GPS guidance using LP or LNAV minimums. Announce "positive course guidance" upon approach activation, noting that there will be no vertical guidance provided.

Airman Certification Standards:

- Prior to Beginning Final Approach Segment:
    - **Altitude:** +/– 100 feet
    - **Airspeed:** +/– 10 knots
    - **Heading:** +/– 10º from selected heading

- Final Approach Segment:
    - **Altitude:** Above MDA, +100/-0 feet to the VDP or the MAP
    - **Airspeed:** +/– 10 knots
    - Bearing: Within ¾ scale deflection of the CDI

Common Errors:

- Failure to identify the navigation aid (VOR, localizer, or GPS waypoint).
- Failure to properly configure the aircraft for the approach.
- Not activating the approach mode on the navigation system.
- Descending below published step-down altitudes.
- Failure to maintain airspeed.
- Exceeding ¾ scale deflection of the CDI.

Precision Instrument Approach (Instrument)

The objective of Precision Instrument Approach is to proficiently execute precision approaches using Instrument Landing System (ILS) and GPS-based systems, ensuring compliance with all regulatory and operational guidelines.

Procedure:

1. **Pre-Approach Preparation (prior to IAF crossing or final intercept vector):**
    - Load the approach procedure into the Flight Management System (FMS).
    - Conduct the Instrument Approach Checklist.
    - Comply with ATC assigned altitudes until cleared for the approach.
    - Select, tune, identify, and confirm the operational status of Localizer/VOR frequencies prior to being cleared for the approach.
2. **Approach Initiation:**
    - Once cleared for the approach, comply with published altitudes and activate the approach.
    - When established on approach (CDI begins to center), announce “positive course guidance” (GPS) or “localizer alive” (ILS).
3. **Final Approach:**
    - Announce “Glideslope Alive” when glideslope becomes active.
    - ½ dot below glideslope intercept, reduce speed to final approach speed **100 KIAS**, ensure approach speed (V_{LE}=140 KIAS) to **extend gear and (V_{FE} = 111 KIAS) add 10° of flaps. (unless multi-engine in single engine flight)**.
    - Cross the FAF at the published altitude.
    - Begin a stabilized descent with the CDI centered after crossing the FAF.
    - Follow the glide slope and CDI to maintain precise lateral and vertical guidance.
    - Perform altitude callouts at 1,000', 500', 100', and at minimums.
4. **Landing or Missed Approach Decision:**
    - If required visual references are in sight at the Decision Altitude (DA)/Decision Height (DH), continue descent to land and slow to an airspeed that allows for a stabilized landing.
    - If required visual references are not in sight at DA/DH, conduct missed approach procedure.
5. **System-Specific Considerations:**
    - **ILS Approach:** Utilize both vertical and lateral guidance provided by the ILS system. Ensure all components such as localizer and necessary VOR systems (if applicable) are identified and active.
    - **GPS Approach:** Follow GPS guidance, typically using LPV or LNAV/VNAV minimums, ensuring "positive course guidance" is announced upon course acquisition.

Airman Certification Standards:

- Prior to Beginning Final Approach Segment:
    - **Altitude:** +/– 100 feet
    - **Airspeed:** +/– 10 knots
    - **Heading:** +/– 10º from the selected heading
- Final Approach Segment:
    - **Altitude:** Maintain a stabilized final approach from FAF to DA/DH
    - **Airspeed:** +/– 10 knots
    - **Bearing:** Within ¾ scale deflection of the CDI

Common Errors:

- Failure to identify the localizer or GPS station.
- Failure to properly configure the aircraft for the approach.
- Not activating the approach mode on the navigation system.
- Descending below the published altitude at the FAF.
- Failure to maintain the required airspeed.
- Exceeding ¾ scale deflection of the CDI.

Circling Approach (Instrument)

The objective of a Circling Approach is to execute a circle to land maneuver proficiently following the completion of an instrument approach, adhering to the specific operational guidelines and safety standards as outlined by the current Airman Certification Standards (ACS).

Procedure:

1. **Complete Instrument Approach:**
    - Successfully execute the designated instrument approach procedure as per the approach chart and ATC instructions.
2. **Final Approach:**
    - ½ NM prior to the Final Approach Fix (FAF) (non-precision approach) OR ½ dot below glideslope intercept (precision approach), reduce speed to final approach speed **100 KIAS**, ensure approach speed **(V_{LE}=140 KIAS)** to **extend gear**, and **(V_{FE} = 111 KIAS) add 10° of flaps (unless multi-engine in single engine flight – then No Flaps)**.
    - Cross the FAF at the published altitude.
    - Begin a stabilized descent with the CDI centered after crossing the Final Approach Fix (FAF).
    - Cross any intermediate step-down fixes at the published altitude.
3. **Circling Radius and Aircraft Categories:**
    - **Category B Aircraft (Seminole):** Maintain 90-100 KIAS to hold a circling radius of approximately 1.5 NM from the runway threshold appropriate for Category B, considering the aircraft's performance capabilities, especially in a potential single engine configuration. Ensure optimal visibility by maintaining MDA and maneuverability.
4. **Circling Maneuver Initiation:**
    - Maintain circling minimums until a safe position to commence an approach to land is established. Do not descend below circling minimums if in actual instrument conditions.
    - Once landing is assured, confirm approach speed and add any additional flaps, if necessary.
5. **Visual Reference and Missed Approach:**
    - Maintain continuous visual contact with the runway or identifiable parts of the airport. If visual contact is lost at any time, immediately initiate a missed approach procedure.
6. **Landing Preparation:**
    - Maneuver to a base or downwind leg appropriate for the landing runway considering wind and other environmental conditions. Begin a stabilized descent without exceeding a 30° bank angle.
    - Aim to touch down within the first one-third of the runway, ensuring the approach and landing are conducted without excessive maneuvering that could exceed the normal operating limits of the airplane.

Airman Certification Standards:

- **Altitude:** Maintain +100/-0 feet until descending below the MDA or the preselected circling altitude above the MDA.
- **Bank Angle:** Do not exceed 30° of bank during the circling maneuver to ensure safety and control.
- **Airspeed:** Maintain airspeed ±10 knots,
- **Heading/Track:** Desired heading/track ±10°

Common Errors:

- **Circling too close/far out from the airport:** Maintain the recommended circling radius to ensure adequate visual contact and compliance with circling minimums.
- **Descending below Minimum Descent Altitude (MDA):** Maintain MDA until you are in a position to safely descend for landing.
- **Excessive maneuvering on final approach:** Ensure the approach to landing is stable, with minimal heading changes and bank angles not exceeding the prescribed limits.

Multi Engine Instructor (MEI)

Guidelines

Simulator vs. Actual Aircraft Training Considerations

Both the Eastman and Macon flight training locations are equipped with Frasca Seminole simulators, which allow instructors to replicate extreme engine failures safely in ways that would not be feasible in the actual aircraft. The simulator should be used to introduce low-altitude failures, high-bank failures, and other extreme scenarios that cannot be safely replicated in the aircraft.

Seminoles spin aggressively once they enter a spin, and recoveries are not guaranteed once a spin begins.

1. NO backseater is allowed when performing a Vmc demo in the aircraft.
2. No engine failures in excessive bank angles (e.g., 55°+). A standard rate turn (≈ 15° bank) is acceptable.
3. No engine failures below 82 knots. At lower speeds, it is too easy to introduce yaw and lose control. The focus should be on pitching down first before accelerating to 88 knots (Vyse) and applying full power on the operating engine.

Specific Aircraft Engine Failure Guidelines:

1. Take off Roll (Simulated Failures):
    a. Fail engine using mixture control (left or right).
    b. **Do not fully cut off**—only pull mixture enough to introduce yaw, then return to full rich immediately.
    c. Allow student to recognize and respond to the failure.
    d. Ensure both engines are operating normally before attempting another takeoff.
2. After Take off (Simulated Failures):
    a. Engine failures must occur **above 400' AGL**.
    b. Fail engine using throttle (**not mixture**).
    c. Student performs immediate action items:
        i. Touch and announce "feather" (**DO NOT** actually feather).
        ii. Touch and announce "mixture cutoff" (**DO NOT** actually cut mixture).
    d. Simulate feather by bringing MP to 11”-12” on the **failed engine**.
3. Simulated Engine Failures (Cruise & Climb):
    a. Fail engine using throttle.
    b. Allow the student to complete:
        i. Immediate action items.
        ii. Troubleshooting procedures.
        iii. Student announces "feather" and "mixture cutoff" (DO NOT move these controls).
    c. Simulate feather by bringing MP to 11”-12” on the **failed engine**.
4. Actual Engine Shutdown and Feather (*Must be done in the vicinity of an airport*)
    a. Fail engine using mixture, fuel selector, or an intentional shutdown scenario.
    b. Allow student to complete immediate action items (if mixture was pulled, do not allow them to move it forward).
    c. Student simulates troubleshooting procedures. Touch and announce steps (**DO NOT** actually do steps).
    d. Feather the propeller (**not simulated**).
    e. Mixture to cutoff (**not simulated**).
    f. Have the student perform actual securing procedures (**not simulated**).
    g. Airstart Procedure:
        i. Use step-by-step checklist method.
        ii. Maintain 13”-15” MP on the cold engine until CHT is back in the green.
        iii. Reset both throttles and resume normal flight.

Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance

- Pre-maneuver checklist
- Begin in clean configuration above 3,000 AGL
- Mixtures & Props **full forward,** Fuel Pumps **On**
- Slow to **88 KIAS**
- Extend gear.
- Add power to maintain **88 KIAS** and altitude.
- Extend **flaps 10˚**.
- Add power to maintain 88 KIAS and altitude.
- Extend **flaps 25˚**.
- Add power to maintain 88 KIAS and altitude.
- Extend **flaps 40˚.**
- Add power to maintain **88 KIAS** and altitude.

Above steps are for knowledge of drag to required power relationships
ACS-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 KIAS.** (Note VSI when established.)
- Cowl Flaps **OPEN**
- **Flaps up**, maintain **88 KIAS**. (Note VSI.)
- **Gear up**, maintain **88 KIAS**. (Note VSI.)
- Left throttle to **11”-12” MP** simulated feather power, maintain **88 KIAS**. (Note VSI.)
- Pitch for **82 KIAS**. (Note VSI.)
- Pitch for **88 KIAS**. (Note VSI.)
- Pitch for a speed **above 88 KIAS**. (Note VSI.)
- Bring throttles slowly together to **20” MP**.
- Return to Normal Cruise “Cruise Checklist.”