

**CHAPTER 1
CREW COORDINATION PROCEDURES**

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INTRODUCTION

This chapter describes some of the standard operating procedures for the operation of the BSU Piper PA28R200 Arrow, with the goal of maintaining the safest flying and training environment possible. These guidelines and procedures have been established using a CRM approach and are designed to provide a high level of safety in both single and multi-pilot operations.

DEFINITIONS and ABBREVIATIONS

- PF – Pilot Flying (pilot actually manipulating the flight controls)
- PMF – Pilot Monitoring Flight (pilot who, while not actually manipulating the controls, actively monitors the flight)
- PUI – Pilot Under Instruction
- PIC – Pilot In Command (pilot who is in charge of the flight, regardless of who is the PF)
- SOP – Standard operating procedure
- CFI – BSU Authorized FAA Certificated Flight Instructor
- SP – Student Pilot
- PP – Private Pilot
- CP – Commercial Pilot
- AKA – also known as
- ASAP – as soon as possible
- HDG – heading
- ALT – altitude
- ≈ - approximately
- APV – approach with vertical guidance, a precision-like approach that provides glidepath information, but that is still technically a non-precision approach per ICAO (See AIM)
- M/P/T – mixture/props/throttle (right to left, the proper order, generally, to increase power in aircraft with constant speed propellers)
- T/P/M – throttle /props/mixture (left to right, the proper order, generally, to decrease power in aircraft with constant speed propellers)
- Chairflying (Dry time) – Practicing checklist flows and procedures on the ground in either:
 - An actual airplane (pretending to move controls and switches but NOT actually moving them or activating any aircraft systems)
 - A simulator
 - A cockpit mockup
- Flow – a way to execute checklists and SOPs mainly from memory (with some specific exceptions) where the sequence logically “flows” from one step to the next
- Checklist – A checklist is NOT a do list (with some specific exceptions) but primarily a written reference to verify a flow has been performed correctly and to catch any items that may occasionally be missed due to imperfection of human memory.

PIC AUTHORITY

Regardless of who is the PF, PUI or the PMF at any particular moment, the flight crews are reminded that ultimately the BSU designated CFI is the PIC.

When the situation demands, the CFI will take any action necessary to ensure the safe conduct of the flight, and the PF/PUI will comply with the PIC instructions immediately. This does not preclude the other crewmember from making suggestions or asking questions, if appropriate to the situation.

In the situations where there are two CFIs onboard, the most senior CFI will be the PIC of the flight, unless otherwise agreed to before the flight.

CAUTION

BSU Flight Instructors are the PIC on any dual flight training event and are therefore responsible for the safe outcome of the flight. At anytime, during emergencies or otherwise, the CFI/ PIC may take the flight controls from the PF. The PF/PUI shall relinquish controls without reservation. The CFI/PIC, at a later time, will choose the appropriate moment to explain the decision, if necessary.

SINGLE vs. MULTI-PILOT OPERATIONS

During training operations the procedures and maneuvers will be completed by the PF/PUI, with the pilot acting as a single pilot. The expectation is that the PUI is trained to operate entirely without assistance as a single pilot, in accordance with the latest FAA AMEL Commercial PTS.

This, however, does not preclude the option or, in certain circumstances, the necessity for the crew to act as a coordinated team. The flight crew is expected to adhere to the following procedures at all times. Where this is deemed not possible, sound crew judgment shall be used.

The CFIs have the flexibility to practice CRM and crew coordination procedures, as appropriate, to introduce the PUI to multi-cockpit environment, as long as the PUI single pilot competence is not compromised, and the overall training goal of single pilot competence is achieved.

While not relinquishing in any way their PIC authority and responsibility, the CFIs are reminded that the PUIs are training to be future PICs. *Training should be conducted in such a manner that the PUI acts and thinks in all aspects of flight as if s(he) is the PIC, rather than in a manner that reflects the “I am just a student” or “Passenger in Command” mentality.*

CHECKLISTS, FLOWS and SOP EXPLAINED

Proper and accurate execution of flows and checklists is a hallmark of a professional pilot.

As such, a professional pilot realizes that human memory cannot be entirely relied upon, thus written checklists are a necessity. Committing procedures to memory in the way of a flow is an excellent way to speed up checklist execution, as long as verification using written checklists is performed, and memory limitations are realized and respected. The majority of crew-caused accidents resulting in aircraft loss can be attributed to not following checklists and/or standard operating procedure (SOP). As such, flows and checklists complement each other, and together they constitute a complete procedure execution and verification system.

Checklist methodology may be addressed from two different angles:

HOW the flows and checklists are performed and WHO performs the flows and checklists

How the checklists are performed depends on the type of checklist methodology used, and does not depend on which pilot, or how many pilots, perform a particular checklist. One pilot could perform all required checklist items, including verification, or two pilots may perform the same checklist, dividing the workload, and creating redundancy in the process of checking each other. Airline crews cross-check each other during checklist execution to specifically prevent missing any checklist items.

Who performs a checklist depends on the type of checklist, particular operation, safety and efficiency considerations and organizational rules and procedures.

HOW checklists are performed

Checklist items and aircraft controls

A control can be a lever, a switch, a toggle, a wheel, a knob, any other moveable aircraft control or a combination thereof. An item can be an action to be performed at the appropriate time on the checklist, or a combination of a specific control and a particular action to be performed on that control. From this point forward, the words “control” and “item” in conjunction with checklists and SOPs will be used interchangeably to mean any and all of the above, unless otherwise specified.

Checklist action

Action is taken on a particular checklist item, such as SET, CHECKED, VERIFIED, etc. These terms are explained below.

Checklist flow

Checklist items are performed by memory, in logical order of execution. Procedural steps are completed in such a manner as to “flow” from one area of the cockpit to the next in a logical manner. A necessary checklist ITEM is identified, and then the appropriate ACTION is performed. This cycle is then repeated for the next item.

Note that a checklist flow is a concept, NOT a stand-alone checklist execution methodology. A flow is only half of a checklist execution method, with the other half being verification. All flows must be verified with the checklist IN-HAND. *Performing an unverified flow is unacceptable during normal operations.*

NOTE

All BSU Aviation Checklists shall be verified with the checklist in-hand.

Checklists containing solid horizontal lines

Some checklists contain a solid horizontal line to divide them into logical segments that still fall within the same checklist. Perform the checklist flow down to that line. Time permitting, verify the items down to the line with the checklist in-hand. Perform the rest of the checklist flow after the line, then verify the entire checklist or the remainder of the checklist, as appropriate, thus completing the checklist.

Deferring checklist items

The danger of deferring a checklist item is that the item will be forgotten and never acted upon later. This can (and often does) result in situations like improper landing configuration, fuel starvation and gear-up landings. The checklist flows have been designed to minimize the need for deferring any critical item. It is recognized that occasionally deferring an item may be operationally necessary, but should be avoided whenever possible.

Left to Right, Top to Bottom Flow Concept

Some flows must be performed in a precise sequence. Other flows may offer a choice of order in which to perform the necessary items. As pilots are used to reading from left to right/top to bottom, it is logical to take the same approach to flows when the situation permits.

The flows that lend themselves particularly well to this idea are setting/checking the flight instruments and setting/checking the avionics/transponder prior to takeoff. By using a familiar left to right/top to bottom approach, potential for missing items is minimized.

Do/Verify Checklist Execution Method

Sometimes also referred to as a Flow/Confirm method; Checklist items are performed as a logical flow by memory, and then verified with the checklist in hand.

Read/Do Checklist Execution Method

Checklist items are read off the checklist one by one, and performed in that order.

NOTE

The BSU PA28R200 Arrow Normal and Emergency Checklists will be accomplished using the Do/Verify Method.

The BSU PA28R200 Arrow Abnormal Checklists will be accomplished using the Read/Do method.

Checklist interruption and restart

If a checklist flow is interrupted, it MUST be restarted from the beginning.

Checklist start/completion

Checklist name is stated prior to checklist execution. After the checklist is executed in its entirety, the fact is acknowledged by stating that the appropriate checklist is complete (refer to the Callouts section of this chapter).

Challenge/Response verification

A method of checklist verification that is applicable to both Do/Verify and Read/Do methods of checklist execution. An item on a checklist is challenged, the correct action is performed (read/do method) or has already been performed (do/verify method) and then is verified with the checklist in hand, with the proper response being verbalized.

Memory Aids to checklist execution

While not a replacement for proper checklists, memory aids (mnemonics) such as acronyms can be extremely helpful in assisting with efficient checklist execution (i.e. GUMP for before landing, ABCD for engine emergencies – consult a CFI).

Specific item condition to be stated in verification

Whenever possible, the checklists will indicate the actual action to be performed rather than a generic response. Some checklist items (such as flaps, mixture, lights, etc.) may have multiple possible conditions indicated by the use of words such as “SET” and/or “AS REQUIRED” on the checklist. They are not specific actions or verification responses, but rather indicate that the flaps, for example, are to be set as appropriate to the conditions. During the verification phase, the response must indicate the specific condition to which the control has been set.

- **SET** – means the control is set to the appropriate position for the conditions. Specify during verification what the control is (to be) specifically set.
 - “FLAPS SET 25°” (correct response) rather than just “FLAPS..... SET” - an incorrect verification response.
- **AS REQUIRED** – means the control is adjusted as required for the conditions.
 - “MIXTURE..... FULL RICH” or “MIXTURE..... LEANED FOR TAXI”; By itself, “as required” is never an appropriate verification response.
- **CHECKED** – generic response meaning the control is evaluated to be operational, and also VISUALLY checked, to the extent possible, to be in the correct position.
 - “PROPELLER AND SPINNER.....CHECKED” indicates the propeller condition and operational status has been evaluated appropriately.
 - “TRIM..... SET for TAKEOFF” in the cockpit, then visually” CHECKED” to be in the correct position on the elevator.
 - “THROTTLE IDLE.....CHECKED” means that throttle idle test has been completed.
- **IDENTIFIED** – means the proper control for the desired action is identified.
 - “FLAPS..... IDENTIFIED”; Flap lever is positively identified prior to retraction of flaps on the ground, as opposed to the landing gear lever. Such identification can prevent accidental gear retraction or other incorrect reconfiguration.
- **VERIFIED** – means the control is verified to be the desired control and not something else.
 - “FLAPS VERIFIED”; as the lever is verified to be the flap, and not the landing gear or other lever.
- **CONFIRMED** – means the control is VISUALLY confirmed to be in the correct position.
 - “FLAPS..... CONFIRMED UP”; after visually confirming by looking at the flaps on the wings that they have fully retracted.

WHO performs the checklists

The methodologies described above are appropriate to both single and multi-pilot operations. Unless instructionally beneficial or otherwise called for by particular situation (see the previous section), during normal BSU training operations *the PF / PUI will perform all flows and checklists as if s(he) were alone*. The PMF / CFI may elect to handle radio communication, if appropriate, to allow for uninterrupted flow to be completed by the PF.

The verification of the items performed will be accomplished using the **Challenge/ Response** methodology. When performing Normal / Emergency checklists as a single pilot during training operations, the PUI will first perform the appropriate flow, then use the written checklist to verify the items performed, by challenging each item and indicating the appropriate response.

During actual emergencies, the CFI / PIC is responsible for performing and verifying the emergency box items, regardless of who is actually flying the airplane.

EXAMPLES of checklist execution

Single Pilot Checklist Execution

During Normal procedures, PF / PUI performs the Before Landing Checklist as if s(he) were alone, using the Do/Verify method:

1. **PF** performs the flow, by memory, to include all necessary checklist items
2. **PF** states: "Before Landing Checklist"
3. **PF**, with the written checklist visible/readable, verbally and visually verifies each item on the checklist. (Challenge: "Mixture"; Response: "Full Rich", etc.)
4. Any missed items are identified and performed during the verification process.
5. **PF** states: "Before Landing Checklist Complete"

During Abnormal procedures, PF / PUI performs the Electrical Discharge In-Flight checklist, using the Read/Do method:

1. **PF** states: "Electrical Discharge In-Flight Checklist"
2. **PF** reads ONE checklist item from the visible/readable checklist.
3. **PF** performs the action, then verbally and visually verifies the completed item. (Challenge: "Avionics Master Switch, both sides" Response: "OFF", etc.)
4. **PF** performs steps 2 and 3 on the remainder of the checklist items.
5. **PF** states: "Electrical Discharge In-Flight Checklist Complete"

Multi-Crew Checklist Execution:

During Normal procedures, PF and PMF perform the Before Landing Checklist together, using the Do/Verify method:

1. **PF** performs the flow, by memory, to include all necessary checklist items.
2. **PF** states: “Before Landing Checklist”
3. **PMF**, with the written checklist in-hand, challenges one item at a time. (Challenge: “Mixture”, etc.)
4. **BOTH PF AND PMF** visually verify the item in question (checking that the both mixtures are indeed full rich).
5. After verification, **PF** responds to the challenge. (Response: ”Full Rich”, etc.)
6. Next item is challenged and verified, in accordance with Steps **3** through **5**.
7. Any missed items are identified and performed during the verification process.
8. **PMF** states: “Before Landing Checklist Complete”

SOP – Standard Operating Procedures

Introduction

It must be recognized that an airplane cannot be operated safely and efficiently by simply reading a checklist, with some very specific exceptions. Multiple procedures must be accomplished from memory to increase safety and efficiency, and to minimize head-down time in the cockpit. Such procedures are often limited as to the time available for their execution, or are coupled to other tasks occurring simultaneously, whereas the pilot may reach task saturation, thus committing errors or neglecting collision avoidance.

SOP Concept

Standard operating procedures are developed to be executed from memory for such tasks where it would be impractical, unsafe or otherwise inappropriate to spell out each item of the procedure on a checklist. They vary from relatively long procedures that must be executed smoothly, in a timely manner and in the proper sequence (i.e. Engine start), to such safety related items that must be done every time aircraft is moved (i.e. Clearing taxi areas). You will find SOPs used throughout this manual.

SOP knowledge and practice

As is with any memory flow, SOP proficiency can only be obtained while practicing, chairflying (in the actual airplane while parked on the ground, a simulator, in front of a poster or similar device). SOP execution must become automatic so attention is not taken away from controlling the aircraft. This requires significant time spent practicing outside of just flying the airplane. All flight crews shall be thoroughly familiar with and demonstrate complete SOP knowledge.

SOPs during flows and checklist execution

SOPs are explained in the appropriate sections of expanded checklists in this manual. SOPs must be executed from memory.

- Where appropriate, the printed checklists may indicate an applicable multi-step SOP to be executed in *CAPITAL ITALICS*.
 - Example: *ENGINE START (SOP).....COMPLETED*

- The ► symbol will be used in this manual to indicate where a SOP must be performed, but that is not included on the printed checklist itself.
 - *Example:* ► *TAXI AREA*.....*CLEAR*
- Whenever an SOP involves multiple steps or an explanation, SOP descriptions may be enclosed in a distinct box for easy identification; it may be followed by expanded SOP with explanations of each step when warranted. The items in this box are not included on the printed checklist itself.
 - *Example:*

SOP Name

Step 1*Action*
Step 2..... *Action*

SOP Name, EXPANDED

Step 1*Action*
Step1 action explained.

Step 2.....*Action*
Step 2 action explained.

- In-flight SOP memory flows that are not part of the printed checklist, and that are found in appropriate sections of this manual, may be presented as a grey box followed by the necessary steps in italics and expanded explanations, as appropriate.
 - *Example:*

PROCEDURE NAME (SOP)

STEP 1.....*ACTION*
STEP 2.....*ACTION*

STERILE COCKPIT PROCEDURES

Sterile cockpit means limiting the conversation between crewmembers to only those items that are operationally and/or instructionally necessary for the current phase of flight.

Sterile cockpit procedures shall be adhered to during any of the following:

- Ground taxi
- Takeoff, landing, traffic pattern and terminal operations
- Anytime at or below 1,000’ AGL
- During any phase of Instrument Approaches
- During any practice area maneuvers

POSITIVE EXCHANGE OF FLIGHT CONTROLS

Any flight control exchange should be clearly verbalized using the three-way positive flight control exchange philosophy. If the autopilot is used, it should be stated as such during the control exchange as to prevent any surprise to the new PF who might not have been aware of the autopilot usage.

NOTE

In case of a PUI who fails to take immediate action in situations requiring a safety-related go-around, the PIC / CFI shall take controls and proceed with the go-around. Delaying a go-around and last second attempts to “salvage” a non-emergency landing gone bad is prohibited. This is not to be misconstrued as not letting a PUI learn from his/her mistakes, or limiting the CFI ability to setup training scenarios, but only to remind PICs / CFIs not to let an error, taken too far, develop into a dangerous situation.

CIRCUIT BREAKER RESET POLICY

Introduction

Experience through numerous incidents/accidents shows that resetting a popped (out) circuit breaker (even once) to see if it pops again may lead to an inadvertent fire, turning a relatively minor problem (loss of a particular electrical circuit) into a major emergency (loss of aircraft/personnel). The following guidance is designed to minimize risk and is general in nature. It is not to be used as a substitute for sound judgment or manufacturer-approved emergency procedures contained in the appropriate Aircraft Flight Manual.

Popped circuit breaker discovered during preflight

Do not reset the breaker. Notify a dispatcher, who will then notify maintenance personnel. The aircraft is considered unairworthy until appropriate action is taken and Maintenance deems the aircraft fit for return to service.

Circuit breaker pops during flight

Do not immediately reset the breaker. Consider if the affected electrical circuit is necessary for a safe conclusion of the flight, and what alternative courses of action are available. If at all possible, avoid resetting the circuit breaker. Obtain ATC assistance and divert to the nearest appropriate airport if the situation demands.

STANDARD CALLOUT PROCEDURES

All BSU callouts are considered mandatory SOPs and are listed below. They will not be specifically repeated in descriptions of maneuvers and procedures, except where it is deemed appropriate to do so for clarity or additional emphasis.

Training flights

During normal training events the PF/PUI will be operating as a single pilot, and will make the standard callouts indicated below.

Non-training flights / Urgent situations / Emergencies

During non-training flights, as well as during urgent or emergency situations, flight crews will work as a team utilizing previously described crew coordination procedures for a successful flight outcome. The PIC will designate the pilot who will make all required callouts.

Callouts - All Operations

Pilot action:	Pilot calls out:
<p><i>Prior to performing any checklist:</i> Verify the correct checklist is about to be performed.</p> <p>Example: Verify the correct checklist is about to be performed prior to execution of Before Engine Start Checklist.</p>	<p>“[Appropriate name] Checklist”</p> <p>Example: “Before Engine Start Checklist”</p>
<p><i>On completion of any checklist:</i> Verify that all items on the appropriate checklist are complete.</p> <p>Example: Verify that all items on the Before Engine Start Checklist are complete.</p>	<p>“[Appropriate name] Checklist Complete”</p> <p>Example: “Before Engine Start Checklist Complete”</p>
<p><i>During aircraft control exchanges on the ground and in the air:</i> Use three-way positive control exchange technique.</p>	<p>Pilot relinquishing controls: “Your controls” Pilot accepting controls: ”My controls” Pilot relinquishing controls: “Your controls”</p>
<p><i>When encountering a horizontal line on a checklist:</i> Verify that all checklist items down to the line have been performed.</p>	<p>“Down to the line”</p>
<p><i>When deferring a checklist item to be performed at a later time (avoid whenever possible)</i></p> <ol style="list-style-type: none"> 1. State which item has been deferred during the flow 2. State that the checklist has been deferred. 3. When appropriate, perform the deferred items. 4. Verify the checklist with the checklist in hand. <p>Example:</p> <ol style="list-style-type: none"> 1. PF decides to defer flap deployment while completing the rest of the flow 2. PF defers the checklist 3. PF deploys flaps when appropriate 4. PF verifies the checklist with the checklist in-hand 	<ol style="list-style-type: none"> 1. “[Item name] deferred” 2. “[Checklist name] checklist deferred” 3. “[Item name] [action performed]” 4. “[Checklist name] checklist complete” <p>Example:</p> <ol style="list-style-type: none"> 1. “Flaps deferred” 2. “Before landing checklist deferred” 3. “Flaps are down” 4. “Before landing checklist complete”

<p>After the PUI receives specific altitude /heading/airspeed instructions from the CFI / PIC: State the new altitude, heading and airspeed, as appropriate.</p> <p>Example: The CFI instructs the PUI to climb to 3,500’ MSL and simultaneously make a right turn to the heading of 060°. The PUI confirms the instruction.</p>	<p>“Climb/descend [new altitude], left/right turn to [new heading], maintain [new airspeed]</p> <p>Example: CFI: “Make a right climbing turn to 3500, heading 060” PUI responds: “Climb to 3500, right to 060”</p>
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Callouts - Ground Operations

Pilot action:	Pilot calls out:
<p>Prior to engaging engine starter: Clear the area to the left, center, right and behind, as appropriate. Open the window.</p> <p>Pause and listen for any response while continuing to visually clear propeller and aircraft area.</p>	<p>Loudly, so it can be heard clearly outside: “Clear prop!” “Left / center / right / behind is clear”</p>
<p>Prior to moving aircraft from a parked position: Clear the area to the left, center and right</p>	<p>“Taxi area is clear”</p>
<p>Prior to turning, crossing an intersection or a runway: Clear the area to the left, center and right</p>	<p>“Left, center, right is clear”, as appropriate.</p>
<p>Prior to taking a runway for departure: Verify there is no aircraft on final approach, or still on the runway of intended use.</p>	<p>“Final approach is clear, runway is clear”</p>
<p>After takeoff power has been applied: Verify on the correct runway. (e.g. RWY 32)</p> <p>Verify full power is being developed. Check that engine instruments are normal. Check that airspeed indicator is functioning.</p>	<p>“32 on the paint, 32 on the heading, 32 on the compass” “Power indications - normal” “Engine instruments - normal” “Airspeed - alive”</p>
<p>Upon reaching Vr: Check airspeed and rotate.</p>	<p>“[States the actual rotation airspeed], rotating”</p>
<p>Prior to retracting flaps on the ground: The PF will place a hand on the flap lever after positively identifying it.</p> <p>The PMF will verify that PF hand is on the flap lever.</p> <p>The PF will retract the flaps only after hearing the PMF verification</p>	<p>PF: “Flaps IDENTIFIED”</p> <p>PMF: “Flaps VERIFIED”:</p> <p>PF: “Flaps set to [actual degrees]”</p>

<p>Prior to any takeoff: Verify that trim is set for takeoff. Verify that flaps are set for takeoff.</p>	<p>“Trim set for TAKEOFF” “ Flaps set to [actual degrees] ”</p>
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Callouts – Flight Operations

Pilot action:	Pilot calls out:
<p>After rotation: Verify positive climb rate is being achieved. Commence retracting landing gear, as appropriate to the runway and actual/simulated obstacles. Verify landing gear is retracting normally and is up and stowed, with no gear warning light.</p>	<p>“Positive rate” “Out of usable runway, gear coming up” “Gear is in transit / Gear is up and stowed”</p>
<p>After takeoff with simulated or actual obstacles: Retract flaps as specified in the appropriate procedure.</p>	<p>“Clear of obstacles, flaps up”</p>
<p>Prior to making a turn in the traffic pattern: Clear the area both in the direction of and opposite to the turn.</p>	<p>“Left/ right/downwind is clear”, as appropriate</p>
<p>Whenever manipulating the landing gear: Commence extending the landing gear. Commence retracting the landing gear. Verify landing gear is extending normally and, once the cycle is complete, is down and locked, with 3 green lights and no gear warning light. Prior to a landing, verify landing gear is down and locked at least a total of three times (this includes the initial deployment and the two-way gear verification): <ol style="list-style-type: none"> 1. On downwind or equivalent 2. On base leg or equivalent 3. On final approach 4. At any other time, as appropriate to the situation. Perform two-way gear verification challenge and response on final approach during any dual flight, no later than short final.</p>	<p>“Gear coming down” “Gear coming up” “Gear is in transit / Gear is down and locked, 3 green, no red” “...3 green, no red” PF/PUI: “Verify gear is down” PMF/CFI: “Gear is down, 3 green, no red” or PMF/CFI: “Go-around” (if the landing gear is not down and locked, abnormal gear indication exists, or PF fails to complete gear verification)</p>

<p><i>At or below 1000' AGL, after downwind midfield (or equivalent) and prior to 300 AGL on final approach:</i> Verify GUMP check (SOP) is complete</p>	<p>“Gas” – verify fuel pump on, proper tank selected “Undercarriage” – 3 green, no red “Mixture” – full rich “Prop” – full forward</p>
<p><i>Prior to turning on final approach in the traffic pattern:</i> Verify there is no aircraft on final approach or on opposing base leg.</p>	<p>“Final approach clear, opposite base clear”</p>
<p><i>Any time on final, if a go-around is warranted:</i> PF/PUI will initiate an immediate go around when situation requires, or when prompted to do so by PMF/CFI.</p>	<p>PMF/CFI initiated go-around situation: PMF/CFI: “Go-around” PF/PUI: “Going around” or PF/PUI Initiated go-around situation: PF/PUI: “Going around” PMF/CFI: “Roger”</p>
<p><i>Prior to performing any maneuvers:</i> Verify pre-maneuver checklist items. Conduct clearing turns.</p>	<p>“Pre-maneuver checklist complete” “Clearing turns complete”</p>

Callouts - Instrument Procedures

Pilot action:	Pilot calls out:
<p><i>On precision (and precision-like) approach:</i> Note when the localizer / CDI needle starts moving, indicating positive course guidance. Note when the glideslope needle starts moving, indicating positive vertical guidance. Note when glideslope needle passes through last dot approaching desired glideslope intercept (typically, your FAF)</p>	<p>“Localizer (or CDI) alive” “Glideslope alive” “Glideslope – 1 dot”</p>
<p><i>On non-precision approach:</i> Note when the appropriate needle begins indicating positive course guidance, if using vectors to final. Note when CDI passes through last dot approaching desired course intercept. Approx. ½ mile from FAF</p>	<p>“Localizer (or CDI) Alive” “CDI - 1 dot” “FAF – half mile”</p>
<p><i>On any instrument approach:</i> When at 500 feet above DA/MDA When at 200 feet above DA/MDA</p>	<p>“500 above” “200 above”</p>

<p>When at 100 feet above DA/MDA</p> <p>When at DA/MDA and/or MAP</p> <p>If 91.175 requirements are met, continue the approach.</p> <p>Otherwise, execute missed approach.</p> <p>When at 100' above TDZE: If 91.175 requirements are met, continue to the landing runway.</p> <p>Otherwise, execute missed approach.</p>	<p>“100 above”</p> <p>“At DA/MDA” and/or “At MAP”</p> <p>“Approach lights” and/or “Going visual”</p> <p>“Going missed”</p> <p>“Going Visual” and/or “Landing”</p> <p>“Going missed”</p>
<p><i>Deviations during an instrument approach:</i> PF makes the following callouts while correcting and/or going missed, as appropriate. PMF makes the callouts if required, and in case of PF failing to do so.</p> <p>Localizer / CDI - off by ½ scale; Glideslope – off by 1 dot;</p> <p>Airspeed +/-10 knots or more of the desired KIAS;</p> <p>Vertical speed in excess of 1,000 FPM below 1,000' AGL;</p> <p>In situations where the above callouts are made by the PMF, the PF must respond as follows:</p>	<p>“Localizer (or CDI) – half scale “ “Glideslope – 1 dot”</p> <p>“Airspeed is [state actual value]”</p> <p>“Vertical speed is [state actual value]”</p> <p>PMF: “[states the deviation, as above]” PF: “Correcting” and/or “Going Missed”</p>
<p><i>Enroute operations:</i> Note when passing within 1000' of the desired level-off altitude during climbs and descents.</p> <p>Example 1: While climbing through 2,000' MSL to 3,000' MSL</p> <p>Example 2: While descending through 4,000' MSL to 3,000' MSL</p>	<p>“[Altitude passing through] to [Level-off altitude], 1000' to go”</p> <p>Example 1: “2000 to 3000, 1000 to go”</p> <p>Example 2: “4000 to 3000, 1000 to go”</p>