



**Waterloo Wellington
FLIGHT CENTRE**

SOP-PA44

Standard Operating Procedures – PA44

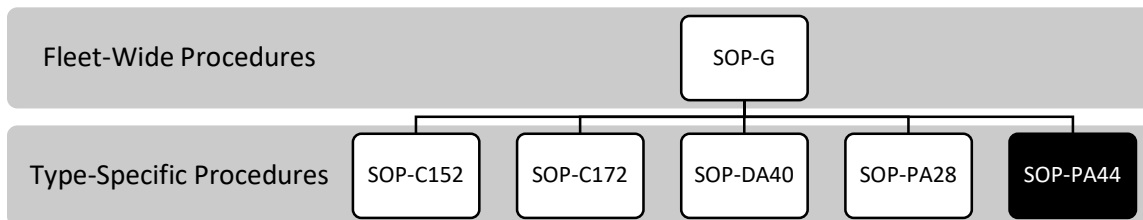
Version 3 – June 2022

SECTION 0 - FRONT MATTER

0.1 - INTRODUCTION

To ensure safety and regulatory compliance, flights must be conducted in accordance with regulations, ATC clearances, personal capability, aircraft operating limitations described in the applicable Pilot Operating Handbook, and WWFC's Flight Training Operations Manual. WWFC has attempted to ensure that the information contained here does not contradict anything listed in any of our fleet Pilot Operating Handbooks, but if there is any disagreement, **the Pilot Operating Handbook is the final authority.**

0.2 - SOP ORGANIZATION CHART



0.3 - VERSION INFORMATION

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SECTION 1 - CONTENTS

SECTION 0 - FRONT MATTER	2
0.1 - INTRODUCTION.....	2
0.2 - SOP ORGANIZATION CHART.....	2
0.3 - VERSION INFORMATION	2
0.4 - ACRONYMS.....	5
SECTION 1 - NORMAL PROCEDURES	6
1.1 - GROUND OPERATIONS.....	6
1.1.1 - Walkaround.....	6
1.1.2 - Before start.....	6
1.1.3 - After start/taxi checklist amplified.....	6
1.1.4 - run up/ before takeoff.....	6
1.2 - FLIGHT MANEUVRRES.....	8
1.2.1 - Flight at reduced airspeed.....	8
1.2.2 - Full Stall – clean.....	9
1.2.3 - Approach To Stall* – landing configuration.....	10
1.2.4 - Steep turns	11
1.2.5 - Engine Failure (cruise) and maneuvering with one engine inoperative	12
1.2.6 - Engine Failure during Overshoot.....	13
1.2.7 - VMC demonstration (Sim only)	13
1.2.8 - One Engine Inoperative Arrival, Approach and Landing	14
1.2.9 - ILS or LPV Approach- Two Or One Engine(s).....	15
1.2.10 - Non-Precision Straight-In Approach Two or One Engine(s).....	16
1.2.11 - Circling Approach (two engines).....	17
1.3 - APPROACH, PROCEDURE TURN, AND HOLDING POWER SETTINGS GUIDE	18
SECTION 2 - STANDARD AVIONICS CONFIGURATION	19
2.1 - VFR – DEPARTURE AND ARRIVAL	19
2.2 - VFR – ENROUTE	19
2.3 - IFR – DEPARTURE	19
2.4 - IFR – ENROUTE	20
SECTION 3 - NORMAL CHECKLIST	21
SECTION 4 - EMERGENCY PROCEDURES	23
SECTION 5 - PILOT BRIEFING CARD	34
SECTION 6 - ADDITIONAL CALLOUTS	35
SECTION 7 - PROFILES	37
7.1 - NORMAL TAKEOFF.....	37
7.2 - NORMAL LANDING	38
7.3 - NORMAL CIRCUIT.....	39

7.4 - ILS OR LPV – TWO ENGINES OR ONE	40
7.5 - NON-PRECISION WITH VERTICAL GUIDANCE – TWO ENGINES OR ONE	41
7.6 - CIRCLING APPROACH (TWO ENGINES).....	43
SECTION 8 - USE OF AUTOMATION _____	44
8.1 - GENERAL.....	44
8.2 - USE DURING AN EMERGENCY.....	45
SECTION 9 - ADDITIONAL BRIEFINGS _____	46
9.1 - IFR DEPARTURE BRIEFING EXPANDED	46
9.2 - IFR APPROACH AND LANDING BRIEFING EXPANDED	47
9.3 - HOLD BRIEFING.....	47

0.4 - ACRONYMS

Acronym	Definition
AFM	Aircraft Flight Manual
AGL	Above Ground Level
ASL	Above Sea Level
ATC	Air Traffic Control
DH	Decision Height
EFB	Electronic Flight Bag
FAF	Final Approach Fix
IFR	Instrument Flight Rules
KIAS	Knots Indicated Airspeed
KTAS	Knots True Airspeed
MAP	Missed Approach Point
MDA	Minimum Descent Altitude
MSA	Minimum Sector Altitude
PIC	Pilot in Command
POH	Pilot Operating Handbook
SID	Standard Instrument Departure
SOP	Standard Operating Procedure
TOC	Top-of-Climb
TOD	Top-of-Descent

SECTION 1 - NORMAL PROCEDURES

1.1 - GROUND OPERATIONS

1.1.1 - WALKAROUND

- 1) While battery is on – confirm all exterior lights are functional

1.1.2 - BEFORE START

- 2) Confirm voltage is at least 12 volts

1.1.3 - AFTER START/TAXI CHECKLIST AMPLIFIED

- 1) Manual Electric Trim Check –
 - a) Move the manual electric nose up
 - i) Ensure the trim wheel is moving in the correct direction
 - ii) Depress the A/P disconnect switch and ensure the trim wheel stops
 - b) Move the manual electric trim nose down
 - i) Ensure the trim wheel is moving in the correct direction
 - ii) Depress the A/P disconnect switch and ensure the trim wheel stops
 - c) Retrim to neutral
- 2) Preflight STBY Attitude indicator Check-
 - a) Depress and hold small button to the left of the wing adjustment until Green LED illuminate.

1.1.4 - RUN UP/ BEFORE TAKEOFF

- 1) Feather Check – with engine at 1500 RPM
 - a) One engine at a time
 - i) Bring the propeller control into the feather detent (max 500 rpm drop)
 - (1) Check for < 500 rpm drop
 - (2) Return to full fine
 - ii) Bring the propeller control to the feather detent again
 - (1) Check for increase in MP
 - (2) Return to full fine
 - iii) Bring the propeller control to the feather detent again
 - (1) Check for decrease in oil pressure
 - (2) Return to full fine
- 2) Propellers governor check
 - a) Bring both **propeller** controls back until the RPM stabilizes at 1800 RPM
 - b) Add one inch of MP and ensure the RPM remains stable at 1800 RPM
 - c) Reduce one inch of MP and ensure RPM remains stable at 1800 RPM
 - d) Return propeller control to full fine

- 3) Carburetor Heat check (One engine at a time)
 - i) Apply carburetor heat
 - ii) Observe drop in RPM
 - (1) Observe engine performance if the engine runs rough could indicate carb ice
 - iii) Remove carburetor heat
 - (1) RPM should return to 2000 RPM
 - (a) If it reads above 2000 RPM, carburetor ice was most likely

- 4) Alternator Output
 - a) Turn on all electrics
 - i) Observe ammeters sharing the load below 50 amp per side
 - ii) Ensure "low voltage" annunciator not illuminated
 - iii) Turn left alternator off – check right can take the load, "Alt inop" annunciation illuminated, "low bus voltage" not illuminated
 - iv) Turn left alternator on and right alternator off – check left can take the load, "Alt inop" annunciation lit, "low bus voltage" not illuminated
 - v) Turn both alternators on – check "Alt inop" annunciation not illuminated, "low bus voltage" not illuminated
 - b) Turn off unnecessary electrics

1.2 - FLIGHT MANEUVERES

1.2.1 - FLIGHT AT REDUCED AIRSPEED

- 1) Perform H.A.S.E.L. check
 - a) Engine
 - i) Carb ice check
 - ii) Fuel pumps on
 - iii) Cowl flaps as required
- 2) Establish an altitude to allow the maneuver to be completed no lower than 3000 feet AGL
- 3) Select a ground reference point and note the corresponding heading
- 4) Reduce the throttles to 14" MP (adjust as needed to maintain altitude and desired airspeed)
 - a) Apply back pressure to maintain altitude as the airplane slows down
 - b) Below 100 KIAS, propeller controls full forward
 - c) Slow the airplane to 72kts (1.3 V_{so} KIAS) add power as necessary.
 - d) Perform a turn while maintaining airspeed and altitude
- 5) Lower the gear, maintain 72kts. (VLE 140kts)
 - a) Adjust power to maintain altitude and airspeed
- 6) Set flaps 10°, maintain 72kts. (VFE 111kts)
 - a) Adjust power to maintain altitude and airspeed
 - b) Perform a turn while maintaining airspeed and altitude
- 7) Set flaps 25°, maintain 72kts. (VFE 111kts),
 - a) Adjust power to maintain altitude and airspeed
 - b) Perform a turn while maintaining airspeed and altitude
- 8) Set flaps 40°, maintain 72kts. (VFE 111),
 - a) Adjust power to maintain altitude and airspeed
 - b) Perform a turn while maintaining airspeed and altitude
 - c) Perform a descent to a desired altitude while maintaining airspeed
- 9) Recover:
 - a) Smoothly apply full throttles,
 - b) Retract flaps incrementally to 0°,
 - c) Gear up (below 109 KIAS)
- 10) Resume straight and level flight (reduce power)
- 11) "Cruise checklist"

1.2.2 - FULL STALL – CLEAN

- 1) Complete H.A.S.E.L. check
 - a) Engine
 - i) Carb ice check
 - ii) Fuel pumps on
 - iii) Cowl flaps as required
- 2) Select a ground reference to simulate a runway
- 3) Reduce the throttle to 15" MP
 - a) Apply back pressure to maintain heading and altitude as the airplane slows to approach speed
 - b) Through 100 KIAS, propellers- full fine
 - c) Reduce throttle to idle
 - d) Increase pitch attitude to induce a stall
 - e) Announce the indications of the stall (aural alert, buffet, loss of control effectiveness etc.)
 - f) Enter and call the "Stall"
- 4) Recover:
 - a) Smoothly apply full throttles,
 - b) Reduce the angle of attack,
 - c) Level the wings
- 5) Establish an attitude that return to altitude, heading and airspeed specified
- 6) Resume straight and level flight
- 7) "Cruise checklist"

1.2.3 - APPROACH TO STALL* – LANDING CONFIGURATION

*Recover at the first indication of a stall (warning horn or light, buffet or decaying control effectiveness)

- 1) Complete H.A.S.E.L. check
 - a) Engine
 - i) Carb ice check
 - ii) Fuel pumps on
 - iii) Cowl flaps as required
- 2) Select a ground reference to simulate a runway
- 3) Reduce the throttle to 15" MP
 - a) Apply back pressure to maintain heading and altitude as the airplane slows to approach speed
 - b) Below VLO (140 KIAS), extend the gear and verify "3 green"
 - c) Below VFE (111 KIAS), incrementally extend the flaps to 40°
 - d) Through 100 KIAS, propellers- full fine
 - e) Maintain straight and level flight (flight test item), or establish a stabilized 400 FPM descent at 75 KIAS (for practice)
 - f) Slowly reduce power to idle
 - g) Slowly increase pitch attitude to induce a stall
 - h) Announce the indications of the stall (aural alert, buffet, loss of control effectiveness etc.)
 - i) Call the "Stall"
- 4) Recover:
 - a) Smoothly apply full throttles,
 - b) Reduce the angle of attack and accelerate to minimize loss of altitude,
 - c) Level the wings
 - d) Retract flaps incrementally to 10°
 - e) Accelerate to 82 KIAS (VX), establish a positive rate of climb.
 - f) Retract flaps to 0°.
 - g) Retract gear after positive rate of climb, accelerate to 88 KIAS (VY).
- 5) Establish an attitude that return to altitude, heading and airspeed specified
- 6) Resume straight and level flight
- 7) "Cruise checklist"

1.2.4 - STEEP TURNS

- 1) Perform two 90° clearing turns
- 2) Select a ground reference point and note the corresponding heading for entry and exit
- 3) Set bug to entry heading
- 4) Establish an airspeed of 120 KIAS
- 5) Roll into a coordinated left or right 45° bank turn
- 6) Adjust pitch to maintain altitude
- 7) Adjust power to maintain airspeed
- 8) Begin the rollout approximately 20° prior to the desired heading (180° from entry)
- 9) Rollout on heading (adjust pitch) and without pause, roll into opposite direction of the previous turn
- 10) Adjust pitch and power to maintain altitude and airspeed
- 11) Begin the rollout approximately 20° prior to the entry heading
- 12) Resume straight and level flight
- 13) "Cruise checklist"

1.2.5 - ENGINE FAILURE (CRUISE) AND MANEUVERING WITH ONE ENGINE INOPERATIVE

- 1) The Instructor / Examiner simulates an engine failure (e.g. closing a throttle)
- 2) Recognize and call the simulated **“engine failure”** and maintain positive control
- 3) Perform initial memory items:
 - a) Maintain - Directional control/ altitude (if able) and appropriate airspeed as able depending on altitude
 - i) *If in a turn when engine failure occurs- roll wings level to deal with emergency*
 - b) Mixture – Full Fwd.
 - c) Propellers - Full Fwd.
 - d) Throttles - Full Fwd.
 - e) Flaps – Up
 - f) Gear – Up
 - g) Identify – Dead foot
 - h) Verify/Throttle – Reduce to ½ confirm no change
- i) **Cause Check**
 - i) Fuel Selector – On
 - ii) Carburetor Heat- On- Both engines
 - iii) Electric fuel pump- On
 - iv) Fuel Qty- Check
 - v) Oil Pressure and Temperature – Check
 - vi) Magneto Switches – On
- j) **Air Start (if scenario identifies it is possible)**
 - i) Throttle – Two full strokes then ¼ inch open
 - ii) Starter - Engage 10 seconds max.
 - iii) Throttle – Reduce power until warm
- k) **If engine does not start:**
 - i) Engine securing procedure (memory only)
 - ii) Throttle – Verify and Retard
 - iii) Propeller – Feather
 - iv) Mixture – ICO
 - v) Zero Sideslip
- l) **If Engine fails to start of altitude does not permit attempt:**
 - i) Engine securing procedure
 - ii) Power (Op. Engine) – As required
- 4) *For training purposes, if engine failure occurred during a turn; turn to the originally assigned heading at this point.*
 - a) *Otherwise, turn towards nearest suitable airport.*
- 5) Autopilot – engage
- 6) Confirm all steps have been completed accurately by confirming with the checklist all memory and non-memory items.
- 7) Contact appropriate ATC – Mayday call – Squawk 7700
- 8) Monitor the operating engine and adjust as necessary
- 9) Disengage Autopilot – Demonstrate coordinated flight with one engine inoperative

1.2.6 - ENGINE FAILURE DURING OVERTHOOT

- 1) Complete H.A.S.E.L. check
- 2) Perform a downwind check and lower the gear at appropriate speed
- 3) Establish a descent, at the full flap final approach airspeed in the landing configuration

- 4) Go-around

- 5) Simulated engine failure by retarding the throttle

- 6) Maintain Directional Control/ Pitch Attitude/ Airspeed
- 7) Mixtures – Full Fwd.
- 8) Props – Full Fwd.
- 9) Throttles – Full Fwd.
- 10) Flaps – Up
- 11) Gear – Up
- 12) Identify – Dead Foot
- 13) Verify/ Throttle – slowly retard and once verified, close throttle
- 14) Inoperative Engine Prop – Feather
- 15) Inoperative Engine Mixture – Cut-off
- 16) Zero Sideslip
- 17) Climb – 88 KIAS (blueline)
- 18) Trim
 - a) *After Takeoff: Climb at 88 KIAS/Blueline or 82 KIAS/VXSE if required for obstacle clearance.*
- 19) Climb to pattern altitude or as required to specified altitude requested
- 20) Declare an emergency
- 21) Land at nearest suitable airport
- 22) Perform Engine Failure Secure Checklist and One Engine Inop Landing Checklist if time permits

1.2.7 - VMC DEMONSTRATION (SIM ONLY)

- 1) Have one engine developing full power and the other at failed but un-feathered
- 2) Increase pitch up attitude to reduce airspeed
- 3) Maintain heading and directional control using rudder and 2-3° AOB into the operating engine
- 4) Recover when directional control is lost, or stall occurs

- 5) Simultaneously – Reduce throttle (on operating engine) and AOA

- 6) Once control is regained –
 - a) Increase throttle slowly
 - b) Increase airspeed to 82 KIAS or 88 KIAS as applicable

1.2.8 - ONE ENGINE INOPERATIVE ARRIVAL, APPROACH AND LANDING

- 1) Prior to entering the traffic pattern, simulate an engine failure
- 2) Inform ATC of the simulated one-engine inoperative landing
- 3) At the mid-field downwind, extend the landing gear (below 140 KIAS) and verify "3 green"
- 4) Designate the point of intended touchdown
- 5) **Abeam the touchdown point**
 - a) Reduce power (approximately 15" MP)
 - b) Airspeed 105 KIAS
- 6) **On the base leg**
 - a) Flaps 10°
 - b) Airspeed 95 KIAS
 - c) GUMP Check
- 7) **On final**
 - a) Flaps 25°
 - b) Airspeed 90 KIAS
 - c) GUMP Check
- 8) Reduce the throttle on inoperative engine **slowly** and increase the pitch attitude while maintaining directional control, to smoothly touchdown at the intended landing point as the throttle reaches idle.
 - a) *Reducing throttle quickly will result in an undesired exciting yaw in the opposite direction to previously held inputs*
- 9) After touchdown, apply the brakes as required and reduce the simulated inoperative engines throttle to idle

Notes:

- *Maximum flap deflection of 25 degrees should be used for engine inoperative approach and landing*
- *Do not use speeds below VYSE (88 KIAS) during engine inoperative pattern operations*

1.2.9 - ILS OR LPV APPROACH- TWO OR ONE ENGINE(S)

- 1) Obtain the ATIS or local weather
- 2) Once approach has been determined – setup, review, and brief the procedure
- 3) Complete the “Before Landing” checklist and identify localizer or WAAS when able.
- 4) Set the published inbound course on the HSI and ensure G430 is in VLOC or GPS and LPV
- 5) The aircraft is considered established inbound when the course is alive– “Localizer Alive” or “Track alive”
- 6) Localizer capture - “Localizer” or “Track”
- 7) Check for flaps at glideslope intercept altitude - Glideslope alive”
- 8) Maintain 100 KIAS until glideslope intercept.
- 9) ½ dot below glideslope/path intercept: “Gear Down“
- 10) Speed check - Extend flaps 25°.
- 11) Descend on glideslope/path at 90 KIAS (or 100 KIAS considering traffic).
- 12) Announce at FAF: “(Waypoint name) (actual altitude)”
- 13) Announce out of 1,000' AGL:
 - a. “Stable – Continuing”
 - b. “Unstable- Go-Around”
 - i. “GUMP.”
 1. “Gas, Undercarriage, Mixtures, Props”
- 14) Maintain 90 KIAS from 1,000' AGL inbound.
- 15) Announce at 100' above minimums: “100 Above.”
- 16) “Minimums.”

1.2.10 - NON-PRECISION STRAIGHT-IN APPROACH TWO OR ONE ENGINE(S)

- 1) Obtain the ATIS or local weather
- 2) Once approach has been determined – setup, review, and brief the procedure
- 3) Complete the “Before Landing” checklist and identify Nav Aid when able or ensure RAIM available.
- 4) If procedure turn is required- maintain 100 KIAS clean outbound and inbound to the FAF.
- 5) Set “VLOC” on G430 and the published inbound course on the HSI if using traditional Nav Aid or set “GPS” on G430 if using a GNSS only or overlay approach.
 - a) Check for flags.
- 6) “Approaching Track”
- 7) “Track”
- 8) Upon final approach, course capture, verify approach mode on GPS (APR, LNAV, LP, etc.)
- 9) If on an approach with vertical guidance:
 - a) ½ dot below glidepath intercept: “Gear Down.”
- 10) If on an approach with no vertical guidance:
 - a) By 0.5 nm from approach path (using CAP descent angle chart): “Gear Down”
 - b) Descend at desired rate at 90-100 KIAS.
- 11) Flaps 0° (one engine) Flaps 25° (two engines).
- 12) Maintain at or above all step-down fixes and the MDA until the MAP
- 13) Within 1 nm of FAF Flaps 10° (one engine)
- 14) Announce at FAF: “(Waypoint name) (actual altitude)”
 - a) “Stable – Continuing”
 - b) “Unstable- Go-Around”
 - i) “GUMP”
 - (1) “Gas, Undercarriage, Mixtures, Props”
- 15) Maintain 90 KIAS from FAF inbound.
- 16) Announce at 100' above minimums: “100 Above.”
- 17) “Minimums.”
- 18) Maintain MDA (plus 50' minus 0')
 - a) Set MAP altitude.
- 19) “Runway in sight, continuing” or maintain MDA to MAP.
 - a) When descending from MDA: Flaps 25° (single engine),
 - (1) *Do not leave MDA until landing is assured.*
- 20) No contact at MAP: “Go-Around”

1.2.11 - CIRCLING APPROACH (TWO ENGINES)

*Circling approaches will **NOT** be attempted if the aircraft is in a single-engine condition (simulated or actual).*

- 1) Obtain the ATIS or local weather
- 2) Once approach has been determined – setup, review, and brief the procedure
- 3) Complete the “Before Landing” checklist and identify Nav Aid when able or ensure RAIM available.
- 4) If procedure turn is required- maintain 100 KIAS clean outbound and inbound to the FAF.
- 5) Set “VLOC” on G430 and the published inbound course on the HSI if using traditional Nav Aid or set “GPS” on G430 if using a GNSS only or overlay approach.
 - a) Check for flags.
- 6) “Approaching Track”
- 7) “Track”
- 8) Upon final approach, course capture, verify approach mode on GPS (APR, LNAV, LP, etc.)
- 9) If on an approach with vertical guidance:
 - a) ½ dot below glidepath intercept: “Gear Down.”
- 10) If on an approach with no vertical guidance:
 - a) By 0.5 nm from approach path (using CAP descent angle chart): “Gear Down”
 - b) Descend at desired rate at 90-100 KIAS.
- 11) Flaps 0°
- 12) Maintain at or above all step-down fixes and the MDA until the MAP
- 13) Within 1 nm of FAF Flaps 10°
- 14) Announce at FAF: “(Waypoint name) (actual altitude)”
 - a) “Stable – Continuing”
 - b) “Unstable- Go-Around”
 - i) “GUMP”
 - (1) “Gas, Undercarriage, Mixtures, Props”
- 15) Maintain 90 KIAS from FAF inbound.
- 16) Announce at 100' above minimums: “100 Above.”
- 17) “Minimums.”
- 18) Maintain MDA while in circling manoeuvre (plus 50' minus 0')
 - a) Set MAP altitude (for original approach).
- 19) “Runway in sight” “continuing” -begin circling manoeuvre.
 - a) When descending from MDA: Flaps 25°.
- 20) Do not leave MDA until landing is assured.
- 21) If contact lost: “Go-Around”

1.3 - APPROACH, PROCEDURE TURN, AND HOLDING POWER SETTINGS GUIDE

	Speed	2-Engine	1-Engine
ILS	100 KIAS -Landing configuration	15"	20"
Non-precision	100 KIAS -Landing configuration	13"	15"
Level at MDA	90 KIAS -Landing configuration (except circling)	20"	Full or as needed
Holding/PT	110 KIAS	18-19"	Full or as needed
Traffic pattern	110 KIAS	18-19"	Full or as needed

These are quick references and will help establish a base line for further refinement based on the weather conditions and altitudes being flown.

SECTION 2 - STANDARD AVIONICS CONFIGURATION

2.1 - VFR – DEPARTURE AND ARRIVAL

PFD: Active with appropriate nav source active on HSI, runway heading bugged, and altitude planned in altitude select window.

MFD: Engine page (Far right)

COM/NAV 1: Nav page group, Moving map page (Nav page 2). Radios as required

COM/NAV 2: Nav page group, Traffic information page (Nav page 3). Radios as required.

2.2 - VFR – ENROUTE

PFD: Active with appropriate nav source active on HSI or off

MFD: Moving map with Traffic (Far left)

COM/NAV 1: Nav page group, Moving map page (Nav page 2). Radios as required.

VLOC Button: Selected to appropriate nav source

COM/NAV 2: Nav page group, Traffic information page (Nav page 3) Radios as required.

2.3 - IFR – DEPARTURE

PFD: Active with appropriate nav source active on HSI,

Heading:

- Runway heading
- Indicated in SID
- Clearance

Altitude:

- As indicated in SID
- Cleared to in clearance,
- or a suitable altitude prior to reaching controlled airspace if no clearance is available on the ground.

MFD: Engine page (Far right)

COM/NAV 1: Nav page group, Moving map page (Nav page 2).

Radio: Tower (MF/ATF) on active, Centre/Terminal or enroute (126.7) on Stby.

Nav: If departure requires Nav Aid set as active in Primary Nav

ILS on Stby for departure airport in case or immediate return

COM/NAV 2: Nav page group, Traffic information page (Nav page 3). Radios as required.

2.4 - IFR – ENROUTE

PFD: Active with appropriate nav source active on HSI

MFD: Moving map with Traffic (Far left)

COM/NAV 1: Nav page group, Moving map page (Nav page 2). Radios as required.

VLOC Button: Selected to appropriate nav source

COM/NAV 2: Nav page group, Traffic information page (Nav page 3) Radios as required.

SECTION 3 - NORMAL CHECKLIST

PA44 (FKUL) NORMAL PROCEDURES

PREFLIGHT	F
<i>Refer to Pilot Briefing Card</i>	

BEFORE START	R&D
Preflight Checks	COMPLETED
Flaps	RETRACT
Flight Planning	COMPLETED
Passenger Briefing	COMPLETED
Cabin Door	CLOSE & SECURE
Seats	ADJUSTED & LOCKED
Seatbelts and Harness	FASTEN/ADJUST CHECK INERTIA REEL
Parking Brakes	SET
Gear Selector	GEAR DOWN
Throttles	IDLE
Propeller Controls	FULL FORWARD
Mixture	IDLE CUTOFF
Quadrant Friction	AS DESIRED
Carburetor Heat Controls	OFF
Cowl Flaps	OPEN
Trim	SET
Fuel Selectors	ON
Radio Master Switch	OFF
Electrical Switches	OFF
Heater Switch	OFF
Circuit Breakers	IN
Day/Night Switch	VERIFY PROPER SETTING
Battery Master Switch	ON
Gear Lights	3 GREEN
Alternators	ON
PFD	VERIFY CORRECT MODEL
Annunciator Panel	CHECK & TEST
Initial Usable Fuel	SET on MFD
Fuel Quantity/Imbalance	CHECK

START	R&D
NORMAL START	
Throttles	¼ inch OPEN (½ inch if hot start)
Propellers	FULL FORWARD
Mixtures	FULL RICH
*Electric Fuel Pump	ON
*IF ENGINE IS COLD (omit if engine is warm)	
*Primer	AS REQ'D (OMIT if engine hot)
*Propeller Area	CLEAR
*Magnetos Switches	ON
*Starter	ENGAGE
*Throttle	ADJUST to 1000 RPM (if engines require warming, 1200 RPM)
*Oil Pressure	CHECK
*Electric Fuel Pump	OFF / CHECK PRESSURE
<i>Repeat Above Procedure (*) for Second Engine</i>	
Ammeters	CHECK
OTHER START PROCEDURES.....refer to POH	

AFTER START / TAXI	F&R or R&D
Annunciator Panel	CHECK & TEST
Mixtures	LEAN FOR TAXI
Radio Master Switch	ON
MFD	VERIFY SET TO PROPER GPS
Lights	AS REQ'D
Heater/Fan	AS DESIRED
Autopilot Master Switch	SELECT ON
Electric Trim	CHECK
Manual Electric Trim Preflight Check	PERFORM
STBY Attitude Indicator	VERIFY ON
Preflight STBY Attitude Indicator Test	PERFORM <i>Green LED required for IFR flight.</i>
Altimeter/STBY Altimeter	SET
ADAHRs	VERIFY INITIALIZED
Radios	CHECK & SET
Parking Brake	RELEASE
Throttle	APPLY SLOWLY
Brakes	CHECK
Steering	CHECK
Flight Instruments	CHECK

RUN UP / BEFORE TAKEOFF	R&D
Run Up Area	check SUITABLE
Parking Brake	SET
Mixtures	FULL RICH
Propellers	FULL FORWARD
Engine Instruments	CHECK
Throttles	1500 RPM
Prop Controls (drop ≤ 500 RPM)	FEATHER CHECK
Throttles	2000 RPM
Magnetos (drop ≤ 175 RPM/diff ≤ 50 RPM)	CHECK
Propellers	1800 RPM, check STABLE
Propellers	FULL FORWARD
Carburetor Heat	CHECK
Alternator Output	CHECK
Annunciator Panel Lights	OUT (except pitot heat)
Throttles (500 to 600 RPM)	IDLE - CHECK
Throttles	1000 RPM
Quadrant Friction	SET
Controls	CHECK
Flight Instruments	CHECK
Engine Instruments	CHECK
Fuel Quantity	SUFFICIENT
Electric Fuel Pumps	ON
Mixtures	FULL FORWARD
Fuel Selectors	ON
Stabilator & Rudder Trims	SET
AP/FD	Disengaged / "RDY"
Pitot Heat	AS REQ'D
Carburetor Heat	OFF
Cowl Flaps	OPEN
Flaps	CHECK & SET
Transponder	AS REQ'D
Annunciator/MFD Messages	CHECK
Door	LATCHED
Parking Brake	RELEASE

PA44 (FKUL)

NORMAL PROCEDURES

LINE CHECK	F
Time	record
Ice Protection	AS REQ'D
Lights	AS REQ'D
Transponder	ALT
Sock	check winds

TAKEOFF	(Technique)
NORMAL TAKEOFF	
Mixture	RICH
Flaps	0° to 10°
Stabilator & Rudder Trim	SET
Power	2700 RPM, FULL THROTTLE
Rotate Speed	75 KIAS
Climb Speed	88 KIAS
<i>When positive rate established and insufficient ... runway remains</i>	
Gear	UP
<i>When desired climb speed is obtained</i>	
Flaps	slowly RETRACT
OTHER TECHNIQUES	per POH

AFTER TAKEOFF	F&R
Attitude	pitch for desired speed
V _y (flaps up)	88 KIAS
V _x (flaps up)	82 KIAS
Enroute / Cruise Climb	105 KIAS
Power	75% or 25" 2500 RPM
Lights	AS REQ'D
Cowl Flaps	AS REQ'D (monitor CHT)
Electric Fuel Pump	ON

CRUISE	F&R
Power	SET per power table
Electric Fuel Pumps	OFF (one at a time)
Fuel Pressure	CHECK
Mixture Controls	AS REQ'D
Cowl Flaps	AS REQ'D

DESCENT	F
Altimeters	SET
Mixture Controls	ADJUST with Descent
Throttles	AS REQ'D
Cowl Flaps	AS REQ'D

BEFORE LANDING	F&R
Altimeter/STBY Altimeter	SET
Seat Backs	ERECT
Seat Belts/Harness	ADJUSTED
Lights	AS REQ'D
Electric Fuel Pumps	ON
Fuel Selectors	ON
Mixture	FULL RICH
Propeller	FULL FORWARD
Landing Gear	DOWN – 140 KIAS max
Landing Gear Lights	3 GREEN
Nacelle Mirror	NOSE GEAR DOWN
Flaps	0° to FULL DOWN
Airspeed (Flaps Up)	80-90 KIAS
(Flaps Down)	75-85 KIAS
Trim	AS REQ'D

AFTER LANDING	F&R
Radios	ground frequency SET
Flaps	RETRACT
Cowl Flaps	FULL OPEN
Electric Fuel Pumps	OFF
Pitot Heat	OFF
Lights	AS REQ'D
Transponder	standby / 1200
Mixture	SET (lean for taxi)
Heater (If ON)	FAN – 2 MIN THEN OFF
Time Down	RECORD

SHUTDOWN	R&D
ELT	check 121.5
Radio Master Switch	OFF
Electrical Switches	OFF
Propeller	FULL INCREASE
Throttle	CLOSED
Mixture	IDLE CUT-OFF
Magneto Switches	OFF
Alternator Switches	OFF
Panel Lights (At Night)	OFF
Battery Master Switch	OFF

SECURING	F
Parking Brake	SET
Flaps	FULL UP
Control Wheel	SECURED with belts
Wheel Chocks	IN PLACE
Parking Brake	RELEASE
Tie Downs	SECURE

SECTION 4 - EMERGENCY PROCEDURES

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ENGINE SECURING PROCEDURE

Throttle.....	RETARD TO VERIFY
Propeller.....	FEATHER (950 RPM Min.)
Mixture.....	IDLE CUTOFF
Zero Sideslip.....	ESTABLISH & MAINTAIN
Cowl Flap.....	CLOSE
Alternator.....	OFF
Magneto Switches.....	OFF
Electric fuel pump.....	OFF
Fuel selector.....	OFF
Electrical load.....	REDUCE
Crossfeed.....	IF REQ'D

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ENGINE FAILURE DURING TAKEOFF (BELOW 75 KIAS OR GEAR DOWN)

Throttles.....	IMMEDIATELY CLOSE
Brakes (or land and brake).....	AS REQ'D
Stop.....	STRAIGHT AHEAD

If insufficient runway remains for a complete stop:

Mixtures.....	IDLE CUTOFF
Fuel Selectors.....	OFF
Magneto Switches.....	OFF
Battery Master Switch.....	OFF
Directional control.....	MAINTAIN (avoid obstacles)

ENGINE FAILURE DURING TAKEOFF (ABOVE 75 KIAS OR GEAR UP)

If sufficient runway remains for a complete stop:

Directional control.....	MAINTAIN
Throttles.....	IMMEDIATELY CLOSE
Land.....	STRAIGHT AHEAD
Brakes.....	AS REQ'D

If decision is made to continue:

Mixture controls.....	FULL FORWARD
Propeller controls.....	FULL FORWARD
Throttle controls.....	FULL FORWARD
Flaps.....	FULL UP
Landing Gear Selector.....	CHECK UP
Inoperative Engine.....	IDENTIFY and VERIFY
Throttle (Inop. Engine).....	CLOSE
Propeller (Inop. Engine).....	FEATHER
Mixture (Inop. Engine).....	IDLE CUTOFF
Establish Bank.....	2° to 3° INTO OP. ENGINE
Climb Speed.....	88 KIAS

At safe altitude:

Engine Securing Procedure.....	COMPLETE
Land.....	AS SOON AS PRACTICABLE

PA44 – FKUL, GMOP – 2021.11

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ENGINE FAILURE DURING CLIMB	
Airspeed.....	MAINTAIN 88 KIAS
Directional control.....	MAINTAIN
Power.....	MAX. CONTINUOUS
Inoperative Engine.....	IDENTIFY and VERIFY
Engine Securing Procedure.....	COMPLETE
<i>At safe altitude:</i>	
Cowl Flap (Operating Engine).....	AS REQ'D
Land.....	AS SOON AS PRACTICABLE

ENGINE FAILURE IN FLIGHT (BELOW V_{MCA})	
Rudder.....	APPLY AGAINST YAW
Throttles.....	RETARD TO STOP TURN
Pitch Attitude.....	LOWER NOSE TO ACCELERATE
Operative Engine.....	ABOVE V_{MCA} (56 KIAS) INCREASE POWER AS AIRSPEED INCREASES ABOVE V_{MCA}
<i>If altitude permits:</i>	
Restart.....	ATTEMPT
<i>If restart fails or altitude does not permit attempt:</i>	
Engine Securing Procedure.....	COMPLETE
Cowl Flap (Op. Engine).....	AS REQ'D

ENGINE FAILURE IN FLIGHT (ABOVE V_{MCA})	
Inoperative Engine.....	IDENTIFY
Operative Engine.....	ADJUST POWER AS REQ'D
Airspeed.....	NOT BELOW 88 KIAS
<i>Before securing Inop. Engine:</i>	
Carburetor Heat.....	HOT
Mixture.....	RICH
Electric Fuel Pump.....	ON
Fuel Quantity.....	CHECK
Oil Pressure and Temperature.....	CHECK
Magneto Switches.....	CHECK
Air Start.....	ATTEMPT
<i>If engine does not start:</i>	
Engine Securing Procedure.....	COMPLETE
<i>If restart fails or altitude does not permit attempt:</i>	
Engine Securing Procedure.....	COMPLETE
Power (Op. Engine).....	AS REQ'D
Fuel Quantity (Op. Engine).....	SUFFICIENT
Electric Fuel Pump (Op. Engine).....	AS REQ'D
Cowl Flap (Op. Engine).....	AS REQ'D
Land.....	AS SOON AS PRACTICABLE

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ONE ENGINE INOP LANDING

Engine Securing Procedure..... COMPLETE
 Seat Belts/Harnesses SECURE
 Fuel Selector (Op. Engine) ON
 Mixture (Op. Engine) FULL RICH
 Propeller Control (Op. Engine)..... FULL FORWARD
 Electric Fuel Pump (Op. Engine)..... ON
 Cowl Flap (Op. Engine) AS REQ'D
 Altitude & Airspeed MAKE NORMAL APPROACH
 When landing is assured:
 Landing Gear DOWN
 Wing Flaps 25° (2ND NOTCH)
 Final Approach Speed 90 KIAS
 Power RETARD SLOWLY AND FLARE
 Directional cont..... MAINTAIN as pwr reduced

ONE ENGINE INOP GO AROUND

Mixture FORWARD
 Propeller..... FORWARD
 Throttle SMOOTHLY ADVANCE TO MAX
 Flaps RETRACT SLOWLY
 Landing Gear RETRACT (AFTER POSITIVE RATE)
 Airspeed..... 88 KIAS
 Zero Sideslip ESTABLISH AND MAINTAIN
 Cowl Flap (Op. Engine) AS REQ'D

LOSS OF OIL PRESSURE

Oil Pressure Gauge..... VERIFY INDICATION
 Engine Securing Procedure..... COMPLETE

ONE ENGINE INOP. FUEL MGMT

CRUISE
 When using fuel from same side tank:
 Fuel Selector (Op. Engine) ON
 Fuel Selector (Inop. Engine) OFF
 Electric Fuel Pumps..... OFF (unless req'd)
 When using fuel from opposite side tank:
 Fuel Selector (Op. Engine) CROSSFEED
 Fuel Selector (Inop. Engine) OFF
 Electric Fuel Pumps..... OFF (unless req'd)
LANDING
 Fuel Selector (Op. Engine) ON
 Fuel Selector (Inop. Engine) OFF

PA44 FKUL, GMOP EMERGENCY PROCEDURES

**AIR START
(w/ UNFEATHERING ACCUMULATOR)**

Fuel Selector (Inop. Engine)..... ON
Magneto Switches (Inop. Engine)..... ON
Electric Fuel Pump (Inop. Engine)..... ON
Mixture..... FULL RICH
Throttle..... OPEN ¼ INCH
Propeller..... FULL FORWARD
Throttle..... REDUCE POWER UNTIL WARM
Alternator..... ON

NOTES:

1. *Starter assist is required if propeller is not windmilling freely within 5-7 seconds after the propeller control is advanced.*
2. *When propeller unfeathering occurs, it may be necessary to retard prop control slightly so as to not overspeed the prop.*

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**AIR START
(STARTER ASSISTED)**

Fuel Selector (Inop. Engine)..... ON
Magneto Switches (Inop. Engine)..... ON
Electric Fuel Pump (Inop. Engine)..... ON
Mixture..... FULL RICH
Throttle..... TWO FULL STROKES
THEN OPEN ¼ INCH
Propeller..... FORWARD TO CRUISE
Starter..... ENGAGE UNTIL PROP WINDMILLS
Throttle..... REDUCE POWER UNTIL WARM
If engine does not start:
Prime..... AS REQ'D
Alternator..... ON

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ENGINE FIRE DURING START

If engine has not started:

Mixture IDLE CUTOFF
Throttle FULL OPEN
Starter CONTINUE TO CRANK

If engine has started and is running, continue to operate to try to pull fire into engine. If fire continues:

Fuel Selectors OFF
Electric Fuel Pumps OFF
Mixtures IDLE CUTOFF
Throttles FULL OPEN
External Fire Extinguisher USE
Airplane EVACUATE

NOTES:

1. *If fire continues, shut down both engines and evacuate.*
2. *If fire is on the ground, it may be possible to taxi away.*

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ENGINE FIRE IN FLIGHT

Affected Engine:

Fuel Selector OFF
Throttle IDLE
Propeller FEATHER
Mixture IDLE CUTOFF
Cowl Flap OPEN
Engine Securing Procedure COMPLETE

If fire persists:

Airspeed INCREASE TO BLOW OUT FIRE
Land AS SOON AS POSSIBLE

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ELECTRICAL FIRE

Flashlight (at night).....	LOCATE
Battery Master.....	OFF
Alternator Switches.....	OFF
All Electrical Switches.....	OFF
Radio Master Switch.....	OFF
Vents.....	CLOSED (to avoid drafts)
Cabin Heat.....	OFF
If fire persists.....	EXTINGUISH (IF POSSIBLE)
Bus Tie CBs	
Both Main Bus.....	PULL
Non-essential.....	PULL
Avionics Bus #1.....	PULL
Avionics Bus #2.....	PULL
L. Alternator.....	PULL
R. Alternator.....	PULL
All Main Bus CBs.....	PULL
All Avionics Bus CBs.....	PULL
<i>If flight can be safely continued without electrical power, continue to nearest suitable airport and land.</i>	
<i>If electrical power is required for safe continuation of the flight (NOTE: immediately pull breaker if faulty system is reinstated):</i>	
One (1) Main Bus Tie CB.....	IN
Battery Master.....	ON
L. or R. Alternator CB.....	IN
Corresponding Alternator Field CB.....	IN
Corresponding Alternator Switch.....	ON
Main Bus CBs	
Electric Tachometer.....	IN
Gear Indicator.....	IN
Avionics Bus #1.....	IN
Avionics Bus #2.....	IN
Radio Master Switch.....	ON
Audio.....	IN
Comm #1.....	IN
Nav #1.....	IN
Vents.....	OPEN (when fire is out)
Land.....	AS SOON AS PRACTICAL

PA44 FKUL, GMOP EMERGENCY PROCEDURES

ENGINE ROUGHNESS

Carburetor Heat..... ON

If roughness continues after one minute:

Carburetor Heat..... OFF

Mixture..... ADJUST TO MAINTAIN SMOOTHNESS

Electric Fuel Pump..... ON

Engine Gauges..... CHECK

Magneto Switches..... CHECK

If operation is satisfactory on either magneto, continue on that magneto at reduced power and full RICH mixture to first airport.

ENGINE OVERHEAT

Cowl Flaps..... OPEN

Mixture..... ENRICHEN

Power..... REDUCE

Airspeed..... INCREASE (if altitude permits)

LOSS OF FUEL PRESSURE

Electric Fuel Pump (affected engine)..... ON

PROPELLER OVERSPEED

Throttle (aff. engine)..... RETARD

Oil pressure (aff. engine)..... CHECK

Prop control (aff. engine)..... FULL DECREASE RPM
THEN SET if any control avail.

Airspeed..... REDUCE

Throttle (aff. engine)..... AS REQ'D to remain <2700 rpm

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PA44 FKUL, GMOP EMERGENCY PROCEDURES

SINGLE ALTERNATOR FAILURE

Verify Failure CHECK AMMETERS
If LO BUS voltage annunciator illuminated:
 Electrical Load REDUCE until <60 AMPS
 & LO BUS annunciator out
 Failed ALTR Switch OFF
 Failed ALTR CB CHECK and RESET AS REQ'D
 Failed ALTR Switch (after >1 sec delay) ON
If power not restored:
 Failed ALTR Switch OFF
 Ammeter MONITOR (<60 AMPS)

DUAL ALTERNATOR FAILURE

Verify Failure CHECK AMMETERS
 Electrical Load REDUCE to MINIMUM
 REQUIRED FOR SAFE FLIGHT
 ALTR Switches OFF
 ALTR CBs CHECK and RESET AS REQ'D
 ALTR Switches (after >1 sec delay) ON
If only one alternator resets:
 Operating ALTR Switch ON
 Failed ALTR Switch OFF
 Ammeter MONITOR (<60 AMPS)
If neither alternator resets:
 Both Alternator Switches OFF
Batt pwr. only, maintain minimum elec. load
 Total electrical failure ANTICIPATE
 Land AS SOON AS PRACTICAL

TOTAL ELECTRICAL FAILURE

STBY Attitude Indicator SELECT STBY PWR
*Note: if STBY PWR is not selected after 1 minute,
 standby attitude indicator will shut down.*
 STBY Attitude Indicator VERIFY ON (flag hidden)
 STBY Instruments USE for flight control
 Battery Master Switch OFF
 Land AS SOON AS POSSIBLE

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PA44 FKUL, GMOP EMERGENCY PROCEDURES

PFD – PARTIAL FAILURES

Loss of PFD Engine Data
 Engine Instruments REFER TO MFD
 Land AS SOON AS PRACTICAL

Invalid Air Data or Invalid Heading Data
 Standby Instruments USE for flight control
 PFD Circuit Breaker PULL and RESET
 Land AS SOON AS PRACTICAL

ADAHRS Fault
 Standby Attitude Indicator VERIFY ON
 Standby Instruments USE for flight control
 PFD Circuit Breaker PULL and RESET
 Land AS SOON AS PRACTICAL

PFD – TOTAL FAILURE

STBY Attitude Indicator VERIFY ON (flag hidden)
If time and conditions permit:
 PFD Brightness Control (BRT/DIM) ... FULL BRIGHT
 PFD Circuit Breaker PULL and RESET
If PFD cannot be reinstated:
 STBY Instruments USE for flight control
 GNS430 / MFD Map Page USE for navigation
 Land AS SOON AS PRACTICAL

MFD - LOSS OF ENGINE DATA

DAU Circuit Breaker PULL and RESET
If data remains invalid, maintain power settings (if appropriate for phase of flight) and land as soon as practicable, otherwise:
 Mixture FULL RICH
 Propeller Control FULL FORWARD
 Manifold Pressure AS REQ'D
 Land AS SOON AS PRACTICAL

PA44 FKUL, GMOP EMERGENCY PROCEDURES

OPEN ENTRY DOOR

If both top and side latches are open, door will trail slightly open and airspeeds will be reduced slightly.

To close the door in flight:

Airspeed Slow to 82 KIAS
 Cabin Vents CLOSE
 Storm Window OPEN
 Top Latch (if open) LATCH
 Side Latch (if open) PULL on armrest and LATCH
 If both latches are open LATCH SIDE then TOP

EMERGENCY DESCENT

Carburetor Heat ON
 Throttles CLOSED
 Propeller Controls FORWARD
 Mixtures AS REQ'D
 Landing Gear EXTEND 140 KIAS MAX.
 Airspeed 140 KIAS

**SPIN RECOVERY
(INTENTIONAL SPINS PROHIBITED)**

Throttles RETARD to Idle
 Rudder FULL OPPOSITE DIRECTION OF SPIN
 Control wheel FULL FORWARD
 Ailerons NEUTRAL
 Rudder NEUTRALIZE when rotation stops
 Control wheel SMOOTH BACK PRESSURE
 to recover from dive

CARBON MONOXIDE DETECTED

CABIN HEAT/FAN Switch FAN
 HI VENT/FAN LO Switch HI VENT
 Air Intake OPEN
 Cabin Vents OPEN
 Window OPEN (below 129 KIAS)
 Land AS SOON AS PRACTICAL

EMERGENCY EXIT

Thermoplastic Cover REMOVE
 Emergency Exit Handle PULL FORWARD
 Window PUSH OUT

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PA44 FKUL, GMOP EMERGENCY PROCEDURES

GEAR UNSAFE INDICATION

If Gear Unsafe light remains on after extension or retraction or landing gear indicator lights do not illuminate upon extension.

Navigation Lights (Daytime)..... OFF
 Day/Night Dimmer Switch (Daytime)..... DAY
 Circuit Breakers CHECK
 Master Switch ON
 Alternators CHECK
 Emerg. Gear Extend Knob CHECK IN & GATED

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EMERG. GEAR EXTENSION

Gear Unsafe Indication Checklist COMPLETE

To extend, proceed as follows:

Airspeed..... REDUCE (100 KIAS max.)
 Gear Selector..... GEAR DOWN
 Emerg. Gear Extend Knob..... PULL
 Indicator Lights 3 GREEN
 Emerg. Gear Extend Knob..... KEEP OUT

GEAR UP EMERGENCY LANDING

If emergency gear extension fails:

Approach and Landing..... NORMAL
 Airspeed..... 80-90 KIAS
 Flaps UP

Just prior to touchdown:

Throttles CLOSE
 Battery Master Switch OFF
 Fuel Selectors OFF
 Touchdown AT SLOWEST SPEED POSSIBLE

SECTION 5 - PILOT BRIEFING CARD

PA44 (FKUL)	Pilot Briefing Card																																																																																					
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Fuel Selectors.....	ON																																																																																					
Radio Master Switch.....	OFF																																																																																					
All Electrical Switches.....	OFF																																																																																					
Battery Master Switch.....	ON																																																																																					
Annunciator Panel.....	PRESS TO TEST																																																																																					
Landing Gear Lights.....	3 GREEN																																																																																					
Battery Master Switch.....	OFF																																																																																					
Emergency Exit.....	CHECK																																																																																					
Flaps.....	EXTEND																																																																																					
Windows.....	check CLEAN																																																																																					
Required Documents.....	check ON BOARD																																																																																					
Baggage.....	STOW PROPERLY - SECURE																																																																																					
External Check.....	per POH																																																																																					
Passenger Briefing																																																																																						
Smoking / Seatbelts / Doors																																																																																						
Emergency Exits/Equipment																																																																																						
Takeoff Briefing																																																																																						
Takeoff Procedure																																																																																						
Runway																																																																																						
Flap Setting / Retraction Schedule																																																																																						
Speeds:																																																																																						
Rotation																																																																																						
Initial Climb																																																																																						
Go/No-Go																																																																																						
Memory items for engine failures:																																																																																						
On the runway																																																																																						
After takeoff w/ and w/out rwy rem.																																																																																						
Threats																																																																																						
Arrival Briefing																																																																																						
VFR																																																																																						
Field Elevation																																																																																						
Circuit Altitude																																																																																						
Circuit Joining Procedure																																																																																						
Type of Landing (planned config)																																																																																						
Stable Call Altitude																																																																																						
IFR																																																																																						
Approach Type & Name																																																																																						
Minimum Altitudes																																																																																						
Overshoot (Missed) Procedure																																																																																						
Radios / RNAV Config'd																																																																																						
Timing / Type of Landing																																																																																						
Special / Stable Call Altitude																																																																																						

Speeds – all KIAS

V _S 57	V _{NE} 202	2 nd Stage Climb 105
V _{SO} 55	V _{FE} 111	V _{APP} 90
V _{MCA} 56	V _{LO} (ret) 109	V _{REF} 90 (norm. *&* eng. out)
V _A (3800) 135 / (2700) 112	V _{LO} (ext) & V _{LE} 140	MDXW 17
V _{TURB} 135	V _R 75	2300/19 ^u = 120 ^{JP} / 105 ^{DOWN}
V _{NO} 169	V _{YSE} 88 / V _{XSE} 82	

SECTION 6 - ADDITIONAL CALLOUTS

Phase of Flight	Callout
Climbing	<u>“XXXX’ climbing XXXX’ “</u> Eg. “2000’ climbing 5000’ “
Climbing – 1,000 feet from assigned Altitude	<u>“1000 feet to level-off”</u>
Descending	<u>“XXXX’ descending XXXX’ “</u> Eg. “9000’ descending 3000’ “
Descending – 1,000 feet from assigned altitude	<u>“1000 feet to level-off”</u>
Level at an assigned altitude	<u>“Level XXXX’ “</u> Eg. “Level 5000’ ”
Engaging Autopilot	“ Autopilot ON”
Prior to Disengaging the Autopilot	“Manual Flight”
Changes to flight mode annunciation: Any changes to a flight mode or changes within a flight mode will be announced	“Heading mode, 245° selected” “Altitude – 4000’ selected” “VS mode – 500 fpm selected” “NAV mode – GPS 1 selected” “Approach Mode – ILS 26 active”

STANDARD CALLOUTS ILS APPROACH

Phase of flight	Callout
Localizer alive	“Localizer alive”
Localizer Capture	“Localizer”
Glideslope alive	“Glideslope alive”
Glideslope Capture	“Glideslope” “Missed approach altitude <u>XXXX</u> ’ set”
FAF	“ <u> (fix name) </u> ’ (actual altitude)”
1000’ AAE	If Stable: “STABLE, CONTINUING” If Unstable: “UNSTABLE, GO AROUND”
Minimums	“Minimums – Landing or Go-around

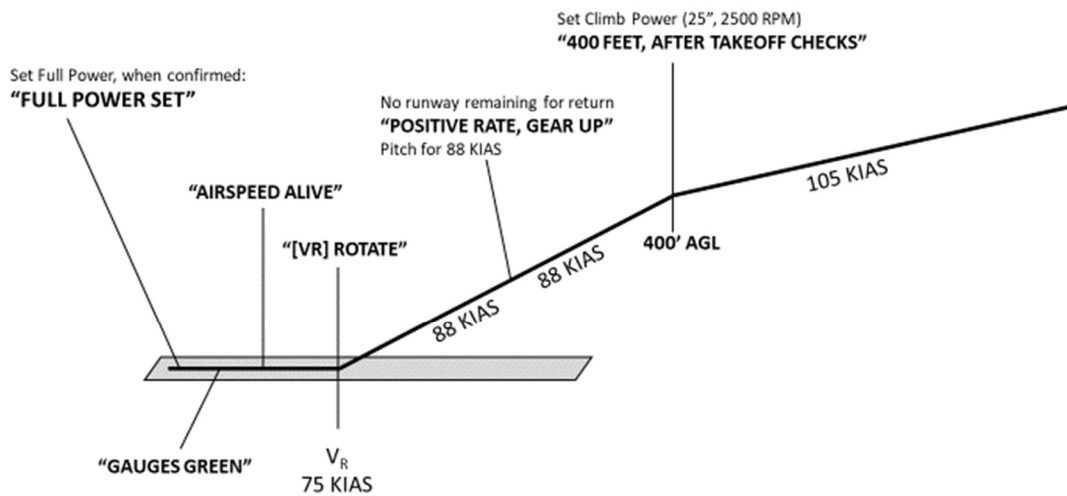
STANDARD CALLOUTS - NON-ILS APPROACH

Phase of flight	Callout
Approaching track	“Track alive”
Track capture	“Track”
Approaching glidepath, aprx 2nm to the published glidepath	“Approaching glidepath”
Glidepath Capture	“Glidepath”
FAF	“ <u> (fix name) </u> ’ (actual altitude)”
At FAF and/or at least 300ft below MAA	Set MAA in the Alt Select “MAA <u>XXXX</u> set”
1000’ AAE	If Stable: “STABLE, CONTINUING” If Unstable: “UNSTABLE, GO AROUND”
Minimums	“Minimums – Landing or Go-around

SECTION 7 - PROFILES

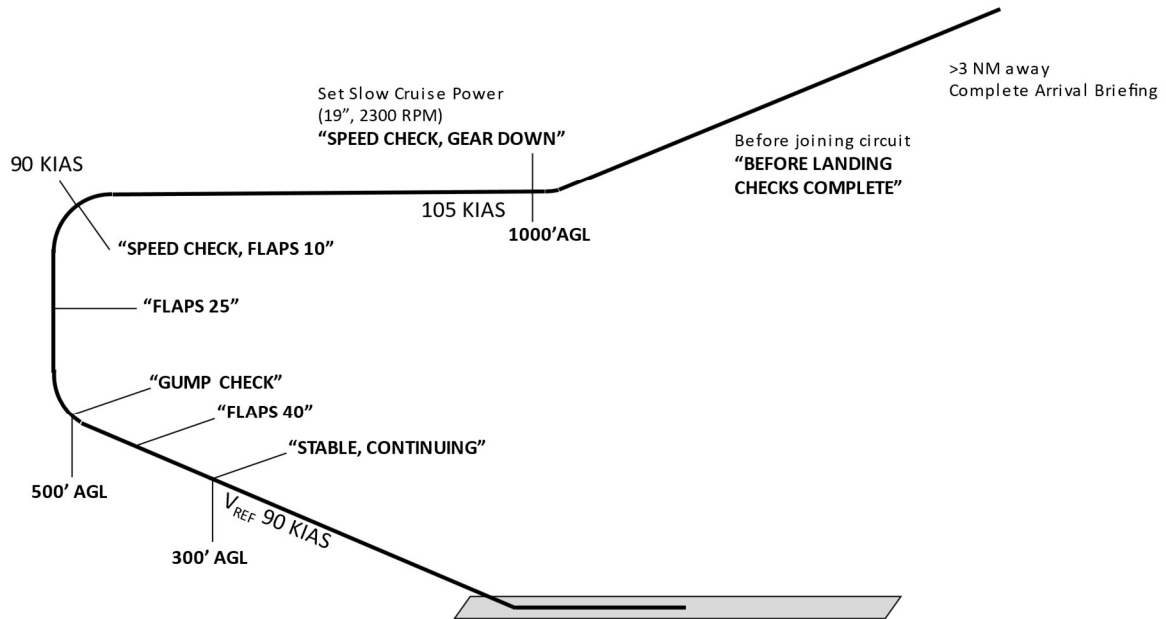
7.1 - NORMAL TAKEOFF

PA44 – Normal Takeoff



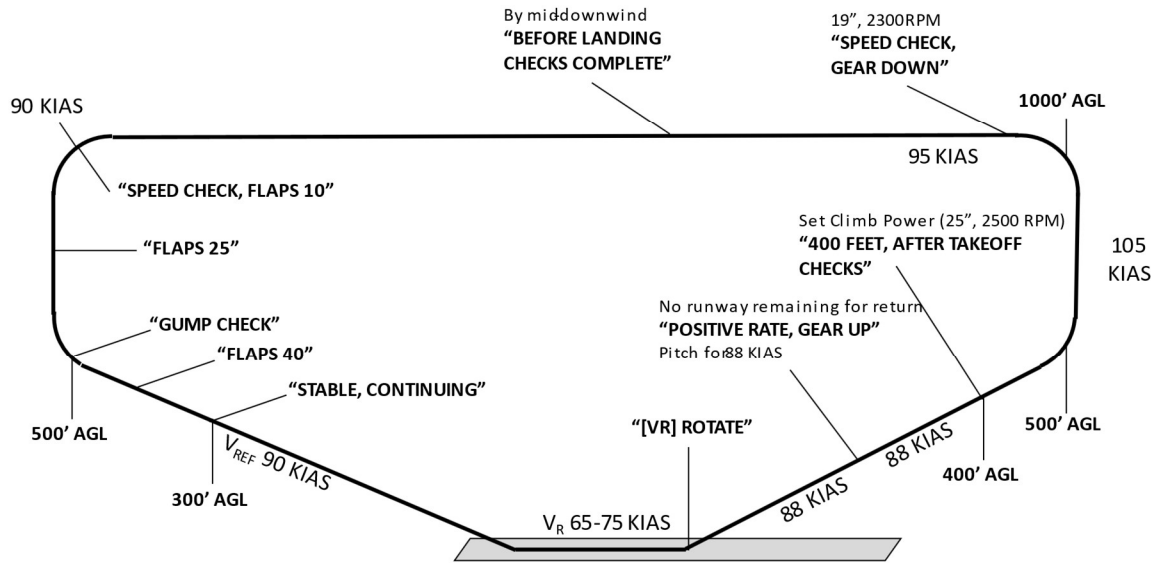
7.2 - NORMAL LANDING

PA44 – Normal Landing

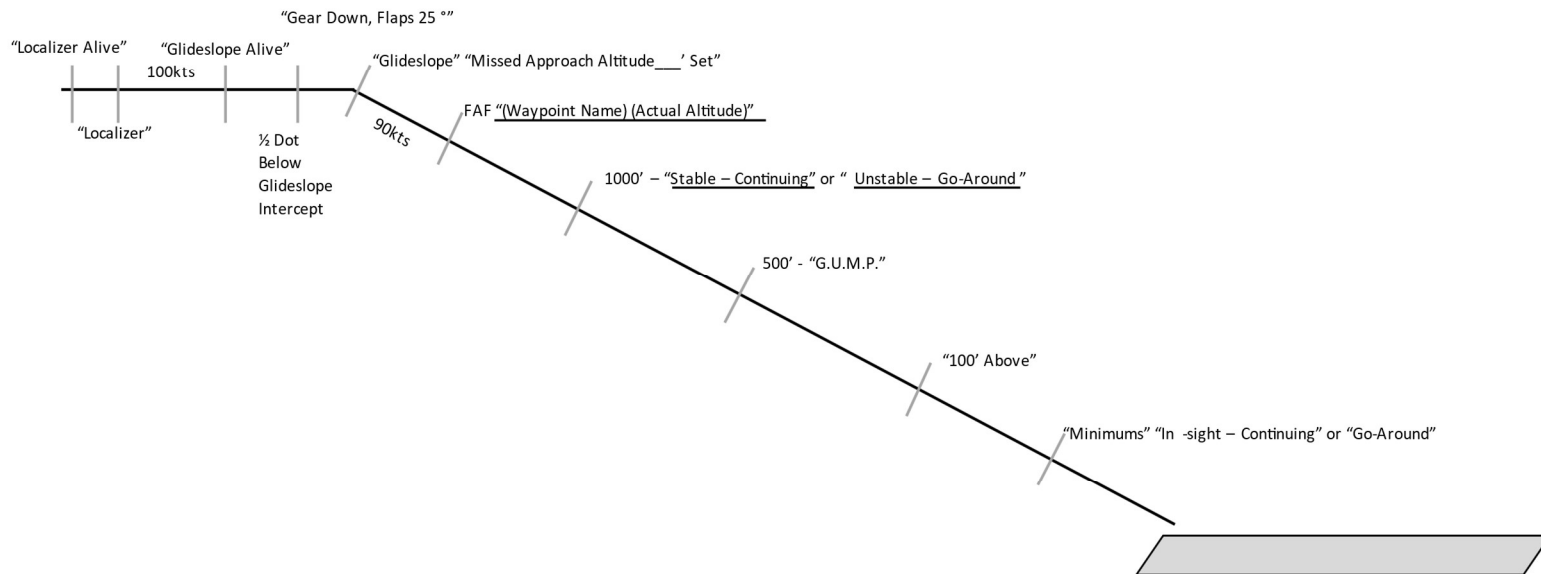


7.3 - NORMAL CIRCUIT

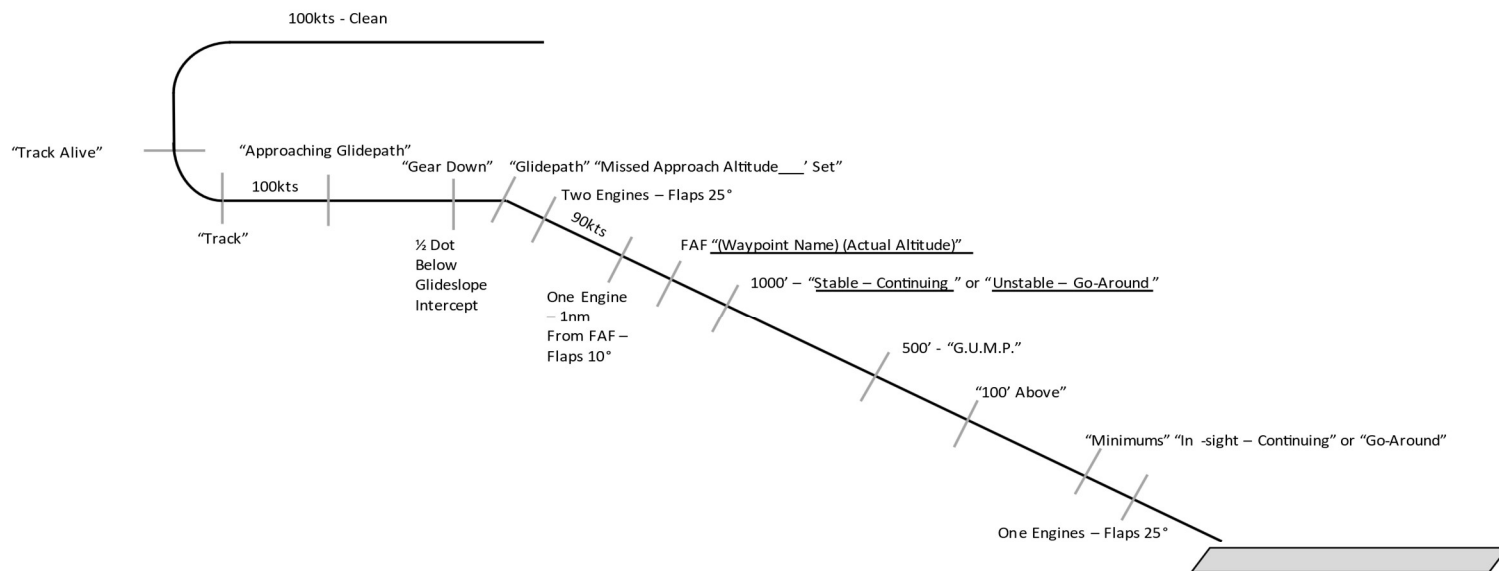
PA44 – Normal Circuit



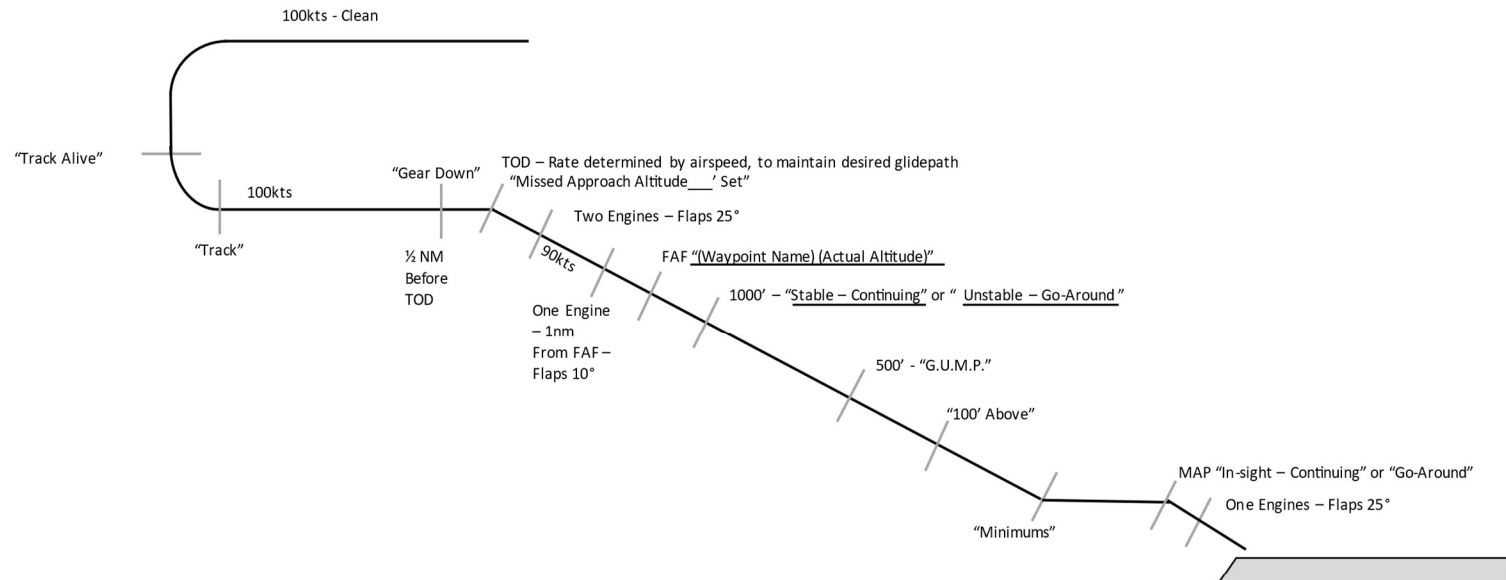
7.4 - ILS OR LPV – TWO ENGINES OR ONE



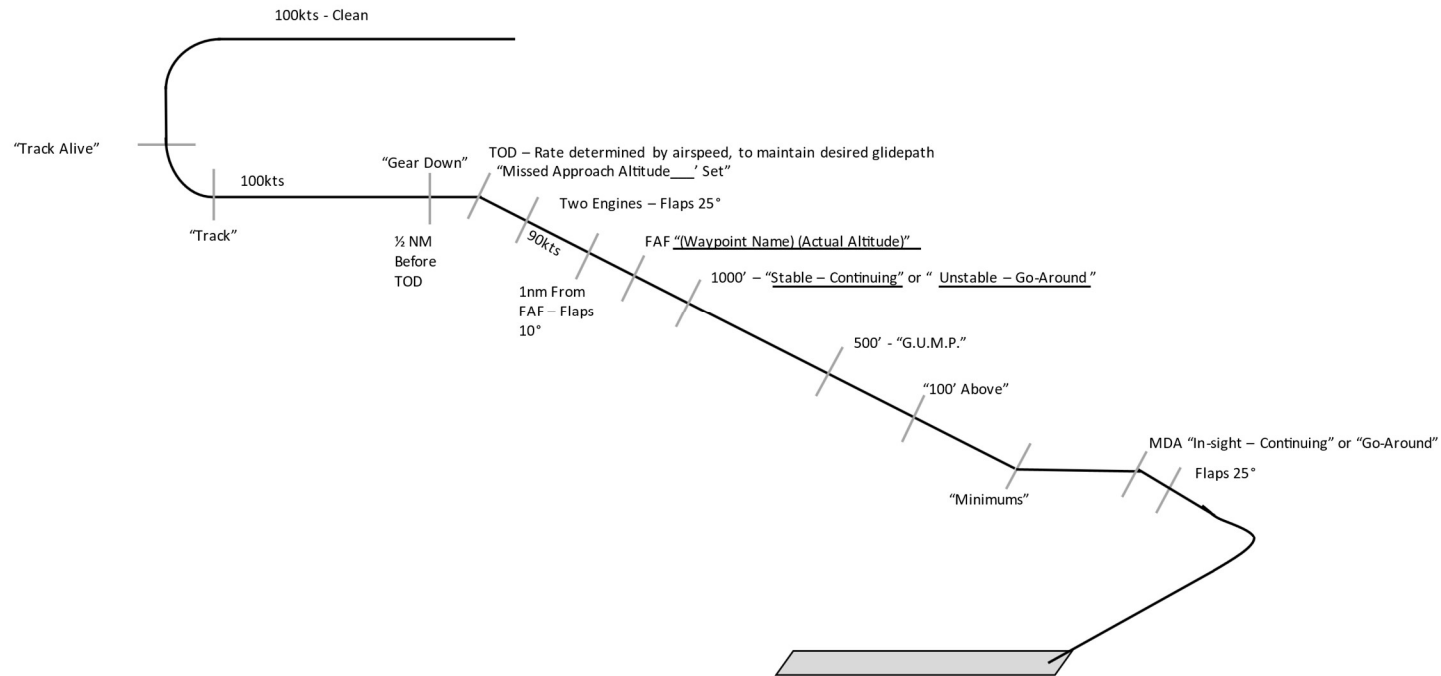
7.5 - NON-PRECISION WITH VERTICAL GUIDANCE – TWO ENGINES OR ONE



NON-PRECISION WITHOut VERTICAL GUIDANCE – TWO ENGINES OR ONE



7.6 - CIRCLING APPROACH (TWO ENGINES)



SECTION 8 - USE OF AUTOMATION

8.1 - GENERAL

The Automation is to be used to enhance safety and reduce workload. It is the pilot's responsibility to determine the appropriate level of automation to use.

Pilots should adhere to the following guidelines when using the automation:

- Pilots should be aware of the input to the automation system and **verbalize all** mode engagement, changes, and inputs for heading and altitudes
- Briefing of general use of the automation should be considered during takeoff and departure settings and approach and landing segments.
- The use of automation is operated within aircraft limitations.

Flight Mode Annunciator (FMA)

Announcing FMAs when using the AP/FD system is critical to the pilot's situational awareness. It is imperative that all mode selection and inputs are verbalized.

When using the autopilot and flight director systems (AP/FD) the pilot must use the following procedure:

- When autopilot and/or flight director is engaged, the pilot **must** announce what is displayed on the Flight Mode Annunciators.
- When a new mode is selected the pilot will **verbalize** the new selection along with the parameters set under the new mode. For example, when switching from NAV mode to HDG while being radar vectored the pilot would say: "HDG mode, 310° selected"

8.2 - USE DURING AN EMERGENCY

The use of autopilot and/or flight director is recommended during some emergency situations as the autopilot will reduce workload so the pilot can problem solve and gain/regain situational awareness.

During any non-control-related emergency, it is recommended the pilot engage the autopilot if it is not already engaged, following the proper procedure. If the autopilot is already on the pilot will continue to monitor the autopilot annunciations and inputs while they perform emergency procedures drills and any follow-up items.

During any control-related emergency, it is required the pilot disengage the autopilot if it is engaged as they regain control of the aircraft. Once control is regained and any initial steps of the emergency procedure are complete it is recommended the pilot engage the autopilot to reduce workload in the follow-up actions.

From the Seminole POH Section 9, Supplement 4, 9-21, Page 5 of 9:

4. **Single Engine Operations – Autopilot Mode:**
 - a) **Engine Failure during an autopilot approach operation: Disengage autopilot, conduct remainder of approach manually.**
 - b) **Engine failure during normal climb, cruise, descent: Retrim aircraft, perform normal aircraft engine out procedures.**
 - c) **Maintain aircraft yaw trim throughout all single engine operation.**

SECTION 9 - ADDITIONAL BRIEFINGS

9.1 - IFR DEPARTURE BRIEFING EXPANDED

In addition to the takeoff briefing items found in the SOP-G, the following must also be briefed prior to any IFR training or actual flight:

- 1) Aircraft status (Deferred defects, fuel IFR certified etc.)
- 2) NOTAMS
- 3) Runway in use & potential taxi route (hot spots?)
- 4) Runway condition, wind component and significant weather
- 5) Noise abatement – if applicable (e.g., CYHM)
- 6) Departure - SID (if in clearance)
 - a) NAVAID (tuned and ID)
 - b) Climb procedure
 - c) Altitude restrictions
 - d) Routing
 - e) Speed restrictions
 - f) Takeoff minimums
 - g) Meeting climb gradients
- 7) Autopilot/ FD usage

9.2 - IFR APPROACH AND LANDING BRIEFING EXPANDED

In addition to the Arrival Briefing items found in the SOP-G, the following must also be briefed prior to any IFR training or actual flight:

- 1) Aircraft status (Defects – deferred or new)
- 2) NOTAMS
- 3) ATIS / Weather at destination & alternate
- 4) Fuel remaining & alternate airport
- 5) MEA / MORA / MSA
- 6) TOD point
- 7) STAR
 - a) NAVAID (tuned and ID)
 - b) Descent procedure
 - c) Altitude restrictions
 - d) Routing
 - e) Speed restrictions
- 8) Automation use*
- 9) Landing speeds and approach configuration
- 10) Runway
 - a) Environment – length, width, lighting
 - b) Wind
 - c) Condition
 - d) Go/ No-go
- 11) Threats

*Automation briefing is to include a decision on when you will disconnect the autopilot on the approach.

9.3 - HOLD BRIEFING

For any hold, the following briefing will apply prior to entry into the hold

- 1) **T**ype of hold
- 2) **S**peed at entry of hold
- 3) **A**ltitude to maintain
- 4) **F**uel- enough to hold? How long can you remain in hold and maintain min fuel requirements?
- 5) **E**xpect further clearance time