



Flight Training
Professionals

CESSNA C172S NAV III

Flows and Amplified Checklist Procedures

DISCLAIMER

Flight Training Professional's Cessna C172S NAV III Standard Operating Procedures, Checklists, and Operations Manual are used to ensure efficient, proper, and safe operation of the C172S NAV III. However, Flight Training Professionals is not responsible for any errors or omissions of this or any other document. The Cessna C172S NAV III Pilot Operating Handbook should be consulted for additional guidance. If any conflict is found between Flight Training Professional's documents and the manufacturer's Pilot Operating Handbook, defer to the manufacturer's guidance.

CHAPTER 1: GENERAL

Introduction

Flight Training Professional's Cessna C172S NAV III Standard Operating Procedures describe the proper use of the C172S NAV III during all flight phases and procedures. In following chapters there are detailed descriptions on procedures found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

In this first chapter, principles and ideals will be discussed that lay a foundation which will apply in all circumstances and situations to follow in subsequent chapters.

Flight Training Professionals is dedicated to establishing quality Safety Management Systems. To ensure continuous efforts in maintaining and improving operational safety in every aspect, we welcome your input in any of this publication and how it can be improved.

Flight Deck Roles, Duties, and Communication

Communication, particularly interpersonal communication, is a critical objective of both Crew Resource Management (CRM) and its derivative, Single-Pilot Resource Management (SRM). To facilitate the development of this skill, roles will be assigned to flight crewmembers. These roles will require flight crewmembers to utilize clear, thorough communication between them. By observing the duties and responsibilities associated with a flight crewmember's role throughout training and beyond, skills required for good communication will be developed and honed.

While all attempts are made here to be thorough in addressing the roles and duties of each flight crewmember and the required communication associated, not all circumstances and scenarios are accounted for. Therefore, the flight crew shall utilize good judgement to safely execute all operations. The pilot in command will ensure that all conditions of an operation are within the required, safe tolerances.

NOTE

14 CFR 91.3 (a) - The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

Flight Deck Roles and Duties

Most current operations encompass a two-person crew, and as such there are two associated roles:

1. The Pilot Flying (PF)
2. The Pilot Monitoring (PM)

The Pilot Flying (PF)

The role of the Pilot Flying (PF) includes the primary duty of flying the airplane in a safe manner. Specifically, it is the responsibility of the Pilot Flying (PF) to ensure the airplane is flown in compliance with applicable regulations, the manufacturer's recommendations, appropriate publications, and Flight Training Professional's Standard Operating Procedures, Checklists, and Operations Manual.

NOTE

The Pilot Flying shall be commonly referred to as "PF"

The PF role has specific duties that shall be performed:

1. Ensure the desired aircraft state by manipulating the flight controls or automatic flight control and flight management systems to direct the aircraft's attitude, airspeed, and altitude.
2. Ensure the desired aircraft state to comply with applicable collision avoidance standard operating procedures.
3. Ensure the desired aircraft state by complying with the intended plan established either by the flight crew/pilot in command (PIC) or as directed by Air Traffic Control (ATC).
4. Ensure the completion of all appropriate radio communication.
5. Configure the desired aircraft state and complete the verification of the desired aircraft state with the appropriate checklist.
6. Begin all appropriate flight crewmember coordination/communication standard operating procedures.

These duties are to be performed in order of appropriate task prioritization. Always aviate first, then navigate and communicate.

The Pilot Monitoring (PM)

The role of the Pilot Monitoring (PM) is to monitor and verify the aircraft is operated in a safe manner. Specifically, it is the responsibility of the Pilot Monitoring (PM) to verify the airplane is flown in compliance with applicable regulations, the manufacturer's recommendations, appropriate publications, and Flight Training Professional's Standard Operating Procedures, Checklists, and Operations Manual.

NOTE

The Pilot Monitoring shall be commonly referred to as "PM"

The PM role has specific duties that shall be performed:

1. Ensure the desired aircraft state by monitoring the PF's manipulation of the flight controls or automatic flight control and flight management systems to direct the aircraft's attitude, airspeed, and altitude.
2. Alert the PF of any perceived or potential deviations from the desired aircraft state in attitude, airspeed, or altitude, and intervene if necessary.
3. Monitor the aircraft and system states, alert the PF of any perceived or potential deviations from the desired aircraft state, and intervene if necessary.
4. Verify the desired aircraft state to comply with applicable collision avoidance standard operating procedures.

5. Verify the desired aircraft state by ensuring compliance with the intended plan either established by the flight crew/pilot in command (PIC) or as directed by Air Traffic Control (ATC), and intervene if necessary.
6. Verify the completion of all appropriate radio communication and assist if necessary.
7. Assist in the verification of the desired aircraft state with the appropriate checklist.
8. Respond to all appropriate flight crewmember coordination/communication standard operating procedures.
9. Support the PF at all times.

At any given time during an operation with two flight crewmembers, there will always be a crewmember assigned to the role of PF and another crewmember assigned to the role of PM. These roles need not coincide with the pilot in command (PIC) nor must they remain fixed through the entire operation. The role assignments of PF and PM can be transferred as needed.

Under any circumstance or reason for transfer of roles. The roles shall be transferred positively with verbal assignment and verbal acceptance and include a standard brief of aircraft state.

NOTE

The PF shall always maintain positive control of the aircraft and will avoid all tasks or activities that distract from this primary responsibility. If the PF must carry out these tasks or activities, the PF shall transfer aircraft control to the other pilot, and then assume the PM role.

Sterile Flight Deck

To determine what is and what is not appropriate flight deck communication, we should look to an understanding of the sterile flight deck rule. A sterile flight deck model encompasses the principle that the crew will only engage in communications and actions pertinent to safe operation of that aircraft during critical phases of flight including taxi, takeoff, and landing. Distractions are a key factor in incidents and accidents that occur during high workload environments. Distractions can lead to establishing undesired aircraft states such as: improper checklist use for aircraft configuration, loss of positive control of the aircraft leading to upset attitudes, and situational and/or spatial disorientation.

While this requirement is not regulatory, for Flight Training Professionals' operations, all activities not related to flight training will be avoided during:

- All taxiing, takeoffs, and landings
- Terminal operations to include traffic pattern operations, departure, arrival, and approach procedures
- Checklist use procedures
- While in communication with any facility to include operations within all airspace requiring radio communications

NOTE

Refer to pages 1-9 to 1-15 for a complete list of Flight Training Professionals' callouts critical to proper Crew Resource Management (CRM), Single-Pilot Resource Management (SRM), and communication.

NOTE

Refer to section 6 for a complete list of Flight Training Professionals' standard briefings critical to proper Crew Resource Management (CRM), Single-Pilot Resource Management (SRM), and communication.

Checklist Use

Research undertaken in association with Threat and Error Management (TEM) shows that pilots, as human beings, are prone to errors. These errors range across the whole of aviation. However, many accidents and incidents occur as a result of pilots' failure to comply with standard operating procedures. Thus, employing tools to anticipate, compensate, and mitigate errors is critical to safe operations. None is more essential or vital than proper checklist usage.

There are two means of acceptable checklist usage:

1. Do/Verify
2. Read/Do

Though the Do/Verify method requires increased dedication to procedural practice, there are several advantages of the Do/Verify method:

1. More expedient checklist completion – This allows more time to dedicate to task management.
2. Enhanced flight deck/systems awareness – With configuration changes performed by memory, layout and orientation of the flight deck and associated systems are more familiar.
3. Additional verification – Further reduces the possibility for errors to go unchecked. The checklist is effectively carried out twice as verification.

Be aware of distractions or interruptions that could disrupt the checklist execution. If there were such an occurrence, the checklist, irrespective of which method were employed, shall be completed from the start to assure all items have been addressed.

When utilizing the Do/Verify method, a memorized procedural flow is employed to ensure the desired aircraft state, and then the associated checklist is referenced to verify correct performance. There are two acceptable means of completing the Do/Verify method:

1. In operations prior to phase three of the Flight Training Professionals Private Pilot ASEL syllabus and operations prior to phase six of the Flight Training Professionals Instrument Rating syllabus, the Pilot Flying (PF) will make use of the Pilot Monitoring (PM) to achieve a verification of the flow procedure (Step 3 Below).

Step 1. The Pilot Flying (PF) will execute the appropriate memory flow.

Step 2. The Pilot Flying (PF) will announce the commencement of the appropriate checklist.

Step 3. The Pilot Monitoring (PM) will read the **challenge** checklist items, the Pilot Flying (PF) will verify with a tactile inspection and verbalize the appropriate checklist **response**.

Step 4. The Pilot Flying (PF) will announce the completion of the checklist.

2. In operations after phase three of the Flight Training Professionals Private Pilot ASEL syllabus operations after phase six of the Flight Training Professionals Instrument Rating syllabus, the Pilot Flying (PF) will practice Single Pilot Resource Management (SRM) to achieve a confirmation of the flow procedure (Step 3 Below).

Step 1. The Pilot Flying (PF) will execute the appropriate memory flow.

Step 2. The Pilot Flying (PF) will announce the commencement of the appropriate checklist.

Step 3. The Pilot Flying (PF) will read the **challenge** checklist items, verify with a tactile inspection, and verbalize the appropriate checklist **response**.

Step 4. The Pilot Flying (PF) will announce the completion of the checklist.

NOTE

Refer to pages 1-9 to 1-15 for the complete list of checklist callouts.

Flight Training Professionals' Standard Callouts

Pilots must ensure that the desired aircraft state is maintained throughout all phases of flight, and communication be continuously retained between crewmembers to verify that desired state.

As a continued measure to improve the ability to safely operate an aircraft irrespective of conditions, Flight Training Professionals has established standard callouts.

These callouts:

- Foster expedient, proper communication among crewmembers necessary for situational awareness.
- Will often initiate a standard command and response procedure referred to in the "Checklist Use" (1-7 to 1-8) discussion.
- Are specific to Flight Training Professionals and are tailored to the Cessna C172S NAV III to meet aircraft operating requirements.

Crewmembers will use these standard callouts during all phases and types of operations carried out in Flight Training Professionals C172S NAV III aircraft. Refer to the following sections for guidance.

Checklist and Flow Callouts

| Event | PF Callout | Remarks |
|---|--|---|
| After completing the Before Starting Engine Flow | <i>"Before Starting Engine Checklist"</i> | Alert the PM to begin the commands for the Before Starting Engine Checklist. |
| Complete the Before Starting Engine Checklist's command and responses | <i>"Before Starting Engine Checklist complete"</i> | Alert the PM that the Before Starting Engine Checklist is complete. |
| After completing the Before Start Final Items Flow | <i>"Before Start Final Items Checklist"</i> | Alert the PM to begin the commands for the Before Start Final Items Checklist. |
| Complete the Before Start Final Items Checklist's command and responses | <i>"Before Start Final Items Checklist complete"</i> | Alert the PM that the Before Start Final Items Checklist is complete. |
| After completing the Starting Engine Flow | <i>"Starting Engine Checklist"</i> | Alert the PM to begin the commands for the Starting Engine Checklist. |
| Prior to engaging the engine starter | <i>"Clear Prop"</i> | Alert all persons of the impending engine start by distinctly verbalizing the call out. |
| Complete the Starting Engine Checklist's command and responses | <i>"Starting Engine Checklist complete"</i> | Alert the PM that the Starting Engine Checklist is complete. |
| After completing the Before Taxi Flow | <i>"Before Taxi Checklist"</i> | Alert the PM to begin the commands for the Before Taxi Checklist. |
| Complete the Before Taxi Checklist's command and responses | <i>"Before Taxi Checklist complete"</i> | Alert the PM that the Before Taxi Checklist is complete. |
| Prior to completing the Taxi Items checklist | <i>"Taxi Items Checklist"</i> | Alert the PM to begin the commands for the Taxi Items Checklist. |

| | | |
|---|--|--|
| Complete the Taxi Items Checklist's command and responses | <i>"Taxi Items Checklist complete"</i> | Alert the PM that the Taxi Items Checklist is complete. |
| After completing the Before Takeoff Flow | <i>"Before Takeoff Checklist"</i> | Alert the PM to begin the commands for the Before Takeoff Checklist. |
| Complete the Before Takeoff Checklist's command and responses | <i>"Before Takeoff Checklist complete"</i> | Alert the PM that the Before Takeoff Checklist is complete. |
| After completing the Line Up Items Flow | <i>"Line Up Items Checklist"</i> | Alert the PM to begin the commands for the Line Up Items Checklist. |
| Complete the Line Up Items Checklist's command and responses | <i>"Line Up Items Checklist complete"</i> | Alert the PM that the Line Up Items Checklist is complete. |
| After completing the Climb Flow | <i>"Climb Checklist"</i> | Alert the PM to begin the commands for the Climb Checklist. |
| Complete the Climb Checklist's command and responses | <i>"Climb Checklist complete"</i> | Alert the PM that the Climb Checklist is complete. |
| After completing the Cruise Flow | <i>"Cruise Checklist"</i> | Alert the PM to begin the commands for the Cruise Checklist. |
| Complete the Cruise Checklist's command and responses | <i>"Cruise Checklist complete"</i> | Alert the PM that the Cruise Checklist is complete. |
| Prior to completing the Pre-Maneuver checklist | <i>"Pre-maneuver Checklist"</i> | Alert the PM to begin the commands for the Pre-maneuver Checklist. |
| Complete the Pre-Maneuver Checklist's command and responses | <i>"Pre-maneuver Checklist complete"</i> | Alert the PM that the Pre-Maneuver Checklist is complete. |

| | | |
|---|--|--|
| After completing the Descent Flow | <i>"Descent Checklist"</i> | Alert the PM to begin the commands for the Descent Checklist. |
| Complete the Descent Checklist's command and responses | <i>"Descent Checklist complete"</i> | Alert the PM that the Descent Checklist is complete. |
| After completing the Before Landing Flow | <i>"Before Landing Checklist"</i> | Alert the PM to begin the commands for the Before Landing Checklist. |
| Complete the Before Landing Checklist's command and responses | <i>"Before Landing Checklist complete"</i> | Alert the PM that the Before Landing Checklist is complete. |
| After completing the Go-Around Flow | <i>"Go-Around Checklist"</i> | Alert the PM to begin the commands for the Go-Around Checklist. |
| Complete the Go-Around Checklist's command and responses | <i>"Go-Around Checklist complete"</i> | Alert the PM that the Go-Around Checklist is complete. |
| After completing the After Landing Flow | <i>"After Landing Checklist"</i> | Alert the PM to begin the commands for the After Landing Checklist. |
| Complete the After Landing Checklist's command and responses | <i>"After Landing Checklist complete"</i> | Alert the PM that the After Landing Checklist is complete. |
| After completing the Shutdown Flow | <i>"Shutdown Checklist"</i> | Alert the PM to begin the commands for the Shutdown Checklist. |
| Complete the Shutdown Checklist's command and responses | <i>"Shutdown Checklist complete"</i> | Alert the PM that the Shutdown Checklist is complete. |

Takeoff Callouts

| Event | PF Callout | Remarks |
|--|---------------------------------------|--|
| While entering/positioning on the intended runway | <i>"Runway (Runway #) identified"</i> | Alert the PM to a confirmation of the correct runway/runway alignment |
| Upon setting takeoff power | <i>"Engine instruments normal"</i> | Alert the PM that performance, temperature, and pressure instruments indicate satisfactory parameters. |
| Upon positive indication on the airspeed indicator | <i>"Airspeed alive"</i> | Alert the PM that the airspeed indicator is functioning properly. |

Configuration Change Callouts

| Event | PF Callout | Remarks |
|--|---|---|
| Before extending flaps to 10 degrees. | <i>"Below 110 Knots, flaps 10"</i> | Alert the PM to a confirmation that the airspeed is below V_{FE110} , and the flaps are set to 10 degrees. |
| Before extending flaps to settings greater than 10 degrees. | <i>"Below 85 Knots, flaps 20"</i> or <i>"Below 85 Knots, flaps 30"</i> | Alert the PM to a confirmation that the airspeed is below V_{FE} , and the flaps are set to 20 or 30 degrees. |
| Before retracting flaps from 30 degrees to 20 degrees. | <i>"Descent arrested, flaps 20"</i> | Alert the PM to a confirmation that the airplane is in positive control and not presently descending. |
| Before retracting the flaps from 20 degrees to 10 degrees or from 10 degrees to 0 degrees. | <i>"(Current Airspeed), flaps 10"</i> or <i>"(Current Airspeed), flaps 0"</i> | Alert the PM to a confirmation that the airplane is at the appropriate airspeed for flap retraction |

Maneuvering Callouts

| Event | PF Callout | Remarks |
|--------------------------------|------------------------|--|
| When a stall occurs | <i>"Stall"</i> | Alert the PM that a stall has occurred and that the pilot flying will recover appropriately. |
| Anytime a stall warning occurs | <i>"Stall warning"</i> | Alert the PM that a stall warning has occurred and that the pilot flying will recover appropriately. |

Approach to Landing Callouts

| Event | PF Callout | Remarks |
|--|---------------------------------------|--|
| Upon visual identification of the runway | <i>"Runway (Runway #) identified"</i> | Alert the PM to a confirmation of the correct runway/runway alignment |
| Prior to continuing below 300 feet AGL during approach to landing. | <i>"300 feet, stabilized"</i> | Alert the PM that a stabilized approach is obtained and that the approach will continue. |
| Upon initiating a go-around | <i>"Going around"</i> | Alert the PM that the approach is being abandoned. |

Instrument Approach Callouts

| Event | PF Callout | Remarks |
|---|----------------------------|--|
| Upon positive, final approach course guidance | <i>"Course alive"</i> | Alert the PM to a confirmation that the CDI is providing course guidance for the correct approach. |
| Upon positive vertical guidance | <i>"Glide slope alive"</i> | Alert the PM to a confirmation that there is positive vertical guidance for the correct approach. |

| | | |
|--|------------------------------|--|
| Upon intercepting the glide slope/glide path at the published altitude | <i>"Glide slope checked"</i> | Alert the PM to a confirmation that the glide slope has been intercepted at the correct altitude |
| Upon reaching 500 feet above the published DA/MDA | <i>"500 above minimums"</i> | Alert the PM to a confirmation that the airplane is 500 feet above the minimum altitude for the correct approach. |
| Upon reaching 100 feet above the published DA/MDA | <i>"100 above minimums"</i> | Alert the PM to a confirmation that the airplane is 100 feet above the minimum altitude for the correct approach. |
| Upon reaching the published DA/MDA | <i>"Minimums"</i> | Alert the PM to a confirmation that the airplane is at the minimum altitude for the correct approach. |
| Upon meeting the requirements of 14 CFR 91.175(c) | <i>"Go visual"</i> | Alert the PM to a confirmation that the airplane can and will safely and legally continue the approach. * |
| Upon meeting the requirements of 14 CFR 91.175(c)(1), 14 CFR 91.175(c)(2), and only 14 CFR 91.175(c)(3)(i) | <i>"Approach lights"</i> | Alert the PM to a confirmation that the airplane can and will safely and legally continue the approach to 100 feet above TDZE or THRE as applicable. * |
| Upon initiating a missed approach | <i>"Going missed"</i> | Alert the PM that the approach is being abandoned. |

* The PM can utilize these callouts in actual or simulated IMC to accomplish desired training outcomes.

CHAPTER 2: PREFLIGHT PROCEDURES

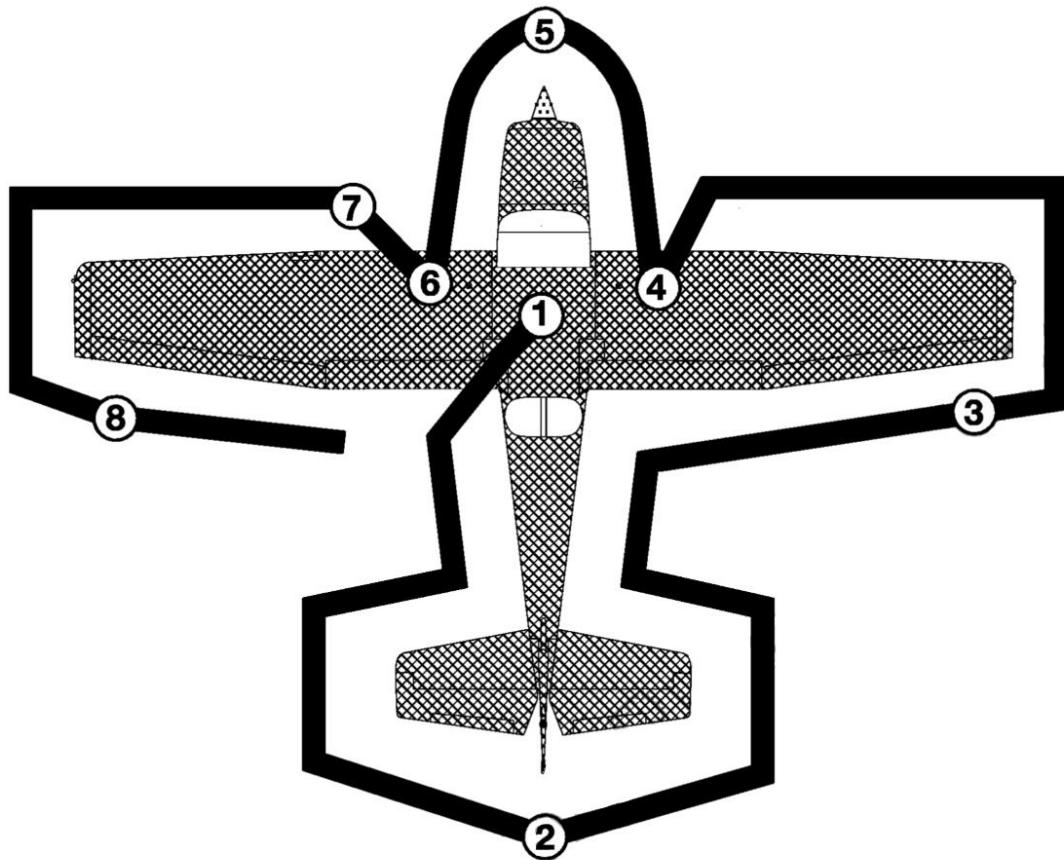
Chapter 2 Introduction and Motivation

In this chapter there are descriptions of preflight procedures found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

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Preflight Inspection

To maximize the efficiency of the airplane preflight inspection process while minimizing the risk of missed or improperly performed preflight items, the following flow will be utilized.



①

AIRCRAFT ACCEPTANCE

| | |
|------------------------------|----------|
| Maintenance Status | CHECK |
| Emergency & Safety Equipment | CHECK |
| Hobbs Meter | CHECK |
| A/C Documents | CHECK |
| Checklist | COMPLETE |

Amplified Procedure

- 1. Maintenance Status** CHECK
- A. Review the aircraft dispatch sheet and verify that all aircraft and equipment inspections are current to include:
- a. Airworthiness Directives
 - b. ELT Inspection
 - c. IFR GPS Database
 - d. IFR VOR Check
 - e. Pitot-Static Inspection
 - f. Transponder Inspection
 - g. 100 Hour Inspection
 - h. Annual Inspection
 - i. ELT Battery Due Date
 - j. FAA Registration
- B. Review any discrepancies and deferred items found on the airplane dispatch. Ensure that the airplane is in an airworthy and acceptable condition.
- 2. Emergency & Safety Equipment** CHECK
- CHECK that the required survival equipment is on board. CHECK that the equipment is stored and secured appropriately. Survival equipment required for the flight will vary based on the operation. CHECK that the fire extinguisher is properly charged with the pressure indicator pointing in the green range. CHECK that the extinguisher is secured with both latches closed.
- 3. Hobbs Meter** CHECK
- CHECK that the aircraft hobbs meter agrees with what is reported on the dispatch ticket. Record the current reading if there is a discrepancy on the dispatch ticket.
- 4. A/C Documents** CHECK
- CHECK that the Airworthiness Certificate and Aircraft Registration are properly located in the airplane and clearly visible. CHECK that the registration number and serial number correctly matches the aircraft on all documents. CHECK that the Aircraft Registration is current. CHECK that the Garmin Cockpit Reference Guide is available and properly stowed in the front-passenger side panel pocket. CHECK that the Pilot Operating Handbook, specific to that N-number airplane, is available and properly stowed in the front-passenger seat-back pocket.

NOTE

No items will be placed on top of the glare shield panel except the ignition switch key. Anything else can scratch the windshield and obstruct visibility. Be gentle when moving the sun visors, as this can damage the magnetic compass or scratch the windshield.

PREFLIGHT INSPECTION

CABIN

| | |
|--|------------|
| Aircraft Acceptance Checklist | COMPLETE |
| Control Lock | REMOVE |
| Ignition Switch | OFF |
| Avionics Switches | OFF |
| Master Switch (ALT and BAT) | ON |
| Primary Flight Display (PFD) | VERIFY ON |
| Tach Time | CHECK |
| Fuel Gauge(s) | CHECK |
| Low Fuel Annunciators | VERIFY OFF |
| Oil Pressure Annunciator | VERIFY ON |
| Low Volts Annunciator | VERIFY ON |
| Low Vacuum Annunciator | VERIFY ON |
| Avionics Switch (BUS 1) | ON |
| Forward Avionics Fan | VERIFY ON |
| Avionics Switch (BUS 1) | OFF |
| Avionics Switch (BUS 2) | ON |
| Aft Avionics Fan | VERIFY ON |
| Avionics Switch (BUS 2) | OFF |
| Flaps | DOWN |
| Master Switch (ALT and BAT) | OFF |
| Alternate Static Source | CLOSE |
| Trim | TAKEOFF |
| Fuel Selector Valve | BOTH |
| Fuel Shut-off Valve | ON/IN |
| ELT Switch | ARM |
| Baggage (DO NOT BLOCK FT AVIONICS FAN) | STOW |

Amplified Procedure

1. **Aircraft Acceptance Checklist** COMPLETE
Verify that the Aircraft Acceptance Checklist is COMPLETE.
2. **Control Lock** REMOVE
REMOVE the Control Lock from the control wheel and store it securely in the pilot's seat back pocket.
3. **Ignition Switch** OFF
Verify that the Ignition Switch is in the OFF position. Verify that the ignition key is out of the ignition switch and located on the dash.

- 4. Avionics Switches** **OFF**
 Verify that the Avionics Switches (Bus 1 and 2) are in the OFF position. This will reduce excessive wear on the avionics.
- 5. Master Switch (ALT and BAT)** **ON**
 Select the Master Switch (ALT and BAT) to the ON position.
- 6. Primary Flight Display** **VERIFY ON**
 VERIFY that the Primary Flight Display (PFD) is ON.
- 7. Tach Time** **CHECK**
 CHECK that the Tach Time agrees with what is reported on the dispatch ticket. Record the current reading if there is a discrepancy on the dispatch ticket.
- 8. Fuel Gauges** **CHECK**
 CHECK that the Fuel Gauges (Left and Right) indicate properly and that the fuel amount indicated meets the required amount of fuel for the flight. For fuel requirements refer to the Flight Training Professionals Operations Manual.
- 9. Low Fuel Annunciators** **VERIFY OFF**
 VERIFY that the LOW FUEL L and LOW FUEL R Annunciators are OFF.
- 10. Oil Pressure Annunciator** **VERIFY ON**
 VERIFY that the OIL PRESSURE Annunciator is ON.
- 11. Low Volts Annunciator** **VERIFY ON**
 VERIFY that the LOW VOLTS Annunciator is ON.
NOTE
The Low Volts annunciator will not display if the main bus voltage is greater than 24.5 volts.
- 12. Low Vacuum Annunciator** **VERIFY ON**
 VERIFY that the LOW VACUUM is ON.
- 13. Avionics Switch (Bus 1)** **ON**
 Select the left side switch of the Avionics Switch (Bus 1) to the ON position.
- 14. Forward Avionics Fan** **VERIFY ON**
 VERIFY that the Forward Avionics Fan is ON. Listen for an indication that the forward fan is running.
- 15. Avionics Switch (Bus 1)** **OFF**
 Select the left-side switch of the Avionics Switch (Bus 1) to the OFF position.

- 16. Avionics Switch (Bus 2).....ON**
- Select the right-side switch of the Avionics Switch (Bus 2) to the ON position.
- 17. Aft Avionics Fan.....VERIFY ON**
- VERIFY that the Aft Avionics Fan is ON. Listen for an indication that the aft fan is running.
- 18. Avionics Switch (Bus 2).....OFF**
- Select the right-side switch of the Avionics Switch (Bus 2) to the OFF position.
- 19. Flaps.....DOWN**
- Visually clear the area around the flaps and select the flap control lever to the 30° position. Verify that the flap motor runs routinely, the Flaps extend smoothly with no signs of resistance, the flap position indicator shows correct Flaps position, and the Flaps extend fully DOWN.
- 20. Master Switch (ALT and BAT).....OFF**
- Select the Master Switch (ALT and BAT) to the OFF position.
- 21. Alternate Static Source.....CLOSE**
- Check the function of the Alternate Static Source by pulling the knob out. There may be a noticeable increase of altitude on the standby altimeter. CLOSE the Alternate Static Source by pushing the knob to the off or fully in position.
- 22. Trim.....TAKEOFF**
- Verify the elevator trim operates properly and set the Trim to the TAKEOFF position.
- 23. Fuel Selector Valve.....BOTH**
- Verify the fuel selector operates properly and set to BOTH.
- 24. Fuel Shutoff Valve.....ON/IN**
- Select the Fuel Shutoff Valve ON by pushing the control knob fully IN.
- 25. ELT Switch.....ARM**
- Verify the ELT Switch is in the ARM position. This ensures the ELT is armed for automatic use if needed.
- 26. Baggage.....STOW**
- STOW and secure all baggage. Ensure that the aft avionics fan vent is not blocked. Secure any loose Baggage located on the passenger seats with the associated seat belts.

(2)

EMPENNAGE

| | |
|--|--------|
| Baggage Door | SECURE |
| Autopilot Static Source <i>(KAP140 Auto Pilot)</i> | CHECK |
| Horizontal & Vertical Stabilizer | CHECK |
| Elevator & Rudder | CHECK |
| Trim Tab | CHECK |
| Tie Down | REMOVE |
| Antennas | CHECK |

Amplified Procedure**1. Baggage Door** **SECURE**

Verify that the aft avionics fan vent is not blocked. Verify that the Baggage Door is SECURE (closed and locked).

2. Autopilot **CHECK**

If utilizing an aircraft equipped with a KAP140 Autopilot, CHECK the autopilot static source to ensure it is clear of obstructions and undamaged.

3. Horizontal & Vertical Stabilizer **CHECK**

CHECK that the horizontal stabilizer is free of damage along the leading edge, upper surface, and lower surface. CHECK that the horizontal stabilizer is secure and has zero movement. CHECK the vertical stabilizer is free of damage along the leading edge, left surface, and right surface. CHECK that the horizontal stabilizer is secure and has zero movement.

4. Elevator & Rudder **CHECK**

CHECK that the elevator is free of damage along the upper surface, lower surface, and trailing edge. CHECK the elevator for security at each hinge and cable attachment along with the appropriate securing hardware. Apply a lateral load on the elevator to ensure security. There should be no give while applying this load. CHECK that the elevator counterweights are properly installed. CHECK that the rudder is free of damage along the left surface, right surface, and trailing edge. CHECK the rudder for security at each hinge and cable attachment along with the appropriate securing hardware. Apply a vertical load on the rudder to ensure security. There should be no give while applying this load. Check the rudder trim tab for damage. CHECK that the rudder counterweight is properly installed. Check all castle nuts are secured with a safety pin.

NOTE

Do not attempt to adjust the rudder trim.

5. Trim Tab **CHECK**

CHECK that the elevator trim tab is secure and does not move on its own. Inspect the trim tab and trim tab hinge for cracks or other damage. Ensure the mechanical linkage is properly secured both on the lower surface of the trim tab and at the attachment forward of the elevator. Verify the (balance) tab moves opposite the direction of the elevator as the elevator is moved. Check all castle nuts are secured with a safety pin.

NOTE

Do not attempt to move the elevator with the trim tab.

6. Tie Down **REMOVE**

Carefully REMOVE the Tie Down and place the rope in a flat, straight line perpendicular to the airplane's longitudinal axis or wrapped flat on the ground. Inspect the tail skid, eye bolt, and rudder fairing for indications of a tail strike.

7. Antennas **CHECK**

CHECK the navigation, ELT, and GPS/Communication Antennas for damage and security. Also inspect the OAT probe for damage and security.

(3)

RIGHT WING TRAILING EDGE

| | |
|----------|-------|
| Flap | CHECK |
| Aileron | CHECK |
| Wing Tip | CHECK |

Amplified Procedure

1. Flap **CHECK**

CHECK the flap for damage along the upper surface, lower surface, and trailing edge. CHECK the rub-stop tabs to ensure none are exhibiting excessive wear or missing. CHECK that the rollers, rails, and actuator are free of damage and secure. Apply a both an aft load (as the wind will do) and a lateral load to the flaps to CHECK security.

2. Aileron **CHECK**

CHECK the aileron for damage along the upper surface, lower surface, and trailing edge. CHECK that the hinges, pins, and actuator are free of damage and secure. CHECK the aileron for freedom of movement.

3. Wing Tip **CHECK**

CHECK the wing tip for damage. CHECK the housing of the strobe light and the position light. CHECK that any cracks that exist are in nonessential structures and are drilled to stop the crack. Apply a light, vertical load on the wing tip to CHECK for wing structural issues.

(4)

RIGHT WING LEADING EDGE

| | |
|----------------------------|----------------|
| <u>Leading Edge</u> | CHECK |
| <u>Tie Down</u> | REMOVE |
| <u>Fuel Drains</u> | CHECK |
| <u>Landing Gear Strut</u> | CHECK |
| <u>Tire Pressure</u> | CHECK |
| <u>Wheel & Tire</u> | CHECK |
| <u>Fuel Drains (Belly)</u> | CHECK |
| <u>Fuel Level</u> | CHECK |
| <u>Fuel Cap & Vent</u> | CHECK / SECURE |
| <u>Cabin Vent Inlet</u> | CHECK |

Amplified Procedure

1. Leading Edge **CHECK**

CHECK the Leading Edge for contamination, dents, and cracks.

2. Tie Down **REMOVE**

Carefully REMOVE the Tie Down and place the rope in a flat, straight line perpendicular to the airplane's longitudinal axis or wrapped flat on the ground.

3. Fuel Drains **CHECK**

CHECK the fuel by using the fuel sample jar. Drain enough fuel from the five right fuel tank sump drains to CHECK for sediment, water, and proper type of fuel (100LL). Drain first from the two sumps closest to the leading edge first to avoid unseating water or other contamination that would be possibly missed. The type of fuel can be identified visually by a blue tint. Water has more density than 100LL fuel and will sink to the bottom. The water will create a separate layer or appear as bubbles sitting on the bottom of the jar.

Caution

If contamination is found, contact the front desk dispatch personnel.

- Landing Gear Strut **CHECK**

CHECK the Landing Gear Strut and strut fairing for damage or cracks. CHECK that the Landing Gear Strut fairing is properly secured and has no play.

4. Wheel & Tire **CHECK**

CHECK the brake caliper assembly for damage, cracks, excessive brake pad wear, lose hydraulic line, and leaking hydraulic fluid. CHECK the wheel rotor for damage or cracks. CHECK the tire for proper inflation, flat spotting, damage to the sidewall, and wear has no chord showing. CHECK the security of the gear by verifying the hub hardware and the safety pin are secure.

5. Fuel Drains (Belly).....**CHECK**

CHECK the fuel by using the fuel sample jar. Drain enough fuel from the fuel selector, reservoir, and strainer drains to CHECK for sediment, water, and proper type of fuel (100LL). The type of fuel can be identified visually by a blue tint. Water has more density than 100LL fuel and will sink to the bottom. The water will create a separate layer or appear as bubbles sitting on the bottom of the jar. If no contamination is found, return the fuel to the tank by pouring the fuel through the filtered opening of the fuel sample jar.

Caution

If contamination is found, contact the front desk dispatch personnel.

6. Fuel Level.....**CHECK**

CHECK that the Fuel Level is at the acceptable level. Utilize the cylindrical fuel gauge, or "dipstick," to measure the fuel tank's level. Place the fuel gauge down with a slightly aft angle towards the tail of the airplane until it contacts the bottom of the tank. Place a finger over the top of the fuel gauge to cover up the opening. Lift the gauge out of the tank and read the bottom of the meniscus (curve) for the best value. For acceptable fuel levels, refer to the Flight Training Professionals Operations Manual, Section 4.1.2 to 4.1.5.

7. Fuel Cap & Vent.....**CHECK**

CHECK the Fuel Cap for damage. CHECK the black O-ring for damage and secures the cap properly. CHECK that the Vent is clear and the orange covering, or "umbrella," is installed and free of damage. After the Fuel Cap is placed back on the aircraft, ensure it is properly installed with the cap fin parallel to the longitudinal axis of the airplane.

8. Cabin Vent Inlet.....**CHECK**

CHECK that the right Cabin Vent Inlet is unobstructed.

(5)

NOSE

| | |
|----------------------|---------------|
| Windshield..... | CHECK |
| Engine Oil..... | CHECK |
| Engine Cowling..... | SECURE |
| Exhaust..... | CHECK |
| Nose Gear..... | CHECK |
| Tire Pressure..... | CHECK |
| Wheel & Tire..... | CHECK |
| Air Filter..... | CLEAR |
| Propeller..... | CHECK |
| Spinner..... | CHECK |
| Alternator Belt..... | CHECK |
| Air Intakes..... | CHECK |
| Static Source..... | CHECK |

Amplified Procedure

- 1. Windshield** **CHECK**
CHECK that the windshield is free of damage, and check that the windshield is clean. Ensure that no items are placed on the top of the panel to avoid the windshield being scratched.
- 2. Engine Oil** **CHECK**
CHECK that Engine Oil Quantity is at an acceptable level. Oil quantity must be at a minimum is 5.5 quarts and a maximum of 8 quarts. For extended flights, consider carrying extra oil if at or near the minimum oil level. When replenishing oil levels, obtain Aeroshell 100 Plus (SAE 50).
- 3. Engine Cowling** **CHECK**
CHECK the Engine Cowling for damage or deformation. CHECK that the Engine Cowling is secure by ensuring all cam lock fasteners are properly installed. CHECK the cowling for signs of fuel or oil leaks.
- 4. Exhaust** **CHECK**
CHECK the Exhaust is free of damage or cracks. CHECK that the Exhaust is secure and free of obstructions.
- 5. Nose Gear** **CHECK**
CHECK the Nose Gear and strut for damage, cracks, and hydraulic leaks. Check the Nose Gear strut for proper inflation by verifying a minimum of two inches of strut tubing shown. CHECK the nose wheel steering linkages for damage and security. CHECK the shimmy damper for damage and security. Check all castle nuts are secured with a safety pin.
- 6. Tire Pressure** **CHECK**
CHECK the nose wheel tire for proper Tire Pressure.
- 7. Wheel & Tire** **CHECK**
CHECK the Wheel & Tire for damage. CHECK the tire for proper inflation, flat spotting, damage to the sidewall, and wear has no chord showing. CHECK the security of the Wheel & Tire. Check all castle nuts are secured with a safety pin.
- 8. Air Filter** **CHECK**
CHECK that the engine induction Air Filter is unobstructed and clean.
- 9. Propeller** **CHECK**
CHECK that the Propeller is free of damage. CHECK that there are no nicks on the leading or trailing edges of each blade. CHECK that there are no cracks in the Propeller blades. CHECK that the blades are secure.

10. Spinner..... **CHECK**

CHECK that the Spinner is free of damage. CHECK that the Spinner is secured with all screws installed.

11. Alternator Belt..... **CHECK**

CHECK that the Alternator Belt is free of damage like fraying or cracks. CHECK that the Alternator Belt is properly tensioned.

12. Air Intakes..... **CHECK**

CHECK that the Air Intakes are free of obstructions. CHECK there are no foreign items within the engine compartment. CHECK that there are no leaking fluids.

14. Static Source..... **CHECK**

CHECK that the Static Source is unobstructed.

(6)**LEFT WING LEADING EDGE**

| | |
|-----------------------|---------------|
| Cabin Vent Inlet..... | CHECK |
| Pitot Cover..... | REMOVE |
| Pitot Tube..... | CHECK |
| Stall Warning..... | CHECK |
| Fuel Vent..... | CHECK |
| Tie Down..... | REMOVE |

(7)**Leading Edge.....** **CHECK**Amplified Procedure**1. Cabin Vent Inlet.....** **CHECK**

CHECK that the left Cabin Vent Inlet is unobstructed.

2. Pitot Cover..... **REMOVE**

REMOVE the Pitot Cover.

3. Pitot Tube..... **CHECK**

CHECK that the Pitot Tube is free of damage. CHECK that the pitot tube opening and drain hole are unobstructed.

4. Stall Warning..... **CHECK**

CHECK that the Stall Warning opening is unobstructed. Apply suction to the vent opening to CHECK that the Stall Warning system is operating properly. The horn should sound if operating normally.

5. Fuel Vent..... **CHECK**

CHECK that the Fuel Vent is unobstructed. CHECK that the Fuel Vent is free of damage.

6. Tie Down **REMOVE**

Carefully REMOVE the Tie Down and place the rope in a flat, straight line perpendicular to the airplane's longitudinal axis or wrapped flat on the ground.

7. Leading Edge **CHECK**

CHECK the Leading Edge for contamination, dents, and cracks.

(8)

LEFT WING TRAILING EDGE

| | |
|--------------------|----------------|
| Wing Tip | CHECK |
| Aileron | CHECK |
| Flap | CHECK |
| Fuel Drains | CHECK |
| Landing Gear Strut | CHECK |
| Wheel & Tire | CHECK |
| Fuel Level | CHECK |
| Fuel Cap & Vent | CHECK / SECURE |
| Checklist | COMPLETE |

Amplified Procedure

1. Wing Tip **CHECK**

CHECK the wing tip for damage. CHECK the housing of the strobe light and the position light. CHECK that any cracks that exist are in nonessential structures and are drilled to stop the crack. Apply a light, vertical load on the wing tip to CHECK for wing structural issues.

2. Aileron **CHECK**

CHECK the aileron for damage along the upper surface, lower surface, and trailing edge. CHECK that the hinges, pins, and actuator are free of damage and secure. CHECK the aileron for freedom of movement.

3. Flap **CHECK**

CHECK the flap for damage along the upper surface, lower surface, and trailing edge. CHECK the rub-stop tabs to ensure none are exhibiting excessive wear or missing. CHECK that the rollers, rails, and actuator are free of damage and secure. Apply a both an aft load (as the wind will do) and a lateral load to the flaps to CHECK security.

4. Fuel Drains **CHECK**

CHECK the fuel by using the fuel sample jar. Drain enough fuel from the five right fuel tank sump drains to CHECK for sediment, water, and proper type of fuel (100LL). Drain first from the two sumps closest to the leading edge first to avoid unseating water or other contamination that would be possibly missed. The type of fuel can be identified visually by a blue tint. Water has more density than 100LL fuel and will sink to the bottom. The water will create a separate layer or appear as bubbles sitting on the bottom of the jar.

Caution

If contamination is found, contact the front desk dispatch personnel.

Landing Gear Strut **CHECK**

CHECK the Landing Gear Strut and strut fairing for damage or cracks. CHECK that the Landing Gear Strut fairing is properly secured and has no play.

5. Wheel & Tire **CHECK**

CHECK the brake caliper assembly for damage, cracks, excessive brake pad wear, lose hydraulic line, and leaking hydraulic fluid. CHECK the wheel rotor for damage or cracks. CHECK the tire for proper inflation, flat spotting, damage to the sidewall, and wear has no chord showing. CHECK the security of the gear by verifying the hub hardware and the safety pin are secure.

6. Fuel Level **CHECK**

CHECK that the Fuel Level is at the acceptable level. Utilize the cylindrical fuel gauge, or "dipstick," to measure the fuel tank's level. Place the fuel gauge down with a slightly aft angle towards the tail of the airplane until it contacts the bottom of the tank. Place a finger over the top of the fuel gauge to cover up the opening. Lift the gauge out of the tank and read the bottom of the meniscus (curve) for the best value. For acceptable fuel levels, refer to the Flight Training Professionals Operations Manual, Section 4.1.2 to 4.1.5.

7. Fuel Cap & Vent **CHECK**

CHECK the Fuel Cap for damage. CHECK the black O-ring for damage and secures the cap properly. CHECK that the Vent is clear and the orange covering, or "umbrella," is installed and free of damage. After the Fuel Cap is placed back on the aircraft, ensure it is properly installed with the cap fin parallel to the longitudinal axis of the airplane.

WALK AROUND

| | |
|--|-----------|
| Master Switch | ON |
| Lights | ON |
| Pitot Heat (<i>IFR Flights Only</i>) | ON |
| Pitot Heat (<i>IFR Flights Only</i>) | CHECK |
| Lights | CHECK |
| Pitot Heat | OFF |
| Lights (<i>Except Beacon</i>) | OFF |
| Master Switch | OFF |
| Checklist | COMPLETE |

Amplified Procedure

1. **Master Switch**..... **ON**

Select the Master Switch (ALT and BAT) to the ON position.

2. **Lights**..... **ON**

Select all the Lights ON.

3. **Pitot Heat**..... **ON**

Select the Pitot Heat ON.

NOTE

The Pitot Heat is only required to be selected ON for IFR Flights.

4. **Pitot Heat**..... **CHECK**

CHECK that the Pitot Heat is operational by verifying that the Pitot tube is warm to the touch within 30 seconds.

NOTE

The Pitot Heat is only required to be checked for IFR Flights.

NOTE

AVOID touching the Pitot tube if the Pitot Heat has been on for more than 30 seconds. The Pitot Tube can cause severe burns.

5. **Lights**..... **CHECK**

CHECK that all exterior Lights are operational.

NOTE

The final walk around affords an additional opportunity to verify the aircraft is ready for the flight. Examples of things to look for include but are not limited to:

- Verifying all tie downs are removed and stowed.
- Verifying all baggage is stowed and secured in the aircraft.
- Verifying the fuel caps are secured.

6. **Pitot Heat**.....**OFF**
Select the Pitot Heat OFF.
7. **Lights**.....**OFF**
Select all the Lights OFF.
8. **Master Switch**.....**OFF**
Select the Master Switch (ALT and BAT) to the OFF position.

CHAPTER 3: NORMAL PROCEDURES

Chapter 3 Introduction and Motivation

In this chapter there are descriptions on normal procedures found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

Flight Training Professionals has created specific sequences, known as flow-patterns, to execute normal procedures. Flow-patterns enable a logical movement during a specific configuring of the aircraft. Some of the benefits of executing a normal checklist procedure using a flow-pattern include:

- Simplifying both the initial learning and memorization of the checklist sequence and continued use of the checklist after familiarization.
- Creating a logical and consistent progression of eye movement and psychomotor skills.
- Standardizing the checklist procedure among all users.

Flow-patterns will be referred to simply as a "flow." Normal procedure flows will be identified in checklists by the items encompassed within a black box and shall be contributed to memory.

Flight Training Professionals is dedicated to establishing quality Safety Management Systems to ensure continuous dedication to maintaining and improving operational safety in every aspect. We welcome your input in any of this publication, and how it can be improved.

Before Starting Engine Flow



BEFORE STARTING ENGINE

| | |
|---|--------------|
| Aircraft Acceptance Check | COMPLETE |
| Preflight Inspection | COMPLETE |
| Passenger Briefing | COMPLETE |
| Seats, Seat Backs, Seat Belts | SET & LOCKED |
| Fuel Selector Valve | BOTH |
| Fuel Shut-off Valve | ON/IN |
| Mixture | IDLE/CUT OFF |
| Parking Brake | SET |
| Circuit Breakers | CHECK |
| Electrical Equipment (<i>Beacon Remains ON</i>) | OFF |
| Panel Dimming | OFF |
| Avionics Switch (<i>BUS 1 & BUS2</i>) | OFF |
| BEACON Switch | ON |
| Checklist | COMPLETE |

Amplified Procedure

1. **Aircraft Acceptance Check** COMPLETE
Verify the Aircraft Acceptance Check is COMPLETE.
2. **Preflight Inspection** COMPLETE
Verify the Preflight Inspection is COMPLETE.
3. **Passenger Briefing** COMPLETE
COMPLETE the Passenger Briefing. Refer to pages 6-3 to 6-5 for an amplified discussion.
4. **Seats, Seat Back, Seat Belts** SET & LOCKED
SET the Seats to the appropriate positions. The seat height should be adjusted to the standard sight picture position where the eye is in line with the door seal at a normal body posture. The seat should also be adjusted forward or aft as needed to allow the body access to all controls and instruments. SET the Seat Back in the most upright position. Once the seat position is SET, verify the seat is also LOCKED. SET the Seat Belts for each occupant and ensure they are secure. If the Seat Belts contain air bag inflators, ensure the seam is facing up and away from the body for proper inflation.
5. **Fuel Selector Valve** BOTH
Select the Fuel Selector Valve to BOTH to ensure both tanks are utilized during taxi, takeoff, and climb.
6. **Fuel Shut-off Valve** ON/IN
Verify the Fuel Shut-off Valve is IN and ON.
7. **Mixture** IDLE/CUT OFF
Set the Mixture to IDLE to ensure all fuel is CUT OFF.

- 8. Parking Brake** **SET**
SET the Parking Brake to ensure the aircraft remains stationary during engine start. Apply brake pressure, rotate the Parking Brake handle 90° counterclockwise, and pull the handle out.
- 9. Circuit Breakers** **CHECK**
CHECK that the Circuit Breakers are all set in. CHECK with both a visual and tactile inspection by moving your hand along all breakers.
- 10. Electrical Equipment** **OFF**
Select all Electrical Equipment, except for the BEACON switch, OFF.
- 11. Panel Dimming** **OFF**
Select all Panel Dimming OFF by rotating the four dimmer controls counterclockwise to the stop.
- 12. Avionics Switch (Bus 1 & Bus 2)** **OFF**
Select the Avionics Switch (Bus 1 & Bus 2) OFF.
- 13. Beacon** **ON**
Select the BEACON switch ON.

Before Start Final Items Flow



BEFORE START FINAL ITEMS

| | |
|--|----------------|
| STBY BATT Switch (Verify PFD comes on) | ARM |
| Fuel Used (If refilled) | RESET |
| STBY BATT Switch | OFF |
| Flight Controls | FREE & CORRECT |
| PIC Briefing | COMPLETE |
| Checklist | COMPLETE |

Amplified Procedure

1. **STBY BATT Switch** **ARM**

Select the STBY BATT Switch to ARM.

2. **Fuel Used** **RESET**

Select the Engine soft key, then select the System soft key, and then select the GAL REM soft key. Use the necessary soft keys to adjust the amount on the fuel totalizer to what was measured during the preflight inspection, and RESET the Fuel Used to 0 gallons.

3. **STBY BATT Switch** **OFF**

Select the STBY BATT Switch to OFF.

4. **Flight Controls** **FREE & CORRECT**

Verify that the Flight Controls are FREE & CORRECT. Move all flight controls to their maximum deflection to verify freedom of movement. During this procedure, visually verify that all controls deflect in the correct direction.

To accomplish this:

1. Start with the flight control in a neutral position.
2. Move the control full forward
3. Turn the control full right
4. Move the control full aft
5. Deflect the right rudder full right
6. Deflect the left rudder pedal full left
7. Release both rudder pedals
8. Turn the control full left
9. Then return the control full forward.

5. **PIC Briefing** **COMPLETE**

COMPLETE the PIC Briefing. Refer to page 6-6 for an amplified discussion.

Starting Engine Flow Part 1



Starting Engine Flow Part 2



STARTING ENGINE

| | |
|--|------------------|
| STBY BATT Switch | TEST |
| STBY BATT Switch (Verify PFD comes on) | ARM |
| Engine Indicating System (No Red X's on EIS) | CHECK |
| BUS E Volts (VERIFY 24 VOLTS MINIMUM) | CHECK |
| M BUS Volts (VERIFY LESS THAN 1.5 VOLTS) | CHECK |
| BATT S Amps | VERIFY DISCHARGE |
| STBY BATT Annunciator | VERIFY ON |
| Master Switch (ALT and BAT) | ON |
| Cold Start | |
| Throttle | SET |
| Fuel Pump | ON |
| Mixture | RICH |
| Fuel Flow | STABILIZED |
| Mixture | IDLE/CUT OFF |
| Fuel Pump | OFF |
| Warm Start | |
| (Skip Cold Start Procedures) | |
| Propeller Area (Visually & Verbally) | CLEAR |
| Throttle (Adjusted for start) | SET |
| Starter | ENGAGE |
| Mixture | RICH |
| Throttle (800 - 900) | SET |
| Oil Pressure | CHECK |
| AMPS (M BATT & BATT S) | CHECK |
| LOW VOLTS Annunciator | VERIFY OFF |
| Throttle Friction Lock | ADJUST |
| Mixture (Small RPM Rise – Anti Spark Plug Fouling) | LEAN |
| Checklist | COMPLETE |

Amplified Procedure

1. **STBY BATT Switch** **TEST**
Select and hold the STBY BATT Switch in the TEST position for ten seconds. Verify that the green TEST light remains illuminated during that time.
2. **STBY BATT Switch** **ARM**
Select the STBY BATT Switch to ARM. Verify that the PFD powers on.
3. **Engine Indicating System** **CHECK**
CHECK that the Engine Indicating System page of engine instruments are operating properly with no red Xs.
4. **BUS E Volts** **CHECK**
CHECK that the BUS E (Essential Bus) Volts are indicating a minimum of 24 VOLTS.

- 5. M BUS Volts** **CHECK**
CHECK that M BUS (Main Bus) Volts are indicating 1.5 VOLTS or less.
- 6. BATT S Amps** **CHECK**
CHECK that BATT S Amps indicates a discharge.
- 7. STBY BATT Annunciator** **VERIFY ON**
Verify that the STBY BATT Annunciator is ON.
- 8. Master Switch (ALT and BAT)** **CHECK**
Select the Master Switch (ALT and BAT) to ON.
- 9. Cold Start** **AS REQUIRED**
Verify the current oil temperature.
If the oil temperature is less than 100°F and the time since last shutdown is greater than 30 minutes:
 1. SET the Throttle to $\frac{1}{4}$ to $\frac{1}{2}$ inch open to ensure proper priming of the engine.
 2. Select the Fuel Pump ON.
 3. Select the Mixture to full RICH.
 4. Verify the Fuel Flow STABILIZED at a rate of 4-6 gallons per hour.
 a. In higher density altitudes (hotter temperatures), the time at 4-6 gallons per hour should be approximately 3 seconds.
 b. In lower density altitudes (colder temperatures), the time at 4-6 gallons per hour should be approximately 5 seconds.
 5. Select the Mixture to IDLE/CUT OFF.
 6. Select the Fuel Pump to OFF.
If the oil temperature is greater than 100°F or the time since last shutdown is less than 30 minutes, skip to the next checklist item.
- 10. Propeller Area** **CLEAR**
Visually check that every area (front, left, right, behind) around the aircraft is CLEAR of all persons and objects. Call out "Clear Prop" loudly and clearly to alert nearby persons of the impending engine start. Ensure enough time to pass for persons nearby to clear the area or to respond to the call out.
- 11. Throttle** **SET**
SET the throttle to $\frac{1}{8}$ to $\frac{1}{4}$ of an inch for appropriate engine start.
- 12. Starter** **ENGAGE**
Place the aircraft key in the ignition switch and hold with one hand. Select the mixture control with the other hand. Turn the key clockwise to the Start position and hold against the spring load.

13. Mixture..... RICH

Select the Mixture control to full RICH when the engine starts while simultaneously releasing the key from the start position.

14. Throttle..... SET

SET the Throttle to no less than 800 RPM and no more than 900 RPM. This will ensure that the engine is not operated at high RPM without proper oil circulation but will also allow the alternator enough rotation to provide ample electrical output for the electrical system.

15. Oil Pressure..... CHECK

CHECK that the Oil Pressure is indicating normal parameters within no less than 30 seconds from engine start. If oil pressure is still below normal parameters after this time, immediately shut down the engine.

NOTE

The actual pressure indication will vary with power setting and current oil temperature (which changes viscosity). Hotter oil temperatures will generally be associated with lower pressures and colder temperatures with higher pressures.

16. AMPS (M BATT & BATT S)..... CHECK

CHECK that the amps for both the M BATT (Master Battery) and the BATT S (Standby Battery) are positive.

17. LOW VOLTS Annunciator..... VERIFY OFF

VERIFY that the LOW VOLTS Annunciator is OFF.

18. Throttle Friction Lock..... ADJUST

ADJUST the Throttle Friction Lock so that the throttle control is manageable but tight enough to remain in place once set. Rotate the friction lock counterclockwise to loosen and clockwise to tighten.

19. Mixture..... LEAN

LEAN the Mixture for ground taxi during the current conditions. Set the throttle to advance the engine to 1200 RPM. Rotate the mixture counterclockwise. The RPM will begin a small, slow rise. Continue to lean the mixture until the RPM rise tops or drops. If a drop occurs, enrich the mixture with a clockwise rotation on the Mixture control until returning to the peak (highest) RPM observed. Return the throttle to no less than 800 RPM and no more than 900 RPM.

Before Taxi Flow



BEFORE TAXI

| | |
|--|---------------------------------|
| <u>Lights</u> <small>(Day: Beacon/ Night: Beacon, NAV, Taxi/Recog)</small> | <u>AS REQUIRED</u> |
| <u>Panel Dimming</u> | <u>SET</u> |
| <u>Avionics Switch (BUS 1 & BUS 2)</u> | <u>ON</u> |
| <u>Flight Instruments (PFD) (No Red X's)</u> | <u>CHECK</u> |
| <u>Radios</u> | <u>SET & CHECK</u> |
| <u>Altimeters</u> | <u>SET</u> |
| <u>Transponder</u> | <u>VERIFY CODE / VFR (1200)</u> |
| <u>MFD</u> | <u>VERIFY DATA BASE</u> |
| <u>Autopilot</u> <small>(if Installed)</small> | <u>CHECK</u> |
| <u>Standby Flight Systems</u> | <u>CHECK</u> |
| <u>Flaps</u> | <u>UP</u> |
| <u>Taxi Area</u> | <u>CLEAR</u> |
| <u>Parking Brake</u> | <u>RELEASE</u> |
| <u>Checklist</u> | <u>COMPLETE</u> |

Amplified Procedure

1. **Lights** **AS REQUIRED**
Select the exterior Lights AS REQUIRED for the situation. During day operations, select only the Beacon on currently. During night operations, select the Beacon and NAV lights on currently, and set the Landing/Taxi/Recog light to TAXI/RECOG.
2. **Panel Dimming** **SET**
SET all Panel Dimming as required. During day operations, SET all Panel Dimming off by rotating the four dimmer controls counterclockwise to the stop. During night operations, SET all Panel Dimming to a setting that is just bright enough to allow a clear reading of all flight instruments and panel placards.
3. **Avionics Switch (BUS 1 & BUS 2)** **ON**
Select the Avionics Switch (BUS 1 & BUS 2) ON.
4. **Flight Instruments (PFD)** **CHECK**
CHECK that all Flight Instruments are free of red X's on the PFD. CHECK that the airspeed indicator reads at a null value, the vertical speed indicator reads 0 feet per minute, the attitude indicator depicts the aircraft's present orientation, the skid/slip indicator is neutral, the rate of turn indicator shows no turn, and the horizontal situation indicator (HIS) shows the current aircraft heading.
5. **Radios** **SET & CHECK**
SET the applicable communication frequencies based off expected order of use. To ensure both radios are operating properly, split the frequencies between the two radios. For example, set the ATIS and ground control frequencies on COM2 and tower control and practice area frequencies on COM1. This will allow both radios to be utilized prior to departure. Adjust the volume for each radio.

6. Altimeters.....SET

SET the current altimeter setting on both the PFD (use the BARO knob) and the standby altimeter. For IFR operations, ensure that the altimeter indicates within 75 feet of the airport field elevation. If no current altimeter setting is available, set the altimeter to indicate the airport field elevation.

7. Transponder.....VERIFY CODE/ VFR (1200)

VERIFY the correct Transponder CODE is selected. If no code has been assigned, select 1200. If a code has been assigned, select the correct code. If necessary, to change the code, first select the XPDR softkey on the PFD. Select the CODE softkey, and then set the correct code. VERIFY the CODE is correct and the transponder is operating in ALT mode.

8. MFD.....VERIFY DATABASE

VERIFY that the MFD splash screen shows a current navigation, airport directory, obstacles, SafeTaxi, basemap, and terrain DATABASE. Select the ENT key or press the right most softkey on the MFD to acknowledge and continue.

NOTE

Databases do not have to be current for a VFR operation dispatch. However, all VFR Operations should review AIM 1-1-17(b)(1)(c)(2) when preparing for dispatch without current databases. IFR operations require a current navigation database.

9. Autopilot (if installed).....CHECK

CHECK that the GFC 700 AFCS Autopilot successfully completed the preflight self-test. To CHECK the Autopilot:

1. Select the Autopilot on by pressing the AP button on the left side of the MFD on the AFCS mode controller. CHECK that the **AP** is annunciated which indicates that the Autopilot is engaged.
2. Apply forward or aft control to CHECK the Autopilot can be overpowered in pitch. Apply left or right control to CHECK the Autopilot can be overpowered in roll.
3. Select the Autopilot off by pressing the A/P TRIM DISC switch on the pilot's flight control. CHECK that the **AP** is annunciated which indicates that the Autopilot is disengaged. CHECK that the audible Autopilot disconnect tone sounds and that the resistance in the control from the Autopilot servos is released.
4. Select the Flight Director off by pressing the FD button on the left side of the MFD on the AFCS mode controller. IFR operations also have the option of selecting the Flight Director in GA (Go-Around) mode by pressing the GA button located just above and left of the throttle control.

NOTE

The GFC 700 AFCS preflight test must be successfully completed prior to the use of the autopilot, flight director, or manual electric trim.

NOTE

The GFC 700 AFCS conducts a preflight self-test. During this test, a **PFT** annunciates on the PFD to alert of the preflight test. When the test is completed successfully, the **PFT** annunciation clears, and the autopilot disconnect tone sounds. If a **PFT** and/or **AFCS** annunciates, a failure has occurred during the preflight test and/or another problem with the autopilot exists.

10. Standby Flight Systems.....CHECK

CHECK that the standby airspeed indicator indicates 0 knots indicated airspeed. CHECK that the standby attitude indicator is free of the gyro flag and indicates the aircraft's present orientation. CHECK that the standby altimeter indicates within 75 feet of the airport field elevation. CHECK that the magnetic compass casing is full of kerosene fluid, the current aircraft heading is indicated correctly, the compass deviation card is installed, and the heading matches the horizontal situation indicator (HSI).

11. Flaps.....UP

Select the flap control lever to the 0° position. Verify that both the left and right flap retract smoothly with no signs of resistance, the flap position indicator shows correct flap position, and the flaps retract fully UP.

12. Taxi Area.....CLEAR

CLEAR all areas around the aircraft including left, right, and in front of the aircraft.

13. Parking Brake.....RELEASE

RELEASE the Parking Brake by rotating the handle clockwise 90° and push it fully forward.

TAXI CHECK

| | |
|--------------------------|----------|
| Brakes & Steering | CHECK |
| Flight Instruments | CHECK |
| Checklist | COMPLETE |

Amplified Procedure

1. Brakes and Steering..... **CHECK**

CHECK the Brakes immediately by advancing enough thrust to begin a roll with the aircraft. As soon as the roll begins, reduce the throttle smoothly to idle and apply brake pressure to each individual pedal and then both pedals. CHECK that each pedal operates properly with firm pressure and the aircraft slows/stops. If there is another crew member, exchange the controls properly to allow them to check their brake pedals in the same manner. After the brake check, CHECK the Steering of the airplane using rudder and brake combinations as needed during taxi.

NOTE

To properly taxi the Cessna C172S, rudder pedal deflection should be exhausted first and only then should differential braking be utilized. This requires lower engine power use and reduces brake wear.

2. Flight Instruments..... **CHECK**

During taxi CHECK that the magnetic compass, horizontal situation indicator (HSI), and rate of turn indicator show turns to the left and right respectively. CHECK that the skid/slip indicator deflects opposite (outside) the turn. CHECK that the PFD attitude indicator and standby attitude indicator remain stable and upright during turns.

Before Takeoff Flow Part 1



Before Takeoff Flow Part 2



BEFORE TAKEOFF

| | |
|---|-------------------|
| Parking Brake | SET |
| Seats, Seat Backs, Seat Belts | CHECK |
| Doors | CLOSED & LOCKED |
| Manual Electric Trim (MET) <i>(If Installed)</i> | CHECK |
| Flight Instruments (PFD) | CHECK |
| COM & NAV Frequencies | SET |
| FMS Flight Plan | LOAD |
| CDI Soft Key | SELECT NAV Source |
| G1000 ALT PRESELECT | SET |
| KAP 140 ALT PRESELECT <i>(If Installed)</i> | SET |
| GPS Availability | CHECK |
| LRU Status | CHECK |
| Fuel Selector Valve | BOTH |
| Fuel Shut-off Valve | ON/IN |
| Elevator & Rudder Trim | TAKEOFF |
| Oil Temperature <i>(100° F or greater)</i> | CHECK |
| Mixture | RICH |
| Throttle | 1800 RPM |
| Ammeters & Voltmeters | CHECK |
| Fuel Quantity | CHECK |
| VAC Indicator | CHECK |
| Engine Instruments | CHECK |
| Annunciators | CHECK |
| Magneto(s) <i>(175/50) (Optional: Check EGT Rise)</i> | CHECK |
| Throttle | IDLE |
| Throttle <i>(800 – 900)</i> | SET |
| Throttle Friction Lock | ADJUST |
| Mixture | LEAN |
| Departure Briefing | COMPLETE |
| Parking Brake | RELEASE |
| Checklist | COMPLETE |

Amplified Procedure

1. Parking Brake SET

SET the Parking Brake to ensure the aircraft remains stationary. Apply brake pressure, rotate the Parking Brake handle 90° counterclockwise, and pull the handle out.

2. Seats, Seat Backs, Seat Belts CHECK

CHECK that the Seats are in the appropriate positions. CHECK that the Seat Back is in the most upright position. CHECK that the seats are locked. CHECK that the Seat Belts are secure. If the Seat Belts contain air bag inflators, CHECK that the seam is facing up and away from the body for proper inflation.

3. Doors / Windows CLOSED & LATCH

Check that the Doors are CLOSED and LOCKED.

4. Manual Electric Trim (MET) *(if installed)* **CHECK**

Push the left and right switches forward (DN position). CHECK that the elevator trim wheel moves in the nose-down direction. Pull the left and right switches aft (UP position). CHECK that the elevator trim wheel moves in the nose-up direction.

*Refer to C-172S NAV III KAP 140 Information Manual, Section 9, Supplement 3 for KAP140 Preflight Test procedures.

5. Flight Instruments (PFD) **CHECK**

CHECK that all Flight Instruments are free of red Xs on the PFD. CHECK that the airspeed indicator reads at a null value, the altimeter indicates airport field elevation within 75 feet, the vertical speed indicator reads 0 feet per minute, the attitude indicator depicts the aircrafts present orientation, the skid/slip indicator is neutral, the rate of turn indicator shows no turn, and the horizontal situation indicator (HSI) shows the current aircraft heading.

6. COM & NAV Frequencies **SET**

SET the applicable communication frequencies based off expected order of use. To ensure both radios are operating properly, split the frequencies between the two radios. For example, set the ATIS and ground control frequencies on COM2 and tower control and practice area frequencies on COM1. Adjust the volume of each radio. SET the applicable navigation frequencies based off expected order of use. Adjust the volume of each radio.

7. FMS Flight Plan **LOAD**

Using the Primary Flight Display (PFD) or Multi-Function Display (MFD), LOAD the desired flight plan.

8. CDI Soft Key **SELECT Nav Source**

SELECT the appropriate Nav Source for the horizontal situation indicator (HSI) by pressing the CDI Soft Key. Enable the bearing pointers as appropriate by pressing the PFD soft key and then the BRG1 and/or BRG2 soft keys.

9. G1000 ALT PRESELECT **SET**

SET the appropriate initial altitude in the G1000 ALT PRESELECT using the small and large ALT knobs located at the bottom left corner of the Multi-Function Display (MFD).

10. KAP 140 ALT PRESELECT *(if installed)* **SET**

SET the appropriate initial altitude in the KAP 140 ALT PRESELECT (if installed) using the small and large knobs located on the KAP 140 unit.

11. GPS Availability **CHECK**

CHECK the satellite reception availability of both GPS1 and GPS2 units. On the Multi-Function Display (MFD), begin from the NAVIGATION MAP page on the MAP page group. Rotate the large FMS knob clockwise to the AUX page group. Then rotate the small FMS

knob to the GPS STATUS page. CHECK the desired amount of availability on GPS1 and GPS2 using the associated soft keys at the bottom-left side of the screen. If appropriate, CHECK RAIM using the RAIM PREDICTION function and SBAS (WAAS) using the SBAS soft key.

12. LRU Status **CHECK**

CHECK the Line Replaceable Unit (LRU) Status by rotating the small FMS knob from the GPS STATUS page to the SYSTEM STATUS page. CHECK that the STATUS is normal for all LRUs by verifying a green checkmark for each LRU. This will ensure there are no detected problems with any systems associated with the G1000 avionics.

13. Fuel Selector Valve **BOTH**

Select the Fuel Selector Valve to BOTH to ensure both tanks are utilized during taxi, takeoff, and climb.

14. Fuel Shutoff Valve **ON/IN**

Select the Fuel Shutoff Valve ON by pushing the control knob fully IN.

15. Elevator & Rudder Trim **TAKEOFF**

Set the Elevator and Rudder (if installed) trim for takeoff. Rotate the mechanical Trim wheel or use the electrical Trim control until the Trim position indicator shows the takeoff/neutral position.

16. Oil Temperature (100°F or greater) **CHECK**

CHECK that the Oil Temperature is at least 100°F before continuing with the run-up check to ensure proper oil lubrication of the engine.

17. Mixture **RICH**

Select the Mixture control to full RICH.

18. Throttle **1800 RPM**

Verify the area behind the aircraft is clear of the propeller blast. Close and latch the Windows prior advancing the throttle to avoid damage to the window hinge. Smoothly advance the Throttle to 1800 RPM.

19. Ammeters & Voltmeters **CHECK**

CHECK that the M BATT & BATT S ammeters show a normal positive or zero charge for the master and standby batteries. CHECK that the M BUS & BUS E VOLTS indicate a normal voltage indication of approximately 28 volts. This will confirm normal operation of the alternator.

20. Fuel Quantity **CHECK**

CHECK the left and right fuel gauges to ensure proper indications and an acceptable amount of fuel for the operation.

21. VAC Indicator **CHECK**

CHECK that suction from the engine-driven vacuum pump is normal. The Vac Indicator instrument should indicate normal within the green band of a range of 4.5 to 5.5 inches of Mercury ("Hg).

22. Engine Instruments **CHECK**

CHECK that the Exhaust Gas Temperatures (EGT), Cylinder Head Temperatures (CHT), oil temperature, oil pressure, and fuel flow are normal. Temperatures, pressures, and flow rates will vary depending on atmospheric conditions, aircraft configuration, and other parameters. Take these into consideration when observing engine instruments.

23. Annunciators **CHECK**

CHECK that there are no Annunciators on the crew alerting system window on the Primary Flight Display (PFD).

24. Magneto(s) (175/50) (Optional: Check EGT Rise) **CHECK**

CHECK the Magnetos by rotating the ignition switch to the R (Right) magneto position. Note the drop in RPM not to exceed 175 RPM. Rotate the ignition switch back to BOTH magnetos position, and ensure the RPM increases back to normal. Rotate the ignition switch to the L (Left) magneto position. Note the drop in RPM not to exceed 175 RPM. Rotate the ignition switch back to BOTH magnetos position, and ensure the RPM increases back to normal. The differences between the left magneto RPM drop and right magneto RPM drop should not exceed 50 RPM.

NOTE

If a there is a drop of more than 175 RPM, spark plug fouling could be a reason. To attempt to clean a fouled plug(s):

1. Smoothly advance the throttle to 2000 RPM.
2. Lean the mixture to peak RPM.
3. Run the engine in this configuration for 30 seconds.
4. Enrich the mixture to full RICH.
5. Smoothly reduce the throttle to 1800 RPM
6. Perform another magneto check.

If the RPM drop remains of tolerance, then repeat the steps above a maximum of two additional times.

25. Throttle **IDLE**

Reduce the throttle smoothly to IDLE. Release the throttle control and check the operation of the engine at IDLE. The engine should continue to run smoothly at idle.

26. Throttle (800 – 900) **SET**

SET the Throttle to no less than 800 RPM and no more than 900 RPM.

27. Throttle Friction Lock **ADJUST**

ADJUST the Throttle Friction Lock so that the throttle control is manageable but tight enough to remain in place once set. Rotate the friction lock counterclockwise to loosen and clockwise to tighten.

28. Mixture **LEAN**

LEAN the Mixture for ground taxi during the current atmospheric conditions. Set the throttle to advance the engine to 1200 RPM. Rotate the mixture counterclockwise. The RPM will begin a small, slow rise. Continue to lean the mixture until the RPM rise tops or drops. If a drop occurs, enrich the mixture with a clockwise rotation on the Mixture control until returning to the peak (highest) RPM observed. Return the throttle to no less than 800 RPM and no more than 900 RPM.

NOTE

If the mixture has been leaned for the same flight operation before by the method above for ground taxi during the current atmospheric conditions, then the mixture can be leaned to the same position observed in a prior leaning procedure as an alternative to the method above.

29. Departure Briefing **COMPLETE**

COMPLETE the Departure Briefing. Refer to pages 6-7 to 6-9 for an amplified discussion.

30. Parking Brake **RELEASE**

RELEASE the Parking Brake by rotating the handle clockwise 90° and push it fully forward.

Line Up Items Flow



Line Up Items – After Cleared onto Runway Flow



| LINE UP | |
|------------------------------------|-----------------|
| Trim | SET |
| Flaps | AS REQUIRED |
| Autopilot <i>(if Installed)</i> | OFF |
| Transponder | VERIFY ALT/CODE |
| Heading Indicator & Compass | CHECK |
| Landing/Taxi/Recognition Light | SET |
| Strobes | ON |
| Time Off <i>(X/C Flights Only)</i> | NOTE |
| AFTER CLEARED ONTO RUNWAY | |
| All Sectors | CLEAR |
| Runway | IDENTIFIED |
| Mixture | RICH |
| Checklist | COMPLETE |

Amplified Procedure

1. **Trim** SET
Set the Elevator and Rudder (if installed) trim for takeoff.
2. **Flaps** AS REQUIRED
Set the Flap control lever AS REQUIRED for the takeoff procedure. Ensure that the Flaps are set properly by referring the Flap position indicator and a visual inspection each of the Flap positions.
3. **Autopilot (if installed)** OFF
Check that the Autopilot (if installed) is OFF. Ensure that the AP is removed from the Autopilot status box to verify the Autopilot is OFF.
4. **Transponder** VERIFY ALT/CODE
VERIFY that the transponder is set to the correct CODE and is operating in ALT mode.
5. **Heading Indicator & Compass** CHECK
CHECK that the Heading Indicator on the horizontal situation indicator (HSI) matches the magnetic Compass.
6. **Landing/Taxi/Recognition Light** SET
SET the Landing/Taxi/Recognition Light to the appropriate setting. During day operation SET TAXI/RECOG position. During night operation SET LAND position.
7. **Strobes** ON
Select the Strobes light switch ON.

8. Time Off (X/C flights only)..... **NOTE**

During cross-country flights NOTE the Time Off to manage dead reckoning, navigation, and fuel management.

AFTER CLEARED ONTO RUNWAY**1. All Sectors.....** **CLEAR**

CLEAR all areas prior to taxiing onto the runway. CLEAR the approach area including both the final approach and base areas. CLEAR the departure end areas. CLEAR the extent of the runway and all taxiway/runway intersections.

2. Runway..... **IDENTIFIED**

Use the Runway mandatory sign(s) and Runway markings to verify that the runway is IDENTIFIED. Upon positioning the aircraft on and aligned with the Runway, verify that the aircraft heading is aligned with the Runway heading.

3. Mixture..... **RICH**

Select the Mixture control to full RICH.

Climb Flow



| CLIMB | |
|--------------------|-------------------------------|
| Flaps | UP |
| Mixture | LEAN |
| Engine Instruments | CHECK |
| Airspeed | 74 KIAS TO 1000' THEN 85 KIAS |
| Checklist | COMPLETE |

Amplified Procedure

1. **Flaps** UP
Select Flap control lever to 0° and verify the Flaps are UP.
2. **Mixture** LEAN
Ensure the mixture is RICH. If climbing above 3000' AGL, lean the Mixture to the appropriate setting. Ensure smooth engine operation and power output.
3. **Engine Instruments** CHECK
CHECK that the Exhaust Gas Temperatures (EGT), Cylinder Head Temperatures (CHT), oil temperature, oil pressure, and fuel flow are normal.
4. **Airspeed** 74 KIAS TO 1000' THEN 85 KIAS
During the initial climb, the Airspeed should be established at Vy of 74 KIAS to 1000' AGL THEN accelerate to a cruise climb of 85 KIAS. This will allow for better forward visibility for collision avoidance and situational awareness and will also provide better engine cooling.

Cruise Flow



| CRUISE | |
|--------------------------------|-------------|
| Throttle (65 % or less) | AS REQUIRED |
| Mixture | LEAN |
| Heading Indicator & Compass | CHECK |
| Landing/Taxi/Recognition Light | OFF |
| Checklist | COMPLETE |

Amplified Procedure

1. Throttle (65% or less) AS REQUIRED

Set the Throttle to 65% maximum continuous power or less AS REQUIRED for the current conditions. During maneuvering for training purposes, 2300 RPM, ENROUTE CRUISE should be set as indicated in the Flight Training Professionals Pitch and Power Table for the Cessna 172.

2. Mixture LEAN

LEAN the Mixture to the appropriate setting for the current conditions:

- If using 2300 RPM for ENROUTE CRUISE pitch and power setting while maneuvering for training purposes, LEAN the Mixture to no less than 8.0 gallons per hour (GPH).
- If using 2200 RPM for APPROACH CRUISE pitch and power setting while maneuvering for training purposes, LEAN the Mixture to no less than 7.0 gallons per hour (GPH).
- If using a power setting from the 172S NAV III GFC 700 AFCS Cruise Performance table, LEAN the Mixture to the planned fuel burn rate.
- All flights other than cross-country training flights for Private Pilot applicants may also:
 1. Select the ENGINE soft key located on the lower-left side of the Multi-Function Display (MFD).
 2. Select the LEAN soft key.
 3. Select the ASSIST soft key.
 4. LEAN the Mixture and observe the increase in all four exhaust gas temperatures.
 5. Once the peak (hottest) exhaust gas temperature (EGT) is found, then enrichen the mixture until the exhaust gas temperature (EGT) is 50 degrees cooler than the peak (hottest) exhaust gas temperature.

3. Heading Indicator & Compass CHECK

CHECK that the Heading Indicator on the horizontal situation indicator (HSI) matches the magnetic Compass.

4. Landing/Taxi/Recognition Light..... **OFF**
- Select the Landing/Taxi/Recognition Light OFF.

| PRE-MANEUVER | |
|--------------------------------|-------------|
| Area | CLEAR |
| Fuel Selector Valve | BOTH |
| Throttle | AS REQUIRED |
| Mixture | AS REQUIRED |
| Landing/Taxi/Recognition Light | TAXI/RECOG |
| Clearing Turns | EXECUTE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Area** **CLEAR**
Visually CLEAR the Area around the aircraft in all quadrants. CLEAR above, below, left, right, in front, and behind the aircraft.
2. **Fuel Selector Valve** **BOTH**
Select the Fuel Selector Valve to BOTH.
3. **Throttle** **AS REQUIRED**
Set the Throttle AS REQUIRED for the current conditions.
4. **Mixture** **AS REQUIRED**
Set the Mixture AS REQUIRED for the current conditions:
 - For Steep Turns, Lazy Eights, Steep Spirals, and Ground Reference Maneuvers – Leave the Mixture AS REQUIRED for cruise flight.
 - For Slow Flight, Power Off Stalls, Power On Stalls, Chandelles – Smoothly enrich the Mixture AS REQUIRED.
5. **Landing/Taxi/Recognition Light** **TAXI/RECOG**
Select the Landing/Taxi/Recognition Light to TAXI/RECOG.
6. **Clearing Turns** **EXECUTE**
EXECUTE Clearing Turns appropriate for the current conditions. Refer to Flight Training Professionals Cessna 172S Standard Operating Procedures for proper execution.

Descent Flow



| DESCENT | |
|---|-------------------|
| Mixture | AS REQUIRED |
| Throttle | AS REQUIRED |
| Altimeters | SET |
| G1000 ALT PRESELECT | SET |
| KAP 140 ALT PRESELECT (<i>if Installed</i>) | SET |
| Avionics | SET |
| CDI Soft Key | SELECT NAV Source |
| Approach Briefing (<i>VFR or IFR</i>) | COMPLETE |
| Seats | SET & LOCKED |
| Seat Belts | SECURE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Mixture** **AS REQUIRED**
Enrich the Mixture AS REQUIRED on beginning the descent. If descending, enrich Mixture at a rate of approximately 0.2 gallons per hour fuel flow for every 1000' of descent.
2. **Throttle** **AS REQUIRED**
Set the Throttle AS REQUIRED for the current conditions.
3. **Altimeters** **SET**
SET the Primary Flight Display (PFD) and standby Altimeters to the correct barometric Altimeter setting. Verify that the Altimeters agree.
4. **G1000 ALT PRESELECT** **SET**
SET the appropriate altitude in the G1000 ALT PRESELECT using the small and large ALT knobs located at the bottom left corner of the Multi-Function Display (MFD).
5. **KAP 140 ALT PRESELECT (*if installed*)** **SET**
SET the appropriate altitude in the KAP 140 ALT PRESELECT (*if installed*) using the small and large knobs located on the KAP 140 unit.
6. **Avionics** **SET**
 1. SET the applicable communication frequencies based off expected order of use.
 2. SET the applicable navigation frequencies based off expected order of use.
 3. SET the audio panel to COM1 MIC or COM2 MIC and/or COM1 or COM2 as applicable.
 4. SET the FMS flight plan or direct-to function as required.
 5. SET the Transponder to the appropriate code and verify.
 6. SET the heading bug to the appropriate heading.

7. CDI Soft Key.....SELECT Nav Source****

SELECT the appropriate Nav Source for the horizontal situation indicator (HSI) by pressing the CDI Soft Key. Enable the bearing pointers as appropriate by pressing the PFD soft key and then the BRG1 and/or BRG2 soft keys.

8. Approach Briefing.....COMPLETE****

COMPLETE the VFR or IFR Approach Briefing as applicable. Refer to pages 6-10 to 6-13 for an amplified discussion.

9. Seats.....SET & LOCKED****

CHECK that the Seats are in the appropriate positions. CHECK that the Seat Back is in the most upright position. CHECK that the seats are LOCKED.

10. Seats Belts.....SECURE****

Check that the Seat Belts are SECURE. If the Seat Belts contain air bag inflators, check that the seam is facing up and away from the body for proper inflation.

Before Landing Flow



BEFORE LANDING

| | |
|---------------------------------|--------------|
| Seats, Seat Backs, Seat Belts | SET & LOCKED |
| Fuel Selector Valve | BOTH |
| Mixture | RICH |
| Autopilot <i>(if Installed)</i> | OFF |
| Landing/Taxi/Recognition Light | SET |
| Checklist | COMPLETE |

Amplified Procedure

1. **Seats, Seat Backs, Seat Belts** **SET & LOCKED**
CHECK that the Seats are in the appropriate positions. CHECK that the Seat Back is in the most upright position. CHECK that the seats are locked. CHECK that the Seat Belts are secure. If the Seat Belts contain air bag inflators, CHECK that the seam is facing up and away from the body for proper inflation.
2. **Fuel Selector Valve** **BOTH**
Set the Fuel Selector Valve to BOTH.
3. **Mixture** **RICH**
Set the Mixture to full RICH by pushing the Mixture control full forward.
4. **Autopilot *(if installed)*** **OFF**
Select the Autopilot *(if installed)* OFF.
5. **Landing/Taxi/Recognition Light** **SET**
SET the Landing/Taxi/Recognition Light to the appropriate setting. During day operation SET TAXI/RECOG position. During night operation SET LAND position.

Go Around Flow



GO AROUND

| | |
|-----------|----------------|
| Throttle | FULL |
| Flaps | RETRACT TO 20° |
| Airspeed | ABOVE 60 KIAS |
| Flaps | RETRACT TO 10° |
| Airspeed | 65 KIAS |
| Flaps | RETRACT TO 0° |
| Checklist | COMPLETE |

Amplified Procedure

1. **Throttle** **FULL**
Set the Throttle to FULL to arrest descent and expedite transition to a climb and continue a maximum performance climb.
2. **Flaps** **RETRACT TO 20°**
Verify the descent has been arrested and select the flap control lever to RETRACT Flaps TO 20°. Verify the Flaps are set to 20°.
3. **Airspeed** **ABOVE 60 KIAS**
Verify the Airspeed is ABOVE 60 KIAS.
4. **Flaps** **RETRACT TO 10°**
Select the flap control lever to RETRACT the Flaps TO 10°. Verify the Flaps are set to 10°.
5. **Airspeed** **65 KIAS**
Verify the Airspeed is above 65 KIAS, and the aircraft is climbing.
6. **Flaps** **RETRACT TO 0°**
Select the flap control lever to RETRACT the Flaps TO 0°. Verify the Flaps are set to 0°.

After Landing Flow



| AFTER LANDING | |
|--------------------------------|-------------|
| Throttle (800 – 900) | SET |
| Mixture | LEAN |
| Flaps | UP |
| Transponder | VERIFY 1200 |
| Landing/Taxi/Recognition Light | AS REQUIRED |
| Strobes | OFF |
| Checklist | COMPLETE |

Amplified Procedure

1. **Throttle (800 – 900)** SET

SET the Throttle to no less than 800 RPM and no more than 900 RPM. This will ensure that the engine is not operated at high RPM and produce excessive heat but will also allow the alternator enough rotation to provide ample electrical output for the electrical system.

2. **Mixture** LEAN

LEAN the Mixture for ground taxi during the current atmospheric conditions. Set the throttle to advance the engine to 1200 RPM. Rotate the mixture counterclockwise. The RPM will begin a small, slow rise. Continue to lean the mixture until the RPM rise tops or drops. If a drop occurs, enrichen the mixture with a clockwise rotation on the Mixture control until returning to the peak (highest) RPM observed. Return the throttle to no less than 800 RPM and no more than 900 RPM.

NOTE

If the mixture has been leaned for the same flight operation before by the method above for ground taxi during the current atmospheric conditions, then the mixture can be leaned to the same position observed in a prior leaning procedure as an alternative to the method above.

3. **Flaps** UP

Select the Flap control lever to 0°. Verify that the Flaps fully retract UP by ensuring the flap position indicator is set to 0° and a visual inspection of the Flap positions.

4. **Transponder** VERIFY 1200

VERIFY that the Transponder code is set to 1200. If the Transponder code is set to any code other than 1200, set the Transponder code to 1200.

5. **Landing/Taxi/Recognition Light** AS REQUIRED

Set the Landing/Taxi/Recognition Light AS REQUIRED. During day operations, select Landing/Taxi/Recognition Light to OFF. During night operations, select the Landing/Taxi/Recognition Light to TAXI/RECOG.

6. **Strobes** OFF

Select the Strobe lights OFF.

Shutdown Flow



SHUTDOWN

| | |
|--|---------------|
| Parking Brake | SET |
| Avionics Switch (BUS 1 & BUS 2) | OFF |
| Electrical & Lights (<i>Beacon Remains ON</i>) | OFF |
| Panel Dimming | OFF |
| Magneton | GROUND CHECK |
| Mixture | IDLE/CUT OFF |
| Ignition Switch | OFF |
| Overhead Lighting | OFF |
| Master Switch (ALT and BAT) | OFF |
| Tach Time | RECORD |
| Hobbs Meter | RECORD |
| STBY BATT Switch | OFF |
| Parking Brake | RELEASE |
| Fuel Selector Valve | RIGHT OR LEFT |
| Control Lock | INSTALL |
| Cabin Vents & Windows | CLOSE |
| Pitot Cover | INSTALL |
| Tie-Downs | SECURE |
| Flight Deck | SECURE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Parking Brake** **SET**
SET the Parking Brake to ensure the aircraft will remain stationary during the shutdown procedure.
2. **Avionics Switch (BUS 1 & BUS 2)** **OFF**
Select the Avionics Switch (BUS 1 & BUS 2) to OFF.
3. **Electrical & Lights (Beacon Remains ON)** **OFF**
Select all Electrical & Lights to OFF. The Beacon light Remains ON. If the master battery is mistakenly left on after completing the post flight inspection and securing of the aircraft, the Beacon light will allow a visual cue to observers outside the aircraft that the master battery has been left on.
4. **Panel Dimming** **OFF**
Select all Panel Dimming OFF by rotating the four dimmer controls counterclockwise to the stop.
5. **Magneton** **GROUND CHECK**
Rotate the ignition switch counterclockwise smoothly and carefully to the OFF position to perform a GROUND CHECK. Verify that the engine stops its combustion cycle (begins to stop). As soon as this is observed, quickly and smoothly rotate the ignition switch clockwise to the BOTH position. This procedure ensures that when the ignition switch is

selected to the OFF position, the magnetos will not continue to provide electrical output for engine ignition.

NOTE

Do not leave the ignition switch in the OFF position long enough to allow the engine to stop completely. This will leave unburned fuel in the engine cylinders which creates several issues:

1. The unburned fuel causes the engine to be flooded or excessively primed.
 - a. This creates difficulty during next start.
 - b. This creates an increased risk for an engine fire during next start.
2. The unburned fuel causes a risk of the engine starting suddenly which is dangerous to anyone near the propeller.

6. Mixture **IDLE/CUT OFF**

Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF.

7. Ignition Switch **OFF**

Only once the engine and propeller have completely stopped, select the Ignition Switch to OFF to ensure the magnetos are OFF. Take the Key out of the ignition Switch and place on the dash of the aircraft.

NOTE

Do not turn the ignition switch to the OFF position until the engine has completely stopped. This will leave unburned fuel in the engine cylinders. This creates several issues:

1. The unburned fuel causes the engine to be flooded or excessively primed.
 - a. This creates difficulty during next start.
 - b. This creates an increased risk for an engine fire during next start.
2. The unburned fuel causes a risk of the engine starting suddenly which is dangerous to anyone near the propeller.

8. Overhead Lighting **OFF**

Turn the two dimmer controls in the Overhead console counterclockwise until the stop to select the Lighting OFF.

9. Master Switch (ALT and BAT) **OFF**

Select the Master Switch (ALT and BAT) to OFF.

- 10. Tach Time** **RECORD**
 Note the current Tach Time located on the Engine Indicating System Page on the Primary Flight Display (PFD). RECORD the Tach Time on the aircraft dispatch sheet.
- 11. Hobbs Meter** **OFF**
 Note the current Hobbs Meter located on the top, right-hand corner of the instrument panel. RECORD the Hobbs time on the aircraft dispatch sheet.
- 12. STBY BATT Switch** **OFF**
 Select the STBY BATT Switch OFF.
- 13. Parking Brake** **RELEASE**
 RELEASE the Parking Brake by rotating the handle clockwise 90° and push in.
- 14. Fuel Selector Valve** **RIGHT OR LEFT**
 Select the Fuel Selector Valve to either the RIGHT OR LEFT position. This will ensure that fuel will not move from one tank to the other.
- 15. Control Lock** **INSTALL**
 INSTALL the Control Lock to protect the flight control and flight control surfaces and attachments. Verify that the Control Lock placard is positioned over the ignition switch to ensure it is removed prior to engine start.
- 16. Cabin Vents & Windows** **CLOSE**
 CLOSE all Cabin Vents and Windows. Push in the Cabin Heat and Cabin Air controls and rotate all fresh air Vents clockwise to the stop to CLOSE.
- 17. Pitot Cover** **INSTALL**
 INSTALL the Pitot Cover. This will ensure the Pitot tube is protected from foreign objects like moisture and insects from clogging the pitot line.
- 18. Tie Downs** **SECURE**
 Roll the airplane by pushing or pulling on the left and/or right-wing strut to check the tire conditions and position the airplane appropriately for the Tie Downs. SECURE the Tie Downs using only the Flight Training Professionals' approved method.
- 19. Flight Deck** **SECURE**
 Remove all personal items and trash. Check all parts of the cabin including the side pockets, seat back pockets, and below the front and rear seats. If the aircraft is equipped with four-point harness restraints, secure the seat belt diagonally across the seat and place the shoulder harness straps behind the seat back. If the aircraft is equipped with airbag assisted restraints, leave the buckle unsecured. This will ensure the airbag does not inadvertently deploy. Close the passenger side door and set the handle to the LOCKED position. Close the pilot side door and lock with the key. Perform a final walk

around the aircraft and verify all tie downs are properly SECURE and that the aircraft is in the same condition as during the preflight inspection.

CHAPTER 4: EMERGENCY PROCEDURES

Chapter 4 Introduction and Motivation

In this chapter there are amplified descriptions on emergency procedures found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

Flight Training Professionals has created specific sequences, known as flow-patterns, to execute emergency procedures. Flow-patterns enable a logical movement during a specific configuring of the aircraft. Some of the benefits of executing an emergency checklist procedure using a flow-pattern include:

- Simplifying both the initial learning and memorization of the checklist sequence and continued use of the checklist after familiarization.
- Creating a logical and consistent progression of eye movement and psychomotor skills.
- Standardizing the checklist procedure among all users.

Flow-patterns will be referred to simply as a "flow." Emergency procedure flows will be identified in checklists by the items encompassed within a red box and shall be contributed to memory.

Flight Training Professionals is dedicated to establishing quality Safety Management Systems to ensure continuous dedication to maintaining and improving operational safety in every aspect. We welcome your input in any of this publication, and how it can be improved.

Engine Failure During Takeoff Flow



ENGINE FAILURE DURING T/O

| | |
|-----------------------------|----------------|
| Throttle | IDLE |
| Brakes | APPLY |
| Flaps | RETRACT |
| Mixture | IDLE/CUT OFF |
| Ignition Switch | OFF |
| STBY BATT Switch | OFF |
| Master Switch (ALT and BAT) | OFF |
| Checklist | COMPLETE |

Amplified Procedure

1. **Throttle** **IDLE**
If there is any sign of either partial power loss or complete failure of the engine, Close the Throttle to IDLE.
2. **Brakes** **APPLY**
APPLY Brakes to slow to a safe taxi speed and exit the runway if able. Or if necessary slow, and come to a stop straight ahead on the runway.
3. **Flaps** **RETRACT**
Set the flap control lever to 0° to RETRACT the Flaps.
4. **Mixture** **IDLE/CUT OFF**
Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF.
5. **Ignition Switch** **OFF**
Select the Ignition Switch to OFF.
6. **STBY BATT Switch** **OFF**
Select the STBY BATT Switch to OFF.
7. **Master Switch (ALT and BAT) Switch** **OFF**
Select the Master Switch (ALT and BAT) to OFF.

Engine Failure After Takeoff Flow



ENGINE FAILURE AFTER T/O

| | |
|-----------------------------|----------------|
| Airspeed (Flaps Up) | 70 KIAS |
| Airspeed (Flaps DN) | 65 KIAS |
| Throttle | IDLE |
| Mixture | IDLE/CUT OFF |
| Fuel Shut-off Valve | OFF/OUT |
| Ignition Switch | OFF |
| Flaps | AS REQUIRED |
| Master Switch (ALT and BAT) | OFF |

Amplified Procedure

1. **Airspeed (Flaps Up)** **70 KIAS**
If the aircraft presently has a Flaps Up configuration, set the Airspeed to 70 KIAS and maintain.
2. **Airspeed (Flaps DN)** **65 KIAS**
If the aircraft presently has a Flaps DN configuration, set the Airspeed to 65 KIAS and maintain.
3. **Throttle** **IDLE**
If there is a partial power loss instead of a complete failure of the engine, consider making use of the available power to maneuver the aircraft. Otherwise, close the Throttle to IDLE.
4. **Mixture** **IDLE/CUT OFF**
Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF.
5. **Fuel Shut-off Valve** **OFF/OUT**
Select the Fuel Shut-off Valve to OFF by pulling Fuel Shut-off Valve control fully OUT.
6. **Ignition Switch** **OFF**
Select the Ignition Switch to OFF.
7. **Flaps** **AS REQUIRED**
Set the Flaps AS REQUIRED for the situation. Factors like wind direction and speed may be cause for a variation in the final Flaps setting. However, Flaps should always be used to reduce touchdown speed and stall speed.
8. **Master Switch (ALT and BAT)** **OFF**
Select the Master Switch (ALT and BAT) to OFF.

Engine Failure in Flight Flow



ENGINE FAILURE IN FLIGHT

| | |
|---|------------------------------|
| Airspeed | 68 KIAS |
| Fuel Selector Valve | BOTH |
| Fuel Shut-off Valve | ON/IN |
| Mixture | RICH |
| Fuel Pump | ON |
| Ignition Switch | LEFT, RIGHT THEN BOTH |
| Ignition (if propeller is stopped) | START |
| Checklist | COMPLETE |

Amplified Procedure

1. **Airspeed** **68 KIAS**
Set the Airspeed to 68 KIAS and maintain. If excess Airspeed exists before establishing 68 KIAS, consider gaining altitude or at least maintain altitude during the transition. Ensure the flaps are fully retracted to 0°. Set the trim for 68 KIAS.
2. **Fuel Selector Valve** **BOTH**
Set the Fuel Selector Valve to BOTH.
3. **Fuel Shut-off Valve** **ON/IN**
Select the Fuel Shut-off Valve ON by pushing the Fuel Shut-off Valve control fully IN.
4. **Mixture** **RICH**
Set the Mixture to full RICH by pushing the Mixture control full forward.
5. **Fuel Pump** **ON**
Select the auxiliary Fuel Pump to ON.
6. **Ignition Switch** **LEFT, RIGHT THEN BOTH**
Verify the Ignition Switch is selected to BOTH. If so, then select the Ignition Switch to LEFT and observe engine response. If no change, then select the Ignition Switch to RIGHT and observe engine response. If no change, then select the Ignition Switch to BOTH. This individual magneto selection procedure is utilized to attempt to isolate a single faulty magneto that could potentially interfere with the other operational magneto.
7. **Ignition (if propeller is stopped)** **START**
Normally the propeller will be wind milling. However, if the propeller is stopped, select the Ignition switch to START to begin propeller/engine rotation for a START attempt.

| LANDING W/O POWER | |
|-----------------------------|-------------------|
| Airspeed (Flaps up) | 70 KIAS |
| Airspeed (Flaps Dn) | 65 KIAS |
| Seat and Seat Belts | SECURE |
| Radio Call (ATC or 121.5) | COMPLETE |
| Transponder | 7700 |
| Fuel Shut-off Valve | OFF/OUT |
| Mixture | IDLE/CUT OFF |
| Ignition Switch | OFF |
| Flaps | AS REQUIRED |
| STBY BATT Switch | OFF |
| Master Switch (ALT and BAT) | OFF |
| Door (prior to touchdown) | UNLATCH |
| Touchdown | SLIGHTLY TAIL LOW |
| Brakes | AS REQUIRED |
| Checklist | COMPLETE |

Amplified Procedure

1. Airspeed (Flaps Up) **70 KIAS**

If the aircraft presently has a Flaps Up configuration, set the Airspeed to 70 KIAS and maintain.

2. Airspeed (Flaps DN) **65 KIAS**

If the aircraft presently has a Flaps DN configuration, set the Airspeed to 65 KIAS and maintain.

3. Seats and Seat Belts **SECURE**

Set the Seats to the appropriate positions. SECURE the Seat Back in the most upright position. Once the seat position is set, verify the seat is locked and SECURE. Set the Seat Belts for each occupant and ensure they are SECURE. If the Seat Belts contain air bag inflators, ensure the seam is facing up and away from the body for proper inflation.

4. Radio Call (ATC or 121.5) **COMPLETE**

COMPLETE a Radio Call on the most appropriate frequency for the situation. If already in communication with ATC, utilize this frequency. If not presently in communication with ATC, use a recently used ATC frequency or use a frequency for the appropriate geographical area. However, when in doubt, use 121.5 MHz to COMPLETE a Radio Call. The Radio Call should include:

1. If you do not have the undivided attention of those you are addressing, begin with the universal distress call, "Mayday! Mayday! Mayday!"
2. Aircraft type, registration number, and color of aircraft
3. Current or last known position
4. Number of souls on board
5. If time allows, and is presently determined, state intentions.

- 5. Transponder.....** **7700**
Set the Transponder code to 7700. This will alert all air traffic control facilities within range that the aircraft has an emergency.
- 6. Fuel Shut-off Valve.....** **OFF/OUT**
Select the Fuel Shut-off Valve OFF by pulling the Fuel Shut-off Valve control fully OUT. This reduces the risk of a fire after a mishap.
- 7. Mixture.....** **IDLE/CUT OFF**
Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF. This reduces the risk of a fire after a mishap.
- 8. Ignition Switch.....** **OFF**
Select the Ignition Switch to OFF. This reduces the risk of a fire after a mishap.
- 9. Flaps.....** **AS REQUIRED**
Set the Flaps AS REQUIRED for the situation. Factors like wind direction and speed may be cause for a variation in the final Flaps setting. However, Flaps should always be used to reduce touchdown speed and stall speed.
- 10. STBY BATT Switch.....** **OFF**
Select the STBY BATT Switch to OFF. This reduces the risk of a fire after a mishap.
- 11. Master Battery Switch (ALT and BAT).....** **OFF**
Once all radio communications have been completed and the flaps are set to the final position, select the Master Battery Switch (ALT and BAT) to OFF.
- 12. Door (prior to touchdown).....** **UNLATCH**
UNLATCH at least one Door prior to touchdown. If able, place a solid object in the door jam. For example, take a shoe off and put in place to help ensure the door does not jam during landing.
- 13. Touchdown.....** **SLIGHTLY TAIL LOW**
Touchdown SLIGHTLY TAIL LOW to minimize speed at Touchdown.
- 14. Brakes.....** **AS REQUIRED**
Apply Brakes AS REQUIRED to stop or slow the aircraft prior to unavoidable terrain or obstacles in the rollout pathway.

Engine Fire During Start – Engine Start Flow



Engine Fire During Start – No Engine Start Flow



FIRE DURING ENGINE START

| | |
|------------------------------------|--------------------------|
| Starter | CONTINUE CRANKING |
| <i>If Engine Starts:</i> | |
| Throttle (two minutes) | 1800 RPM |
| Engine | SHUTDOWN |
| <i>If Engine DOES NOT Start:</i> | |
| Starter | CONTINUE CRANKING |
| Throttle | FULL |
| Mixture | IDLE/CUT OFF |
| Fuel Shut-off Valve | OFF/OUT |
| Fuel Pump | OFF |
| STBY BATT Switch | OFF |
| Master Switch (ALT and BAT) | OFF |
| Ignition Switch | OFF |
| Fire Extinguisher | EXTINGUISH |
| Airplane | EVACUATE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Starter** **CONTINUE CRANKING**

To draw flames and fuel that could feed the fire into the engine intake manifold, CONTINUE CRANKING the engine by holding the ignition switch in the START position and continue to engage the Starter. This will help to extinguish the fire.

If Engine Starts:

2. **Throttle (two minutes)** **1800 RPM**

Set the Throttle to 1800 RPM and continue the engine operation for (two minutes). This will draw fuel and possibly all flames into the engine intake manifold and control or possibly extinguish the fire.

3. **Engine** **SHUTDOWN**

SHUTDOWN the Engine. Push the Mixture control lock button in and select the Mixture control to Idle/Cut Off. Select the Fuel Shut-off Valve to OFF by pulling Fuel Shut-off Valve control fully out. Report the fire to the front desk to have the maintenance manager have the aircraft inspected.

If Engine Does Not Start:

4. **Starter** **CONTINUE CRANKING**

To draw flames and fuel that could feed the fire into the engine intake manifold, CONTINUE CRANKING the engine by holding the ignition switch in the START position and continue to engage the Starter. This will help to extinguish the fire.

- 5. Throttle** **FULL**
Set the Throttle FULL forward/open. This will set the engine to demand maximum fuel which contributes to creating an incombustible mix of fuel and air. The Throttle setting also creates the most amount of draw of fuel and flames into the engine intake manifold
- 6. Mixture** **IDLE/CUT OFF**
Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF. This will set the CUT OFF the fuel available for combustion which contributes to creating an incombustible mix of fuel and air.
- 7. Fuel Shut-off Valve** **OFF/OUT**
Select the Fuel Shut-off Valve to OFF by pulling Fuel Shut-off Valve control fully OUT. This will isolate the remaining fuel supply from as far from the engine as possible in this system to help minimize the spread of the fire.
- 8. Fuel Pump** **OFF**
Select the Fuel Pump to OFF.
- 9. STBY BATT Switch** **OFF**
Select the STBY BATT Switch to OFF
- 10. Master Switch (ALT and BAT)** **OFF**
Select the Master Switch (ALT and BAT) to OFF.
- 11. Fire Extinguisher** **EXTINGUISH**
Obtain the Fire Extinguisher between the front seats on the floor and EXTINGUISH any fire needed to safely exit the aircraft.
- 12. Airplane** **EVACUATE**
EVACUATE the Airplane. Do not attempt to fight the fire after exiting the aircraft. Ensure that all aircraft occupants meet at the predetermined location. Contact the local fire department or other professional assistance to put out the fire.

Engine Fire During Flight Flow



| ENGINE FIRE IN FLIGHT | |
|---|-------------------|
| Fuel Shut-off Valve | OFF/OUT |
| Mixture | IDLE/CUT OFF |
| Fuel Pump | OFF |
| Master Switch (ALT and BAT) | OFF |
| STBY BATT Switch | OFF |
| Cabin Heat/Air (Except Overhead Vents) | OFF |
| Airspeed | 100+ KIAS |
| See LANDING W/O POWER | EXECUTE |
| Engine Checklist | SHUTDOWN COMPLETE |

Amplified Procedure

- 1. Fuel Shut-off Valve** OFF/OUT
Select the Fuel Shut-off Valve to OFF by pulling Fuel Shut-off Valve control fully OUT. This will isolate the remaining fuel supply from as far from the engine as possible in this system to help minimize the spread of the fire.
- 2. Mixture** IDLE/CUT OFF
Push the Mixture control lock button in and select the Mixture control to IDLE/CUT OFF. This will set the CUT OFF the fuel available for combustion which contributes to creating an incombustible mix of fuel and air.
- 3. Fuel Pump** OFF
Select the auxiliary Fuel Pump to OFF.
- 4. Master Switch (ALT and BAT)** OFF
Select the Master Switch (ALT and BAT) to OFF. This will minimize the risk of the engine fire creating an electrical fire.
- 5. STBY BATT Switch** OFF
Select the STBY BATT Switch to OFF.
- 6. Cabin Heat/Air (Except Overhead Vents)** OFF
Select the Cabin Heat and Cabin Air, located on the lower right side of the instrument panel, to OFF. Do not set the fresh air, Overhead Vents to OFF. These Vents should be verified open and on to help ventilate the cabin. This will help minimize smoke that reduces visibility and causes suffocation.
- 7. Airspeed** 100+ KIAS
Establish an Airspeed of 100+KIAS to create an incombustible mixture of fuel and air. This will help in attempting to extinguish the fire. Begin an emergency descent towards the intended landing lane.

NOTE

Refer to the Flight Training Professionals Cessna 172S Standard Operating Procedures for Emergency Descent procedure.

- 8. See Landing W/O Power.....EXECUTE**

EXECUTE the Landing W/O Power Checklist.

NOTE

Refer to the Flight Training Professionals Cessna 172S Standard Operating Procedures for Engine Failure “ABCDE” procedures.

- 9. Engine.....SHUTDOWN**

Verify that the Engine is SHUTDOWN and secured before attempting the forced landing.

Electrical/Cabin Fire in Flight Flow



ELECTRICAL/CABIN FIRE IN FLIGHT

| | |
|------------------------------------|------------------|
| STBY BATT Switch | OFF |
| Master Switch (ALT and BAT) | OFF |
| Avionics Switch. | OFF |
| All Electrical Switches | OFF |
| Vents/Cabin Air/Heat | CLOSED |
| Fire Extinguisher | USE |
| Cabin | VENTILATE |

If Fire is OUT & Electrical is Needed:

| | |
|-------------------------------------|----------|
| STBY BATT Switch | ARM |
| Master Switch (ALT and BAT) | ON |
| Circuit Breakers | CHECK |
| Radios | OFF |
| Avionics BUS 1 | ON |
| Avionics BUS 2 | ON |
| Radios & Electrical (one at a Time) | ON |
| Vents/Cabin Air/Heat | OPEN |
| Land | ASAP |
| Checklist | COMPLETE |

Amplified Procedure

1. **STBY BATT Switch** **OFF**
Select the STBY BATT Switch to OFF. This will assist in minimizing the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
2. **Master Switch (ALT and BAT)** **OFF**
Select the Master Switch (ALT and BAT) to OFF. This will minimize the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
3. **Avionics Switch** **OFF**
Select the Avionics Switch to OFF. This will minimize the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
4. **All Electrical Switches** **OFF**
Select All additional Electrical Switches to OFF. This will minimize the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
5. **Vents/Cabin Air/Heat** **CLOSED**
Select the Cabin Heat and Cabin Air to OFF. Push in the two controls on the lower right side of the instrument panel to set them to OFF. Select the overhead Vents to OFF by rotating all Vent controls fully clockwise. This will minimize oxygen available in the cabin that could lead to a hotspot developing flames or a present fire to intensify or spread.

6. Fire Extinguisher..... **USE**

Acquire the Fire Extinguisher located between the front seats. Pull the safety pin from the handle, point at the base of the fire, pull the trigger, and sweep the discharge left and right.

7. Cabin..... **VENTILATE**

VENTILATE the Cabin as soon as the fire has been extinguished. Open the windows and any additional vent system to VENTILATE. Inhaling the contents of the Halon fire extinguisher should be avoided.

If Fire is OUT & Electrical is Needed**8. STBY BATT Switch..... **ARM****

Select the STBY BATT Switch to ARM.

9. Master Switch (ALT and BAT)..... **ON**

Select the Master Switch (ALT and BAT) to ON.

10. Circuit Breakers..... **CHECK**

CHECK that all Circuit Breakers are currently set and closed. If any Circuit Breaker is open, do not reset the Circuit Breaker. If all Circuit Breakers are closed and set, consider opening all Circuit Breakers for each bus. Then set only the Circuit Breakers for the equipment and instrumentation needed.

11. Radios..... **OFF**

Select all Radios to OFF. Open the circuit breakers COMM 1 and NAV 1 ENG on the Essential Bus and COMM 2 and NAV 2 on the Avionics Bus #2 to select the Radios to OFF.

12. Avionics Bus 1..... **ON**

If equipment or instrumentation is needed on Avionics Bus 1, select Avionics Bus 1 to ON.

13. Avionics Bus 2..... **ON**

If equipment or instrumentation is needed on Avionics Bus 2, select Avionics Bus 2 to ON.

14. Radios & Electrical (one at a time)..... **ON**

For each additional Radio & Electrical equipment or instrumentation, select one item ON (one at a time). Allow time for signs of continued electrical problems or malfunction before selecting the next item ON.

15. Vents/Cabin Air/Heat..... **OPEN**

OPEN the fresh air Vents, Cabin Air, and Cabin Heat as needed.

16. Land..... **AS SOON AS POSSIBLE**

Land at the nearest airport if the fire is extinguished. If the fire is not extinguished, execute an Emergency Descent and land immediately. Refer to the Flight Training Professionals Cessna 172S Standard Operating Procedures for Emergency Descent procedures.

Wing Fire in Flight Flow



| WING FIRE IN FLIGHT | |
|---------------------------------|---------------------|
| Landing/Taxi/Recognition Lights | OFF |
| Navigation Lights | OFF |
| Strobe Lights | OFF |
| Pitot Heat | OFF |
| Side Slip | EXECUTE |
| Land (flaps as needed) | AS SOON AS POSSIBLE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Landing/Taxi/Recognition Light(s)** **OFF**
Select the Landing/Taxi/Recognition Light(s) switch(s) to OFF. This will assist in minimizing the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
2. **Navigation Lights** **OFF**
Select the Navigation Lights switch to OFF. This will assist in minimizing the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
3. **Strobe Lights** **OFF**
Select the Strobe Lights switch to OFF. This will assist in minimizing the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
4. **Pitot Heat** **OFF**
Select the Pitot Heat switch to OFF. This will assist in minimizing the risk of the electrical hotspot beginning a fire or the present fire intensifying or spreading.
5. **Side Slip** **Execute**
EXECUTE a Side Slip. This will minimize the risk of the flames reaching the cabin or the fuel tank. The Slip should be in the opposite direction of the wing fire to create a component of the relative wind to push the flames outboard. For example, if the fire is on the right wing, then apply right rudder and opposite aileron as needed. Remember “Step on the fire.”
6. **Land (flaps as needed)** **AS SOON AS POSSIBLE**
Land AS SOON AS POSSIBLE in the most immediate option (including off-airport) available. The use of flaps should be avoided to allow for more control of the side slip and better displacement of the flames outboard. Use (flaps as needed) for the approach and landing. If the fire is not extinguished, execute an Emergency Descent and land immediately. Refer to the Flight Training Professionals Cessna 172S Standard Operating Procedures for Emergency Descent procedures.

Inadvertent Icing Encounter Flow



INADVERTENT ICING ENCOUNTER

| | |
|----------------------------------|-----------------------|
| Pitot Heat | ON |
| Altitude or Direction | ADJUST |
| Cabin Heat | ON |
| Defroster Control Outlets | OPEN |
| Cabin AIR | ADJUST |
| Throttle | INCREASE |
| Induction Air (air filter) | WATCH FOR ICING SIGNS |
| Land | ASAP |
| Scrape Windshield | AS REQUIRED |
| Forward Slip (for visibility) | AS REQUIRED |
| Flaps | UP |
| Airspeed (depending on ice) | 65 to 75 KIAS |
| Landing Attitude | LEVEL |
| Checklist | COMPLETE |

Amplified Procedure

1. **Pitot Heat** **ON**
Select the Pitot Heat Switch to OFF. This will help to avoid ice accumulation in and on the Pitot tube.
2. **Altitude or Direction** **ADJUST**
ADJUST the aircraft state to exit the icing conditions. Whether a change in Altitude and/or Direction should be made is dependent on the situation. If the icing conditions are immediately observed at the onset of the icing encounter, then an immediate change in Direction should be suitable. In this case a reversal of course. However, knowledge of what may be inducing the icing conditions may also give insight into what Direction would be appropriate. For example, if flying into the downwind side of a large lake, lake-effect icing could be the cause. The best exit strategy would be to maneuver away from the downwind position. Altitude changes are also prudent when equipped with knowledge of what altitude would produce temperatures or conditions (clear of visible moisture) to end the icing accumulation.
3. **Cabin Heat** **ON**
Select the Cabin Heat control to ON. This will help to avoid ice accumulation on the windscreens.
4. **Defroster Control Outlets** **OPEN**
Select the Defroster Control Outlets to OPEN. This will help to avoid ice accumulation on the windscreens.
5. **Throttle** **INCREASE**
INCREASE the Throttle. This will increase propeller speeds to reduce ice accumulation on the propeller and increase aircraft speed which will reduce ice accumulation.

6. **Induction Air (Air Filter)** **WATCH FOR ICING SIGNS**
- WATCH FOR ICING SIGNS by paying attention to any sign of power loss.
7. **Land** **AS SOON AS POSSIBLE**
- Land AS SOON AS POSSIBLE by diverting to the nearest suitable airport. Consider present aircraft condition, airport runways and facilities, and distance in choosing diversion destination.
8. **Scrape Windshield** **AS REQUIRED**
- Scrape Windshield to remove ice AS REQUIRED. Open the left window and use hand to scrape the ice.
9. **Forward Slip (for visibility)** **AS REQUIRED**
- AS REQUIRED execute a Forward Slip (for visibility) ahead of the aircraft.
10. **Flaps** **UP**
- Verify that the Flaps are UP in the 0° position. This is to ensure avoidance of a tail stall. No flaps and continued ice adherence to the aircraft during landing means higher stall speeds, faster approach speeds, and longer landing distances.
11. **Airspeed (depending on ice)** **65 to 75 KIAS**
- Fly an airspeed that ensures stall avoidance given the icing condition of the aircraft. When in doubt, carry a higher approach speed and plan for a longer landing distance.
12. **Landing Attitude** **LEVEL**
- Plan for a LEVEL Landing Attitude on touchdown to minimize effects of icing on main wing or tail stall attitudes.

Autopilot / Electric Trim Failure Flow



AUTOPILOT / ELECTRIC TRIM FAILURE

| | |
|----------------------------------|-------------------------|
| Control Wheel | REGAIN CONTROL |
| A/P Trim Disc Switch | DEPRESS AND HOLD |
| Trim | ADJUST MANUALLY |
| Autopilot Circuit Breaker | OPEN |
| A/P Trim Disc Switch | RELEASE |
| Checklist | COMPLETE |

Amplified Procedure

1. **Control Wheel** **REGAIN CONTROL**
Grasp the Control Wheel firmly. REGAIN CONTROL of the aircraft as required. The aircraft may be in an unusual attitude and the control pressures required to regain control could be significant.
2. **A/P Trim Disc Switch** **DEPRESS AND HOLD**
Simultaneously DEPRESS AND HOLD the (red) A/P Trim Disc Switch on the pilot's side control wheel. This should disconnect the autopilot if engaged and disengage the servos on the ailerons, elevator, and elevator trim. This will assist in regaining control of the aircraft.
3. **Trim** **ADJUST MANUALLY**
ADJUST the elevator Trim MANUALLY. This will allow for large trim changes in a relatively short time frame which may be necessary. The electric trim will be disengaged while the (red) A/P Trim Disc Switch is held.
4. **Autopilot Circuit Breaker** **OPEN**
OPEN the Autopilot Circuit Breaker located on the bottom right side of the Circuit Breaker panel. The Autopilot Circuit Breaker is on Avionics Bus 2.
5. **A/P Trim Disc Switch** **RELEASE**
RELEASE the A/P Trim Disc Switch. With the autopilot circuit breaker open, it is now safe to RELEASE the A/P Trim Disc Switch.

LOW OIL PRESSURE

If oil temperature is normal:

Nearest Suitable Airport **LAND**

If oil temperature is increasing:

| | |
|--|-------------------------|
| <u>Power</u> | MINIMUM REQUIRED |
| <u>Immediate Landing Option</u> | SELECT |
| <u>Precautionary Landing Checklist</u> | EXECUTE |
| <u>Checklist</u> | COMPLETE |

Amplified Procedure

If oil temperature is normal:

1. Nearest Suitable Airport **LAND**

LAND at the Nearest Suitable Airport as soon as possible. Consider avoiding overflight of congested areas or areas with unsuitable terrain or obstacles.

If oil temperature is increasing:

2. Power **MINIMUM REQUIRED**

Reduce the Power to the MINIMUM REQUIRED to safely maneuver the aircraft.

3. Immediate Landing Option **SELECT**

SELECT an Immediate Landing Option to include off-airport possibilities.

4. Precautionary Landing Checklist **EXECUTE**

EXECUTE the Precautionary Landing Checklist. Be prepared for an impending engine failure.

OIL PRESSURE ANNUNCIATOR

If oil pressure value and oil temperature are normal:

Nearest Suitable Airport **LAND**

If oil pressure value is abnormal and/or oil temperature is increasing:

| | |
|--|-------------------------|
| <u>Power</u> | MINIMUM REQUIRED |
| <u>Immediate Landing Option</u> | SELECT |
| <u>Precautionary Landing Checklist</u> | EXECUTE |
| <u>Checklist</u> | COMPLETE |

Amplified Procedure

If oil pressure value and oil temperature are normal:

1. Nearest Suitable Airport **LAND**

LAND at the Nearest Suitable Airport as soon as practical. Consider avoiding overflight of congested areas or areas with unsuitable terrain or obstacles.

If oil pressure value is abnormal and/or oil temperature is increasing:

2. Power **MINIMUM REQUIRED**

Reduce the Power to the MINIMUM REQUIRED to safely maneuver the aircraft.

3. Immediate Landing Option **SELECT**

SELECT an Immediate Landing Option to include off-airport possibilities.

4. Precautionary Landing Checklist **EXECUTE**

EXECUTE the Precautionary Landing Checklist. Be prepared for an impending engine failure.

DITCHING

| | |
|---------------------|------------------------------|
| Radio & Transponder | EMERGENCY |
| Heavy Objects | SECURE or JETTISON |
| Seat Backs | MOST UPRIGHT POSITION |

Approach:

| | |
|----------------------------|---------------------------|
| High Winds, Heavy Swells | INTO WIND |
| Light Winds, Heavy Swells | PARALLEL TO SWELLS |
| Flaps | 20° TO 30° |
| Airspeed (300 fpm descent) | 55 KIAS |

If No Power:

| | |
|-----------|----------------|
| 0° Flaps | 70 KIAS |
| 10° Flaps | 65 KIAS |

| | |
|------------------------------|-----------------------|
| Doors | UNLATCH |
| ELT | ACTIVATE |
| Touch Down (300 fpm descent) | LEVEL ATTITUDE |
| Face | CUSHION |
| Airplane | EVACUATE |
| Life Vests & Raft | INFLATE |
| Checklist | COMPLETE |

Amplified Procedure**1. Radio & Transponder** **EMERGENCY**

Set an appropriate Radio to complete a radio call on the most appropriate frequency for the situation. If already in communication with ATC, utilize this frequency. If not presently in communication with ATC, use a recently used ATC frequency or use a frequency for the appropriate geographical area. However, when in doubt, use 121.5 MHz to COMPLETE a Radio Call. The Radio Call should include:

1. If you do not have the undivided attention of those you are addressing, begin with the universal distress call, "Mayday! Mayday! Mayday!"
2. Aircraft type, registration number, and color of aircraft
3. Current or last known position
4. Number of souls on board
5. If time allows, and is presently determined, state intentions.

Set the Transponder code to 7700. This will alert all air traffic control facilities within range that the aircraft has an emergency.

2. Heavy Objects **SECURE or JETTISON**

SECURE all Heavy Objects in the most appropriate location. JETTISON any Heavy Object will not be secured. Also, JETTISON any Heavy Object needed to reduce weight,

3. Seats Backs **MOST UPRIGHT POSITION**

Set all Seat Backs to the MOST UPRIGHT POSITION.

*Approach:***4. High Winds, Heavy Swells INTO WIND**

When both Heavy (Large) Sea swells and High Winds exist, it is best to approach INTO WIND. The approach should be made such that the aircraft will touch down on the top or the back side of the Swells. Do not land into the face of a Swell.

5. Low Winds, Heavy Swells PARALLEL TO SWELLS

When the Winds are Low and the Swells are Heavy, approach PARALLEL TO SWELLS. The best touch down position is on top of the SWELLS.

6. Flaps 20° to 30°

Set Flaps to 20° to 30° for the final approach. This will reduce touch down speed and stall speed.

7. Airspeed (300 fpm descent) 55 KIAS

If the aircraft is under power, establish an Airspeed of 55 KIAS at (300 fpm descent). This will sustain a manageable descent rate while minimizing forward speed energy.

*If No Power:***8. 0° Flaps 70 KIAS**

If no power is available, use a higher airspeed on approach. If using 0° Flaps, approach at 70 KIAS. This will allow more ability to maneuver the airplane on the approach and avoid high sink rates.

9. 10° Flaps 65 KIAS

If no power is available, use a higher airspeed on approach. If using 10° Flaps, approach at 65 KIAS. This will allow more ability to maneuver the airplane on the approach and avoid high sink rates.

10. Doors UNLATCH

UNLATCH at least one Door prior to touchdown. If able, place a solid object in the door jam. For example, take a shoe off and put in place to help ensure the door does not jam during landing.

11. ELT ACTIVATE

Once communications have been completed, ACTIVATE the ELT by selecting the ELT switch to ON.

12. Touchdown (300 fpm descent) LEVEL ATTITUDE

The Touchdown should be made under control at minimum descent rate with a target of (300 fpm descent) in a LEVEL ATTITUDE.

13. Face CUSHION

Place soft materials in front of/on every occupants' Face during touchdown to CUSHION the impact of a possibly abrupt stop.

14. Airplane.....EVACUATE

EVACUATE the Airplane using the door that was set ajar prior to touchdown. The conditions may be dark, upside-down, submerged, and otherwise disorienting. Place a hand on a familiar object and then follow hand-over-hand to other familiar objects until reaching exit.

15. Life Vests & Raft.....INFLATE

Only once clear of the aircraft, INFLATE all occupants' Life Vests and Raft.

CHAPTER 5: ABNORMAL PROCEDURES

Chapter 5 Introduction and Motivation

In this chapter there are amplified descriptions on abnormal procedures found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

Abnormal procedures are associated with aircraft states and situations not considered an emergency nor are they normal. These abnormal situations do warrant attention and appropriate decision making. However, they are not usually as time critical as an emergency. If left unaddressed, they can lead to an emergency. However, the priority of ensuring positive control of the aircraft must not be forgotten or neglected. While this chapter covers various abnormalities, not all situations are reviewed.

Flight Training Professionals is dedicated to establishing quality Safety Management Systems to ensure continuous dedication to maintaining and improving operational safety in every aspect. We welcome your input in any of this publication, and how it can be improved.

PRECAUTIONARY LANDING

| | |
|---|-----------------------------|
| <u>Seat and Seat Belts</u> | <u>UPRIGHT & SECURE</u> |
| <u>Airspeed</u> | <u>65 KIAS</u> |
| <u>Before Landing Checklist</u> | <u>COMPLETE</u> |
| <u>Flaps</u> | <u>20°</u> |
| <u>Landing Area</u> | <u>SELECT</u> |
| <u>Avionics BUS 1, BUS 2, & Electrical Switches</u> | <u>OFF</u> |
| <u>Flaps (on final approach)</u> | <u>FULL</u> |
| <u>Airspeed</u> | <u>65 KIAS</u> |
| <u>STBY BATT Switch</u> | <u>OFF</u> |
| <u>Master Switch (ALT and BAT)</u> | <u>OFF</u> |
| <u>Door (prior to touchdown)</u> | <u>UNLATCH</u> |
| <u>Touchdown</u> | <u>SLIGHTLY TAIL LOW</u> |
| <u>Mixture</u> | <u>IDLE/CUT OFF</u> |
| <u>Ignition Switch</u> | <u>OFF</u> |
| <u>Brakes</u> | <u>AS REQUIRED</u> |
| <u>Checklist</u> | <u>COMPLETE</u> |

Amplified Procedure

1. Seats and Seat Belts UPRIGHT & SECURE
SET the Seat backs in the most UPRIGHT position. Once the Seat positions are set, verify the seats are also SECURE. Set the Seat Belts for each occupant and ensure they are SECURE. If the Seat Belts contain air bag inflators, ensure the seam is facing up and away from the body for proper inflation.
2. Airspeed 65 KIAS
Establish an Airspeed of 65 KIAS or as required.
3. Before Landing Checklist COMPLETE
COMPLETE the Before Landing Checklist.
4. Flaps 20°
SET the Flaps to 20° or as required.
5. Landing Area SELECT
SELECT the most suitable Landing Area. Consider the landing conditions available such as runway, grass field, dirt, or paved road, etc. Also consider, other conditions like distance available for landing, wind, obstacles, proximity to people and buildings, etc.
6. Avionics Bus 1, Bus 2, & Electrical Switches OFF
Select Avionics Bus 1, Bus 2, & Electrical Switches to OFF.
7. Flaps (on final approach) FULL
Set Flaps to FULL once (on final approach).

- 8. Airspeed.....** **65 KIAS**
Establish and maintain an Airspeed of 65 KIAS on final approach.
- 9. STBY BATT Switch.....** **OFF**
Select the STBY BATT Switch to OFF. This will minimize the possibility of an electrical fire during landing.
- 10. Master Switch (ALT and BAT).....** **OFF**
Once all communications are complete and the flaps are selected to the final position, select the Master Switch (ALT and BAT) to OFF. This will minimize the possibility of an electrical fire during landing.
- 11. Door (prior to touchdown).....** **UNLATCH**
UNLATCH at least one Door prior to touchdown. If able, place a solid object in the door jam. For example, take a shoe or clothing item off and put in place to help ensure the door does not jam during landing.
- 12. Touchdown.....** **SLIGHTLY TAIL LOW**
Touchdown SLIGHTLY TAIL LOW to minimize speed at Touchdown.
- 13. Mixture.....** **IDLE/CUT OFF**
With the aircraft under directional control, select the Mixture to IDLE/CUT OFF. This will minimize the effects or spread of a fire during landing.
- 14. Ignition Switch.....** **OFF**
Select the Ignition Switch to OFF. This will minimize the effects or spread of a fire during landing.
- 15. Brakes.....** **AS REQUIRED**
Apply Brakes AS REQUIRED to stop or at least slow the aircraft prior to unavoidable terrain or obstacles in the rollout pathway.

LOW VOLTS / STBY BATT ANNUNCIATOR (ABOVE 1000 RPM)

| | |
|--|----------------------|
| Master Switch (ALT ONLY) | OFF |
| Alternator Circuit Breaker (ALT FIELD) | CHECK IN |
| Master Switch (ALT and BAT) | ON |
| Low-Voltage Annunciator (LOW VOLTS) | CHECK OFF |
| M Bus Volts | CHECK 27.5 V Minimum |
| M BATT Amps | CHECK CHARGING (+) |

If Low-Voltage Annunciator Illuminates Again:

| | |
|--|-----------------------|
| Master Switch (ALT ONLY) | OFF |
| Nonessential Electrical | OFF |
| Avionics Switch BUS 1 | OFF |
| COM 1 and Nav 1 | TUNE FREQs AND SELECT |
| Avionics Switch BUS 2 (leave ON if in IMC) | OFF |
| Flight Checklist | TERMINATE COMPLETE |

Amplified Procedure

1. **Master Switch (ALT ONLY)** OFF
Select the (ALT ONLY) side of the Master Switch to OFF. This is the first step in attempting to reset the alternator magnetic field.
2. **Alternator Circuit Breaker (ALT FIELD)** CHECK IN
CHECK that the Alternator Circuit Breaker, marked as ALT FIELD and located on the top left-hand corner of the Circuit Breaker panel on the Cross Feed Bus, is IN and closed. If the ALT FIELD Circuit Breaker is out and open, consider the choice of whether the Circuit Breaker should be pushed in. If the choice is made to push IN the Breaker and the Breaker opens again, do not attempt to close.
3. **Master Switch (ALT and BAT)** ON
Select the Master Switch (ALT and BAT) to ON. This is the second step in attempting to reset the alternator magnetic field.
4. **Low-Voltage Annunciator (LOW VOLTS)** CHECK OFF
CHECK that the Low-Voltage Annunciator is OFF.
5. **M BUS VOLTS** CHECK 27.5 Minimum
CHECK that the M BUS Volts is at a minimum of 27.5 VOLTS. This is to verify that the alternator is operational and providing sufficient electrical output as the alternator operates the system normally at 28 volts.
6. **M BATT Amps** CHECK CHARGING (+)
CHECK that the M BATT Amps indicates a + charge and therefore the alternator is CHARGING the master battery.

If Low Voltage Annunciator illuminates again:

7. Master Switch (ALT ONLY).....OFF

Select the (ALT ONLY) side of the Master Switch to OFF. This is to turn OFF the electrical draw from the Master battery to alternator. This will reduce the electrical draw on the battery and elongate the battery life.

8. Nonessential Electrical.....OFF

Evaluate the situation and determine what Electrical equipment and instruments are Nonessential. Select all Nonessential Electrical equipment and instruments to OFF. This will reduce the draw on the battery and elongate battery life. Consider selecting the Pitot Heat switch, all interior and exterior lights, and Cabin Power 12V to OFF.

9. Avionics Bus 1.....OFF

Select Avionics Bus 1 to OFF. This will reduce the draw on the battery and elongate the battery life.

10. COM 1 and NAV 1.....TUNE FREQs and SELECT

TUNE the appropriate FREQUENCIES for COM 1 and NAV 1 radios and SELECT to the active position.

11. Avionics Switch Bus 2 (leave ON if in IMC).....OFF

Select Avionics Bus 2 to OFF. This will reduce the load on the battery and lengthen the battery life. However, if presently in Instrument Meteorological Conditions (IMC) leave the Avionics Switch Bus 2 ON. This will avoid limited Avionics use while in IMC. If Avionics Bus 2 is selected OFF the following equipment will be inoperative:

1. COM 2
2. NAV 2
3. GTX 345R Transponder
4. GMA 1347 Audio Panel
5. GDU 1044B Multi-Function Display
6. GFC 700 AFCS

12. Flight.....TERMINATE

TERMINATE the Flight as soon as practical. If the flight is presently in IMC, the situation warrants and emergency. Do not hesitate to declare an emergency with ATC and request assistance to TERMINATE the Flight as soon as safely possible.

HIGH VOLTS ANNUNCIATOR

(M BUS VOLTS More Than 32 or M BAT AMPS More than 40)

| | |
|---|-----------------------|
| Master Switch (ALT ONLY) | OFF |
| Nonessential Electrical | OFF |
| Avionics Switch BUS 1 | OFF |
| COM 1 and Nav 1 | TUNE FREQs AND SELECT |
| Avionics Switch BUS 2 <i>(Leave ON if in IMC)</i> | OFF |
| Flight | TERMINATE |
| Checklist | COMPLETE |

Amplified Procedure

1. Master Switch (ALT ONLY)..... OFF

Select the (ALT ONLY) side of the Master Switch to OFF. This is to disengage the alternator to reduce the voltage and avoid a fire.

2. Nonessential Electrical..... OFF

Evaluate the situation and determine what Electrical equipment and instruments are Nonessential. Select all Nonessential Electrical equipment and instruments to OFF. This will reduce the load on the battery and elongate battery life. Consider selecting the Pitot Heat switch, all interior and exterior lights, and Cabin Power 12V to OFF.

3. Avionics Switch Bus 1..... OFF

Select Avionics Bus 1 to OFF. This will reduce the load on the battery and elongate the battery life.

4. COM 1 and NAV 1..... TUNE FREQs AND SELECT

TUNE the appropriate FREQUENCIES for COM 1 and NAV 1 radios and SELECT to the active position.

5. Avionics Switch Bus 2..... OFF

Select Avionics Bus 2 to OFF. This will reduce the load on the battery and lengthen the battery life. However, if presently in Instrument Meteorological Conditions (IMC) leave the Avionics Switch Bus 2 ON. This will avoid limited Avionics use while in IMC. If Avionics Bus 2 is selected OFF the following equipment will be inoperative:

1. COM 2
2. NAV 2
3. GTX 345R Transponder
4. GMA 1347 Audio Panel
5. GDU 1044B Multi-Function Display
6. GFC 700 AFCS

7. Flight.....TERMINATE

TERMINATE the Flight as soon as practical. If the flight is presently in IMC, the situation warrants and emergency. Do not hesitate to declare an emergency with ATC and request assistance to TERMINATE the Flight as soon as safely possible.

STATIC SOURCE BLOCKAGE

| | |
|---------------------------------------|----------|
| Alternate Static Source | ON |
| Airspeed (AIRSPEED CALIBRATION TABLE) | CONSULT |
| Checklist | COMPLETE |

Amplified Procedure

1. **Alternate Static Source**.....**ON**

Select the Alternate Static Source knob, located to the left of the throttle control, to ON.

2. **Airspeed (AIRSPEED CALIBRATION TABLE)**.....**CONSULT**

CONSULT the AIRSPEED CALIBRATION TABLE located in Section 5-11 of the 172S NAV III GFC 700 AFCS Pilots Operating Handbook. Select the cabin heat, cabin air, and defroster on maximum. Close the windows and ventilators. This will minimize the pressure differences inside and outside the cabin.

| CO LVL HIGH ANNUNCIATOR | |
|--------------------------------|----------|
| Cabin Heat | PUSH OFF |
| Cabin Air | PULL ON |
| Cabin Vents | OPEN |
| Cabin Windows | OPEN |
| Nearest Suitable Airport | LAND |
| Checklist | COMPLETE |

Amplified Procedure

1. **Cabin Heat** **PUSH OFF**
PUSH the Cabin heat control in to select the Cabin Heat to OFF. This will minimize the carbon monoxide (CO) in the cabin.
2. **Cabin Air** **PULL ON**
PULL the Cabin Air control out to select the Cabin Air to ON. This will add fresh Air to ventilate the cabin.
3. **Cabin Vents** **OPEN**
Rotate all Cabin Vent counterclockwise to the stop to OPEN the Cabin Vents. This will add fresh air to ventilate the cabin.
4. **Cabin Windows** **OPEN**
OPEN the Cabin Windows. This will ventilate the cabin.
5. **Nearest Suitable Airport** **LAND**
LAND as soon as practical at the Nearest Suitable Airport.

LOW VACUUM ANNUNCIATOR

Vacuum Pressure (VAC) **CHECK**

If vacuum pressure is abnormal:

Standby Attitude Indicator **DISREGARD**
Checklist **COMPLETE**

Amplified Procedure

1. **Vacuum Pressure (VAC)** **CHECK**

CHECK that the Vacuum Pressure (VAC) is indicating normal parameters in the green band between 4.5 and 5.5 inches of mercury ("Hg).

If vacuum pressure is abnormal:

2. **Standby Attitude Indicator** **DISREGARD**

DISREGARD the Standby Attitude Indicator. This is because the Standby Attitude Indicator may be supplying inaccurate attitude information.

FLAT MAIN TIRE

| | |
|--------------------------|------------------------|
| Approach..... | NORMAL |
| Flaps..... | FULL |
| Touchdown..... | GOOD TIRE FIRST |
| Directional Control..... | MAINTAIN |
| Checklist..... | COMPLETE |

Amplified Procedure

1. Approach..... **NORMAL**

Make a NORMAL Approach as appropriate for the type of Approach and landing to be used.

2. Flaps..... **FULL**

Utilize FULL Flaps as a final Flaps setting prior to landing. This will allow minimum touchdown speed and maximum drag to minimize the effects of the flat main tire.

3. Touchdown..... **GOOD TIRE FIRST**

Ensure that the aircraft will Touchdown on the GOOD TIRE FIRST. Select a long and wide runway and/or a runway with a crosswind that assists with touching down on the GOOD TIRE FIRST. For example, if the left main tire is flat, then pick a runway with a crosswind from the right to help the right main tire touchdown first. A slip will be established to ensure the GOOD TIRE will Touchdown FIRST.

4. Directional Control..... **MAINTAIN**

MAINTAIN Directional Control by using aileron control deflected towards the good tire (preferably into the crosswind), and use rudder, nosewheel steering, and brake on the good tire.

FLAT NOSE TIRE

| | |
|---|------------------------|
| Approach | NORMAL |
| Flaps | AS REQUIRED |
| Touchdown | GOOD TIRE FIRST |
| Directional Control (hold nose off) | ON MAINS |
| Checklist | COMPLETE |

Amplified Procedure

1. Approach **NORMAL**

Make a NORMAL Approach as appropriate for the type of Approach and landing to be used.

2. Flaps **AS REQUIRED**

Utilize the Flaps setting AS REQUIRED for the given situation and type of approach and landing.

3. Touchdown **ON MAIN GEAR**

Ensure that the aircraft will Touchdown ON the MAIN GEAR. During and after touchdown apply backpressure and power to hold the nose wheel off the runway as long as possible. As the aircraft slows, add more power and backpressure as required to hold the nose wheel off the runway. Select a long and wide runway and/or a runway with minimal crosswind and maximum headwind. This will assist in holding the nose wheel off the runway at slower speeds. When the tail stalls and the nose wheel touches down, apply full aft elevator deflection and close the throttle.

4. Directional Control **MAINTAIN**

MAINTAIN Directional Control by using aileron control deflected towards crosswind, and use rudder, nosewheel steering, and brakes as needed to MAINTAIN Directional Control.

CHAPTER 6: AMPLIFIED DISCUSSION OF THE CHECKLIST SUPPLEMENT

Chapter 6 Introduction and Motivation

In this chapter there are amplified descriptions of the checklist supplement found in the Flight Training Professional's C172S NAV III Checklist and guidance for execution.

The checklist supplement includes standardized passenger and crew briefings and certified operating and limitation speeds critical safe operation of the C172S NAV III aircraft. These briefings and information must be well understood by all crews prior to flight and should be discussed further as needed to meet the requirements of any individual operation.

Flight Training Professionals is dedicated to establishing quality Safety Management Systems to ensure continuous dedication to maintaining and improving operational safety in every aspect. We welcome your input in any of this publication, and how it can be improved.

PASSENGER BRIEFING

- S** Seatbelts fastened for taxi, takeoff, and landing.
Shoulder harnesses fastened for taxi, takeoff, and landing.
Seat position is adjusted and locked.
Smoking – When/where smoking is prohibited.
- A** Air vents – Location/operation
Environmental controls – Location/operation
Air sickness – Appropriate actions
- F** Fire extinguisher – Location/operation
- E** Emergency exits – Location/operation
Emergency evacuation and egress plan
Emergency/Survival equipment – Location
- T** Traffic – (scanning, spotting, notifying)
Talking – (sterile flight deck)
- Y** Your Questions?

Passenger Briefing Amplified Discussion

For the safety of the flight, passengers must be aware of relevant safety critical items and procedures in the aircraft. At a minimum, 14 CFR 92.207(a)(1) requires that “the pilot in command ensures that each person on board is briefed on how to fasten and unfasten that person’s safety belt and, if installed, shoulder harness.” Though Flight Training Professionals does not operate any aircraft governed by 14 CFR 91.519, it is best operating practice to observe also at least the same briefing items included in the regulation. According to 14 CFR 91.519 each passenger shall be briefed on:

1. Smoking – “when, where, and under what conditions smoking is prohibited.”
2. Use of safety belts and shoulder harnesses – “when, where, and under what conditions it is necessary to have his or her safety belt and, if installed, his or her shoulder harness fastened about him or her.”
3. Door operation and emergency exits - “Location and means for opening the passenger entry door and emergency exits.”
4. Survival equipment – “Location of survival equipment.”
5. “Ditching procedures and the use of flotation equipment required under 14 CFR 91.509.”
6. “The normal and emergency use of oxygen equipment”

The passenger briefing shall be completed before every flight and must be given by the pilot in command or by a crew member delegated by the pilot in command.

1. Seatbelts fastened for taxi, takeoff, and landing.

Explain to the passengers that their seatbelt must be fastened for taxi, takeoff, and landing according to legal regulations. You must also explain when, where, and under what conditions you want them to wear it otherwise.

Explain how to secure the seatbelt by demonstrating the action while giving a verbal description. Use an explanation like “Place the metal buckle into the receiver until it ‘clicks.’ Then tug on the belt to verify it is secure. Ensure that the airbag seam is pointed away from your body for proper airbag inflation. To release the seatbelt, press the red button on the receiver until it ‘clicks’ and draw the buckle and belt away from you.”

2. Shoulder harnesses fastened for taxi, takeoff, and landing.

Explain to the passengers that their shoulder harness must be fastened for taxi, takeoff, and landing according to legal regulations. You must also explain when, where, and under what conditions you want them to wear it otherwise.

Explain how to secure the shoulder harness by demonstrating the action while giving a verbal description. Use an explanation like “Draw the shoulder harness diagonally across your body from your shoulder to your opposite hip. Ensure the shoulder harness is clear of your neck for comfort and safety.”

3. Seat Position is adjusted and locked

Ensure the passenger is briefed how to adjust their seat height, seat back, and seat position. Finally show them to verify that their seat position is locked and will not move during flight.

4. Smoking – When/where smoking is prohibited

Show the NO SMOKING placard to the passengers and explain that smoking is always prohibited before, during, and after the flight. Flight Training Professionals' Operations manual also prohibits smoking within 50 feet of company aircraft and 300 feet when company aircraft are being refueled.

5. Air vents – Location/operation

Show the location of the air vents. There are four located in the forward cabin. Two are on the pilot’s side and two on the front passenger’s side. There are two located in the aft cabin. One if on the left side and one on the right side. All air vents operate by rotating the dial counterclockwise to open and point to direct the flow.

6. Environmental controls – Location/operation

Show the location of cabin air control and cabin heat control. Explain their operation that the lock button is depressed, and the control pulled out to turn them on.

7. Airsickness – Appropriate actions

Explain that airsickness is uncommon but can happen. Things that aggravate airsickness are anxiety and nervousness, hot, stuffy, and uncomfortable conditions, and sending mixed signals to the brain. So appropriate actions include deep breaths in through the nose and out the mouth, cold air blowing on the face and body, and looking out as far as able to the horizon.

Include a discussion of the sick bag carried with personal gear.

8. Fire extinguisher – Location/operation

Show that the Fire Extinguisher is located below and between the front seats. Show how to release the latches. Explain that in the event of a fire, pull the safety pin from the handle, point at the base of the fire, pull the trigger, and sweep the discharge left and right to put out the fire.

9. Emergency exits – Location/operation

Show the location of the emergency exits. The primary emergency exits are the left-side and right-side doors. The secondary emergency exit location is the baggage door. Explain how to operate the doors while demonstrating. This should include a statement like “To close the door, pull the door into the jam until the black handle moves from the OPEN position to the CLOSED position. Then place the black handle in the LOCKED position by moving it forward. To open the door, pull the black handle from the LOCKED position to the OPEN position and push the door open.”

10. Emergency evacuation and egress plan.

Explain the plan for all occupants to exit the aircraft in an emergency. The back-seat passengers would exit first through the primary emergency exits, and then the front seat occupants. All persons would then move to the rear of the airplane and continue until well clear not less than 301 feet from the aircraft.

11. Emergency/Survival equipment – Location

Explain the location of any emergency and/or survival equipment on board the aircraft for that flight.

12. Traffic (scanning, spotting, notifying)

Explain that everyone in the aircraft can help with awareness of other traffic. Explain that scanning is properly done by allowing the eyes to focus on individual sections of the sky for a few seconds before moving on. Explain that aircraft are usually not very prominent at normal distances and will often appear closer to specs at first. Explain that if they see an aircraft, they should notify the Pilot Flying (PF) and or PIC. To point out the aircraft we will use an o'clock position, and we will use the word “high” to represent above the horizon line and “low” to represent below the horizon line.

13. Talking (sterile flight deck)

Explain that talking during ground operations, taxi, takeoff, and landing should be kept to a minimum and only pertinent to the flight. Explain that this will keep the flight deck sterile until reaching cruising altitude. Give any other directions about what you want passengers to do when talking is otherwise allowed.

14. Your questions?

Encourage the passengers to ask questions and answer any they may have.

PILOT IN COMMAND BRIEFING

You are the Pilot In Command. I am the Pilot Flying. If at any time you want the airplane, say "I have the flight controls." I will take my hands and feet off the controls and say, "You have the flight controls." You will verify by saying "I have the flight controls." If you want to give the airplane back to me, say "You have the flight controls." I will put my hands and feet on the controls and say, "I have the flight controls". You will verify by saying "You have the flight controls." Are there any questions? (e.g., Who will fly in an emergency?)

Pilot In Command Briefing Amplified Discussion

For the safety of the flight, all crewmembers must be aware of their roles and responsibilities in the aircraft for that flight. Before beginning any flight, at a minimum, the pilot in command must be identified and there must be a discussion of positive exchange of flight controls. According to the Private Pilot ACS, Skill PA.II.B.S2 and the Commercial Pilot ACS, Skill CA.II.B.S2 a preflight briefing must be completed that includes the identification of the pilot in command. Secondly, the Private Pilot ACS, Instrument Rating ACS, and Commercial Pilot ACS state crews should conduct a positive exchange of flight controls briefing.

Roles shall be established to include who will be Pilot In Command (PIC), who will be Pilot Flying (PF), and who will be Pilot Monitoring (PM).

The positive exchange of controls shall include a three-way interaction that is both a verbal exchange and confirmation, but just as importantly, a visual verification of the exchange. This means that the flight controls should not be released by one person until making a visual confirmation that the other person has taken the flight controls.

Consider also briefing the importance of a sterile flight deck among crewmembers, crewmembers' roles and responsibilities during inflight emergencies, and other areas of concern specific to that flight operation.

DEPARTURE BRIEFING

This will be a (normal/short field/soft field) takeoff and climb on Runway _____.

We will be (departing the pattern to the.../remaining in the pattern) with an initial altitude of _____ feet.

Today, we will rotate at (V_R) KIAS and climb-out at (V_x or V_y) KIAS.

If we have any problems prior to liftoff: I will reduce power, apply brakes as required, and stop on the remaining runway.

If we have an engine failure after liftoff and BELOW 1000 feet AGL: I will maintain directional control, pitch for best glide of 68 knots, and land straight ahead avoiding steep turns and any obstacles.

If we have an engine failure after liftoff and ABOVE 1000 feet AGL: I will maintain directional control, pitch for best glide of 68 knots, and look for a suitable place to land including the possibility of returning to the airport runway(s) (##, ##) and complete the appropriate checklists as time and altitude permit.

Departure Briefing Amplified Discussion

A departure briefing is critical to ensuring the crewmembers are operating proactively rather than reactively to the present and immediate future aircraft state. This means mental preparedness for the departure ensures a plan of action rather than waiting for an occurrence (especially an unexpected one) and responding. Generally, better overall outcomes will come from a proactive rather than reactive approach to high task load phases of flight like takeoff and departures.

A departure briefing will be conducted by the crewmembers before every takeoff from a new airport or runway. The departure briefing will be given by the Pilot In Command (PIC) or by a crewmember delegated by the Pilot In Command (PIC).

1. **This will be a (normal/short field/soft field) takeoff and climb on Runway _____.**

Check that the desired type of takeoff and climb is discussed and include what runway the takeoff and climb will take place on. This avoids using the wrong takeoff and climb procedure or performing the procedure incorrectly. This also helps ensure the correct runway is utilized.

2. **We will be (departing the pattern to the _____ /remaining in the pattern) with an initial altitude of _____.**

Verify the plan immediately following the takeoff and climb to either include remaining in the pattern (left or right pattern), departing a general/cardinal direction, turning to a particular magnetic heading, or tracking a ground based or GPS based navigation. Verify the initial level off altitude. This will ensure awareness of what the plan is immediately following the takeoff and climb which avoid undesired aircraft states like turning the wrong direction or flying into airspace without clearance.

3. Today we will rotate at (V_r) KIAS and climb-out at (V_x or V_y) KIAS.

Verify the planned lift-off speed as given by the manufacturer for the aircraft and the intended climb configuration after lift-off.

4. If we have any problems prior to liftoff: I will reduce power, apply brakes as required, and stop on the remaining runway.

Check that the crewmembers are mentally prepared for the actions to be taken if any failure, anything un-commanded, or any fire occurs prior to liftoff. The decision must be made to immediately reject the takeoff and apply the appropriate actions. This includes closing the throttle to idle and applying brakes to slow the aircraft to a safe speed to exit the runway onto an appropriate exit, or if needed, stop on the runway.

5. If we have an engine failure after liftoff and BELOW 1000' AGL: I will maintain directional control, pitch for best glide of 68 KIAS, and land straight ahead avoiding steep turns and any obstacles.

Check that the crewmembers are mentally prepared for the actions to be taken if an engine failure occurs BELOW 1000' AGL.

The first and foremost action is to maintain control of the airplane and keep the airplane flying by lowering the nose to establish the pitch attitude that will establish best glide airspeed.

If there is runway available, immediately configure the airplane for landing by selecting an appropriate flap setting to increase descent angle, reduce touchdown speed, and stall speed. If the airplane is under control, then consider also making use of slips to increase the descent angle to maximize use of the remaining available runway.

If there is no runway available, continue at best glide and land straight ahead considering available options. These can be discussed in addition to the standard departure briefing. These forced landing options should not require any significant turns beyond 30° either side of the runway extended centerline.

Brief that bank angles used during maneuver will be less than 45 degrees of bank and expect to use small turns to avoid obstacles during maneuvering for the forced landing.

Use flaps when appropriate to increase descent angle, reduce touchdown speed, and stall speed.

6. If we have an engine failure after liftoff and ABOVE 1000' AGL: I will maintain directional control, pitch for best glide of 68 KIAS, and look for a suitable place to land including the possibility of returning to the airport runway(s) (#, #) and complete the appropriate checklists as time and altitude permit.

Check that the crew is mentally prepared for the actions taken if an engine failure occurs ABOVE 1000' AGL.

The first and foremost action is to maintain control of the airplane and keep the airplane flying by lowering the nose to establish the pitch attitude that will establish best glide airspeed.

If there is runway available, immediately configure the airplane for landing by selecting an appropriate flap setting to increase descent angle, reduce touchdown speed, and stall speed. If the airplane is under control, then consider also making use of slips to increase the descent angle to maximize use of the remaining available runway.

If there is no runway available, continue at best glide and land straight ahead considering available options. These can be discussed in addition to the standard departure briefing. The option for returning to land on a runway(s) at the airport shall be discussed. The best runway(s) to consider landing on would be based off factors to include but are not limited to runway proximity and orientation to the airplane after the airplane reverses course, wind direction and speed both aloft and at the surface, runway length, and runway width. When considering which way to turn, consider the winds aloft. Generally, the turn back would be most suited into the wind (if there is a crosswind) to keep the airplane more over the same location on the ground and therefore better aligned with a runway.

Discuss when checklists will be performed and when checklists should defer to aircraft control. Also consider discussing what each crewmember's duties shall be in this situation.

VFR APPROACH BRIEFING

This will be a (normal/short field/soft field) approach and landing on Runway _____.

We will enter _____ (left downwind, etc.) with a traffic pattern altitude of _____ feet.

Our touchdown point is _____, and we plan to exit the runway to the (Left, Right) on taxiway/runway _____.

We will go-around at or below 300 feet AGL if we are not on a stabilized approach.

VFR Approach Briefing Amplified Discussion

1. **This will be a (normal/short field/soft field/other) approach and landing on Runway _____.**

Check that the desired type of approach and landing is discussed and include what runway the approach and landing will take place on. This avoids using the wrong approach and landing procedure or performing the procedure incorrectly. This also helps ensure the correct runway is utilized.

2. **We will enter _____ (left downwind, etc.) with a traffic pattern altitude of _____ feet.**

Verify the plan to join the traffic pattern. Entry procedures could be anything from overflying the airfield at least 500' above traffic pattern altitude to transition to the other side of the airfield to joining a straight-in approach at a towered airport. Verify the initial altitude to fly in the traffic pattern. This will ensure awareness of what the plan is when arriving in the terminal area around the airport which will avoid undesired aircraft states like turning the wrong direction or flying into airspace without clearance.

3. **Our touchdown point is _____, and we plan to exit the runway to the (Left, Right) on taxiway/runway _____.**

Verify the planned touchdown point on the runway. This briefing provides for intention about where the airplane will be directed to on the runway, and it also allows for more time to visualize and plan for the target touchdown point. Which in turn will aid in better awareness and management of the energy of the airplane. Verify which taxiway or runway will be planned for exiting the landing runway and ensure the direction of turn to exit is correct given the intended destination on the airport. This enhances situational awareness and in conjunction reduces risk for runway incursions or unnecessary delays.

4. **We will go-around at or below 300 feet AGL if we are not on a stabilized approach.**

Verify the intention that if the approach is not stabilized by the arrival of 300 feet above ground or if the approach becomes destabilized below 300 feet above ground, a go-around is the only option. Stabilized approaches are key to ensuring the airplane is setup for a successful approach and landing. This briefing prepares the mental state to intentionally mitigate the risks of faulty approaches and landings by setting the go-around as the only option during faulty approaches and landings.

IFR APPROACH BRIEFING

- NAME THE APPROACH (Ensure Current)
 - A** ATIS / AWOS
 - M** MARKER BEACONS
 - I** IDENTIFY NAVAIDS
 - C** COURSES
 - E** ENTRY
 - A** ALTITUDES
 - T** TIME
 - M** MISSED APPROACH WAYPOINT & PROCEDURE
 - S** SAFETY OF FLIGHT

NOTE

The approach should be fully briefed before flight to include applicable NOTAMs. Refer to standard operating procedures for further guidance.

IFR Approach Briefing Amplified Discussion

Included among the areas to be addressed while preparing for an IFR flight should be a review of, at a minimum, the most likely approach at the destination. Therefore, time should be taken before the flight to review the approach chart in its entirety.

Before reviewing any other material, charts should be:

- Identified by their procedure name to include the navaid(s) used, runway, and airport.
- Verified for currency
- Checked for applicable NOTAMs and adjusted as appropriate

To fully review the approach during preflight preparation, a complete familiarization of the individual sections of the approach chart is key. A best practice would be to move through these sections with a left-to-right, top-to-bottom scan. The sections to review include the:

- Top margin identification section
- Bottom margin identification section
- Pilot briefing information section
- Plan view section
- Profile view section
- Landing minimums section
- Airport diagram section

An inflight approach briefing shall begin with a review of:

- Local weather (ATIS, AWOS/ASOS, D-ATIS)
- Approach(s) and runway(s) in use

- NOTAMs
- Terrain
- Surface conditions
- Aircraft performance parameters
- Arrival delays
- Complete traffic picture

Once these items are reviewed, a decision is made on the safety and suitability of executing the approach and of the situation as a whole. If the decision is made to continue with the approach, then the formatting of what is briefed becomes approach specific.

The briefing shall additionally act as a checklist whereby all items are properly configured. To facilitate the proper preparation in briefing the approach, the following memory aid/checklist should be utilized.

- NAME THE APPROACH - The briefing begins by naming the approach to ensure that the proper approach is briefed.
 - A** ATIS / AWOS/Communication - Brief the weather picture by obtaining the latest weather information, and if available, runway and approach in use. Verify that the appropriate communication frequencies have been entered.
 - M** MARKER BEACONS - The marker beacon audio control is selected on.
 - I** IDENTIFY NAVAIDS - The applicable NAVAIDS should be tuned and identified. If GPS navigation is to be utilized, then verify that there are no GPS related alerts and that the appropriate RNP exists. Also, if GPS is the nav source verify that the procedure is properly loaded.
 - C** COURSES - Brief all courses to be flown, and where and how the changes will occur.
 - E** ENTRY - Brief how the approach will begin. (i.e., feeder route, initial approach fix, procedure turn, vectors to final etc.)
 - A** ALTITUDES - Brief all altitudes (Initial, Intermediate, Mandatory, MDA or DA) to be flown, and where and how the changes will occur.

- T** TIME - Brief what time will determine the transition from the final approach fix to the missed approach point if required. In absence of an applicable time, brief the distance.
- M** MISSED APPCH PT. & PROCEDURE - Brief the Missed Approach Point (Waypoint, DME distance, on Glide Slope at DA, etc...) and the missed approach procedure. Brief aircraft configuration changes for the missed approach.
- S** SAFETY OF FLIGHT - Brief any pertinent approach specific items and associated appropriate actions.

For additional reference, refer to the Instrument Procedures Handbook page 4-42 for an example of a typical approach briefing set in a crew environment.

- Example Briefing

ILS 7 ORL

| | |
|------------------|---|
| ATIS/Com | Zulu/Tower 118.7 |
| Marker | Marker Audio On |
| Ident | I-ORL 109.9 |
| Course | Inbound Course 073° |
| Entry | Vectored |
| Altitudes | 2000, 309 |
| Time | Optional |
| Missed | MAP at 309 on GS, Climb on R-066 to MSHEL Cross MSHEL at 1500, Then Climbing Left turn to 1600 and 020° to R-049 to OVIDO and hold. |