SPARTAN COLLEGE
OF AERONAUTICS AND TECHNOLOGY

PIPER ARCHER

CHECKLIST

Pilots Name_____

The checklist on the following pages is intended to be used as a ready reference and provides only the basic steps and sequences. This checklist should be used in conjunction with FAA-H-8083-3, the FAA Airman Certification Standards, Practical Test Standards, and the Pilot's Operating Handbook for the Piper Archer.

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CHECKLIST REVISIONS

REVISION NUMBER	REVISION DATE	REFERENCE PAGE NUMBERS
0	06/01/2020	ALL
1	06/30/2020	ALL
2	12/09/2021	1,5,6,7,11,19,20,45,46,68,73
3	02/21/2023	1,8,20,24,25,26
4	08/12/2024	ALL
5	02/04/2025	13,14,16,23,36,37,51,57

CONTENTS

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CONTENTS

CONTENTS

Normal Operations

I. PREFLIGHT INSPECTION

INTERIOR INSPECTION

CAUTION

FLAPS MUST BE PLACED IN THE UP POSITION BEFORE THEY WILL LOCK AND SUPPORT WEIGHT ON THE STEP. REMOVE PITOT COVER BEFORE TURNING PITOT HEAT ON.

NOTE

NORMAL GEAR STRUT EXTENSION (EXPOSED AREA) CORRESPONDS TO THAT FOR THE AIRPLANE UNDER A NORMAL STATIC LOAD (EMPTY WEIGHT OF THE AIRPLANE PLUS FULL FUEL AND OIL).

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1. Aircraft documents and certificate
   a) VERIFY N-NUMBER OF FOLDER MATCHES THE AIRCRAFT
   b) AIRWORTHINESS CERTIFICATE
   c) REGISTRATION CERTIFICATE
   d) POH OR AIRPLANE FLIGHT MANUAL
   e) WEIGHT AND BALANCE DATA
   f) EQUIPMENT LIST

2. Inspections
   a) 100 HOUR / ANNUAL
   b) PITOT STATIC
   c) ELT BATERY DUE
   d) TRANSPONDER
   e) VOR CHECK
   f) AIRWORTHINESS DIRECTIVES

3. Control Wheel ..... RELEASE RESTRAINTS
4. PARK BRAKE ..... SET
5. All Instrument Panel and Overhead Switches ..... OFF
6. MIXTURE ..... IDLE CUT-OFF
7. LEFT/RIGHT MAG SWITCHES ..... OFF

8. BATT MASTR Switch ..... ON
9. AVION MASTER ON ..... VERIFY NAV DATABASE(IFR ONLY)
10. Interior Lighting (Night Flight) ..... VERIFY OPERATION
11. PITOT HEAT Switch ..... ON
12. PITOT HEAT OFF CAS Message ..... EXTINGUISHED
13. FUEL QTY Indications ..... CHECK QUANTITY
14. Exterior Lighting Switches ..... ON
15. Exterior Lighting ..... VERIFY OPERATION

CAUTION

CARE SHOULD BE TAKEN WHEN CHECKING THE HEATED PITOT HEAD. THE UNIT BECOMES VERY HOT. GROUND OPERATION SHOULD BE LIMITED TO THREE MINUTES TO AVOID DAMAGING THE HEATER ELEMENTS.

16. Pitot/Static Head ..... CHECK – WARM
17. Stall Warning Horn ..... CHECK
18. All Lighting Switches ..... OFF
19. PITOT HEAT Switch ..... OFF
20. PITOT HEAT OFF CAS Message ..... ILLUMINATED
21. BATT MASTR Switch ..... OFF
22. Flaps ..... EXTENDED
23. Primary Flight Controls ..... PROPER OPERATION
24. Stabilator and Rudder Trim ..... NEUTRAL
25. Pitot and Static Systems ..... DRAIN (ALT STATIC MUST BE OPEN)
26. Windows ..... CHECK CLEAN

NOTE

SECURE AND ADJUST ALL UNUSED SEAT BELTS AND SHOLDER HARNESS TO PREVENT CONTROL INTERFERENCE OR PASSENGER INJURY DURING FLIGHT IN TURBULENT AIR.

27. Tow Bar and Baggage ..... STOW PROPERLY & SECURE
28. Baggage Door ..... CLOSE & SECURE

RIGHT WING

1. Surface Condition ..... CLEAR OF ICE, FROST, SNOW
2. Flap and Hinges ..... NO DAMAGE OR INTERFERENCE
3. Aileron and Hinges ..... NO DAMAGE
4. Static Wicks ..... CHECK and SECURE (3 TOTAL)
5. Wing Tip and Lights ..... CHECK
6. Fuel Tank ..... CHECK SUPPLY VISUALLY AND SECURE CAP
7. Fuel Tank Vent ..... CLEAR

CAUTION
WHEN DRAINING ANY AMOUNT OF FUEL, CARE SHOULD BE TAKEN TO ENSURE THAT NO FIRE HAZARD EXISTS BEFORE STARTING ENGINE.

8. Fuel Tank Sumps ..... DRAIN AND CHECK
9. Tie Down and Chock ..... REMOVE
10. Main Gear Strut ..... PROPER INFLATION (4.5 +/- .25 in.)
11. Tire ..... CHECK
12. Brake block and disc ..... CHECK
13. Fresh Air Inlet ..... CLEAR

NOSE SECTION

1. General Condition ..... CHECK
2. Cowling ..... SECURE
3. Windshield ..... CLEAN
4. Oil ..... CHECK QUANTITY (6 QTS MIN)
5. Dipstick ..... PRROPERLY SEATED AND SECURE
6. Oil Filler Door ..... SECURE
7. Propeller and Spinner ..... CHECK
8. Air Inlets ..... CLEAR
9. Chock ..... REMOVE
10. Nose Gear Strut ..... PROPER INFLATION (3.25 +/- .25 in)
11. Tire ..... CHECK
12. Fuel Strainer ..... DRAIN (READ NOTE)

CAUTION
WHEN DRAINING ANY AMOUNT OF FUEL, CARE SHOULD BE TAKEN TO ENSURE THAT NO FIRE HAZARD EXISTS BEFORE STARTING ENGINE.

NOTE
THE FUEL STRAINER SHOULD BE DRAINED TWICE, ONCE WITH THE FUEL SELECTOR VALVE ON EACH TANK.

Check the general condition of the nose section; look for oil or fluid leakage and that the cowling is secure. The propeller and spinner should be checked for detrimental nicks, cracks, or other defects. Check the tire for cuts, wear and proper inflation.

LEFT WING

1. Surface Condition ..... CLEAR OF ICE, FROST, SNOW
2. Fresh Air Inlet..... CLEAR
3. Main Gear Strut ..... PROPER INFLATION (4.5 +/- .25 in)
4. Tire ..... CHECK
5. Brake Block and Disc ..... CHECK

CAUTION
WHEN DRAINING ANY AMOUNT OF FUEL, CARE SHOULD BE TAKEN TO ENSURE THAT NO FIRE HAZARD EXISTS BEFORE STARTING ENGINE.

6. Fuel Tank Sump ..... DRAIN AND CHECK
7. Fuel Tank Vent ..... CLEAR
8. Tie Down and Chock ..... REMOVE
9. Fuel Tank ..... CHECK SUPPLY VISUALLY AND SECURE CAP
10. Pitot/Static Head ..... REMOVE COVER – HOLES CLEAR
11. OAT Probe..... CHECK
12. Wing Tip and Lights..... CHECK
13. Aileron and Hinges..... NO DAMAGE OR INTERFERENCE
14. Flap and Hinges..... NO DAMAGE OR INTERFERENCE
15. Static Wicks..... CHECK and SECURE (3 TOTAL)

FUSELAGE

1. Antennas ..... CHECK
2. Empennage (left side) ..... CLEAR OF ICE, FROST, SNOW
3. Stabilator and Trim Tab (left side) ..... NO DAMAGE OR INTERFERENCE
4. Rudder ..... NO DAMAGE OR INTERFERENCE
5. Static Wicks ..... CHECK and SECURE (3 TOTAL)
6. Stabilator and Trim Tab (right side) ..... NO DAMAGE OR INTERFERENCE
7. Empennage (right side) ..... CLEAR OF ICE, FROST, SNOW
8. Tie Down ..... REMOVE

II. BEFORE STARTING ENGINE

WARNING

THE **START ENGD** WARNING CAS MESSAGE WILL ILLLUMINATE AFTER 30 SECONDS OF CONTINUOUS ENGINE CRANKING. IF THE CAS MESSAGE ILLUMINATES AFTER THE ENGINE IS RUNNING, STOP THE ENGINE AND DETERMINE THE CAUSE.

CAUTION

DO NOT ATTEMPT FLIGHT IF THERE IS NO INDICATION OF ALTERNATOR OUTPUT

CAUTION

IF A POSITIVE OIL PRESSURE IS NOT INDICATED WITHIN 30 SECONDS FOLLOWING AN ENGINE START, STOP THE ENGINE AND DETERMINE THE TROUBLE. IN COLD WEATHER IT WILL TAKE A FEW SECONDS LONGER TO GET A POSITIVE OIL PRESSURE INDICATION.

NOTE

IF ENGINE DOES NOT START WITHIN 10 SECONDS, PRIME AND REPEAT STARTING PROCEDURE. STARTER MANUFACTURER RECOMMENDS STARTER CRANKING PERIODS BE LIMITED TO 10 SECONDS WITH A 2 MINUTE REST PERIOD BETWEEN CRANKING PERIODS. MAXIMUM OF 5 START PERIODS ALLOWED. IF START IS NOT ACHIEVED ON FIFTH ATTEMPT ALLOW STARTER TO COOL FOR 30 MINUTES BEFORE ATTEMPTING ADDITIONAL STARTS.

BEFORE STARTING ENGINE

1. N-Number ..... VERIFY CORRECT AIRCRAFT
2. Flaps ..... RETRACT
3. Passengers..... BOARD AND BRIEFED
4. Door..... CLOSED AND SECURE
5. Seats..... ADJUSTED AND LOCKED IN POSITION
6. Seat Belts and Harness ... FASTEN/ADJUST CHECK INERTIA REEL
7. FUEL Selector .....OFF THEN DESIRED TANK
8. PARK BRAKE ..... SET
9. Circuit Breakers.....CHECK IN
10. ALTERNATE AIR.....CLOSE

11. ALTERNATE STATIC SOURCE ..... OFF
12. All Electrical Switches ..... OFF
13. DAY/NIGHT Switch (if installed) ..... SET
14. BATT MASTR ..... OFF
15. AVION MASTER ..... OFF

NOTE
THE EMERG BATT MAY REMAIN ON AFTER CHECKING FOR PROPER BUS OPERATION, THEREBY ALLOWING THE DISPLAYS TO REMAIN ACTIVE PRIOR TO ENGINE START. AVOID DELAYS BETWEEN THEIS CHECK AND ENGINE STARTING TO PRESERVE EMERGENCY BATTERY POWER.

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16. EMERG BATT Switch..... ARM
    - PFD with no red-x's on:
        - Attitude
        - Airspeed
        - Altitude
        - Vertical Speed
    - Audio Panel
    - Com 1
    - Nav 1
    - Engine Indications (except oil pressure)
    - Standby Flight Instruments
17. E VOLTS Indication..... 23.3 VOLTS (Minimum)
18. FUEL QTY Indications ..... CHECK QUANTITY AND IMBALANCE

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*If the E VOLTS indication is less than 23.3 VOLTS, the voltage can be checked again at the end of the GROUND CHECK checklist (after being charged by the primary electrical system) or can be conditioning charged by ground personnel prior to further checks. E VOLTS indication must not be less than 23.3 volts prior to flight.

III. STARTING ENGINE

PRCEED TO THE APPROPRIATE ENGINE START CHECKLIST

NORMAL START – COLD ENGINE (oil temp below 140º)

1. THROTTLE ..... ½ IN. OPEN
2. BATT MASTR Switch ..... ON
3. ALTR Switch ..... ON
4. LEFT/RIGHT MAG Switches ..... ON
5. FUEL PUMP ..... ON
6. FIN STROBE Switch ..... ON
7. MIXTURE ..... PRIME 3-5 seconds – then IDLE CUT-OFF
8. CAS Messages ..... CONSIDER ANY ILLUMINATED
9. PFD Annunciations ..... CONSIDER ANY ILLUMINATED
10. Propeller ..... CLEAR
11. START Switch ..... ENGAGE
12. MIXTURE ..... ADVANCE
13. THROTTLE ..... ADJUST (800-1200 RPM WARM UP)
14. OIL Pressure ..... CHECK

NORMAL START – HOT ENGINE (oil temp above 140º)

1. THROTTLE ..... ½ IN. OPEN
2. BATT MASTR Switch ..... ON
3. ALTR Switch ..... ON
4. LEFT/RIGHT MAG Switches ..... ON
5. FUEL PUMP ..... ON
6. SIN STROBE Switch ..... ON
7. MIXTURE ..... IDLE CUT-OFF
8. CAS Messages ..... CONSIDER ANY ILLUMINATED
9. PFD Annunciations ..... CONSIDER ANY ILLUMINATED
10. Propeller ..... CLEAR
11. START Switch ..... ENGAGE
12. MIXTURE (when engine starts) ..... ADVANCE
13. THROTTLE ..... ADJUST (800-1200 RPM WARM UP)
14. OIL Pressure ..... CHECK

ENGINE START – FLOODED

1. THROTTLE ..... OPEN FULL
2. BATT MASTR Switch ..... ON
3. ALTR Switch ..... ON
4. LEFT/RIGHT MAG Switches ..... ON
5. FUEL PUMP ..... ON
6. SIN STROBE Switch ..... ON
7. MIXTURE ..... IDLE CUT-OFF
8. CAS Messages ..... CONSIDER ANY ILLUMINATED
9. PFD Annunciations ..... CONSIDER ANY ILLUMINATED
10. Propeller ..... CLEAR
11. START Switch ..... ENGAGE
12. MIXTURE (when engine starts) ..... ADVANCE
13. THROTTLE ..... RETARD
14. OIL Pressure ..... CHECK

ENGINE START – USING EXTERNAL POWER SOURCE

NOTE
THE EMERG BATT SWITCH MAY REMAIN ON WHILE USING EXTERNAL POWER. THE EMERGENCY BUS DOES NOT RECEIVE POWER FROM THE EXTERNAL POWER SOURCE DUE TO A RELAY IN THE CIRCUIT.

1. BATT MASTR Switch ..... OFF
2. ALTR Switch ..... OFF
3. LEFT/RIGHT MAG Switches ..... ON
4. EMERG BATT Switch ..... Verify ARM
5. ALL Electrical Equipment ..... OFF
6. External Power ..... APPLY
7. Throttle ..... ½ IN. OPEN
8. FUEL PUMP ..... ON
9. FIN STROBE Switch ..... ON
10. MIXTURE ..... PRIME 3-5 seconds – then IDLE CUT-OFF
11. CAS Messages ..... CONSIDER ANY ILLUMINATED
12. PFD Annunciations ..... CONSIDER ANY ILLUMINATED
13. Propeller ..... CLEAR
14. START Switch ..... PRESS

15. MIXTURE (when engine starts)..... ADVANCE
16. THROTTLE .....LOWEST POSSIBLE RPM
17. External Power ..... DISCONNECT
18. ALTR Switch.....ON – Check Ammeter Indication

NOTE
DO NOT ATTEMPT FLIGHT IF THERE IS NO INDICATION OF ALTERNATOR OUTPUT.

NOTE
AVOID PROLONGED IDLING AT LOW RPM, AS THIS PRACTICE MAY RESULT IN FOULED SPARK PLUGS.

IV. BEFORE TAXIING

1. AVION MASTER Switch ..... ON
2. EMERG BATT Switch..... VERIFY ARM
3. Multi-Function Display (MFD) .... VERIFY DATABASE CURRENCY
4. MFD Aux – Weight planning.....ENTER WEIGHTS AS REQUIRED
5. Fuel Totalizer (weight)..... FOB SYNC OR ENTER MANUALLY
6. CAS Messages.....CONSIDER ANY ILLUMINATED
7. PFD Annunciations.....CONSIDER ANY ILLUMINATED
8. System Messages (Message Softkey).....CONSIDER
9. Lights..... AS REQUIRED
10. Heater and Defroster.....AS DESIRED
11. TAWS and TRAFFIC (if installed) ..... TEST
12. COM/NAV Radios & AVIONICS ..... CHECK &TEST
13. Annunciator Test ..... TEST
14. LRU ..... CHECK ALL GREEN
15. Autopilot.....Verify Preflight Self-Test (PFT) completed and disconnect tone heard
16. Standby Flight Instrument ..... VERIFY NO RED-X'S OR FAILURE ANNUN
17. Altimeter/Standby Altimeter ..... SET
18. TIMER..... SET 30 MIN FOR FUEL BURN
19. CLOCK..... SET
20. RADIOS ..... SET
21. TRANSPONDER..... As Required
22. Passenger Briefing..... COMPLETE
23. PARK BRAKE..... RELEASE

V. TAXIING

1. Taxi area ..... CLEAR
2. PARK BRAKE ..... RELEASED
3. Throttle ..... APPLY SLOWLY
4. Brakes ..... CHECK
5. Steering ..... CHECK
6. Speed ..... MINIMUM REQUIRED
7. Instruments ..... CHECK

NOTE

DURING TAXI, IF THE VOLTS INDICATION DECREASES INTO THE WARNING RANGE, INCREASE ENGINE RPM (IF POSSIBLE) TO RETAIN ADEQUATE BATTERY CHARGING.

NOTE

DURING EXTENDED PERIODS OF ENGINE IDLE AT HIGH AMBIENT TEMPERATURES, FUEL FLOW TO THE ENGINE CAN BE INTERRUPTED BY THE FORMATION OF FUEL VAPOR BUBBLES IN THE FUEL LINE RESULTING IN ROUGH IDEL OPERATION. TO CORRECT THIS CONDITION, SEE SECTION 4.15

VI. GROUND CHECK

1. PARK BRAKE ..... SET
2. THROTTLE ..... 2000 RPM
3. LEFT/RIGHT MAG Check ..... MAX DROP 175 RPM, MAX DIFF 50 RPM
4. Oil Temperature ..... CHECK
5. Oil Pressure ..... CHECK
6. VOLTS Indication ..... CHECK BUS (28 +/- 1 VOLT)
7. ALTR AMPS Indication ..... CHECK NORMAL
8. ALTERNATE AIR ..... APPROX 40 RPM DROP MIN
9. FUEL PUMP ..... OFF (Verify Engine Operation)
10. THROTTLE ..... RETARD

NOTE

OPERATION ON ONE MAGNETO SHOULD NOT EXCEED 10 SECONDS.

NOTE
AVOID PROLONGED GROUND OPERATION WITH ALTERNATE AIR "OPEN" AS THE AIR IS UNFILTERED.

IF E VOLTS INDICATION LESS THAN 23.3 VOLTS DURING BEFORE STARTING ENGINE CHECKLIST

1. EMERG BATT Switch..... Verify ARM
2. AVION MASTER Switch ..... OFF
3. ALTR Switch..... OFF
4. BATT MASTR Switch ..... OFF
5. E VOLTS Indication.....23.3 VOLTS MINIMUM

IF E VOLTS LESS THAN 23.3 VOLTS, DETERMINE CAUSE AND CORRECT THE ISSUE PRIOR TO FLIGHT

IF E VOLTS GREATER THAN OR EQUAL TO 23.3 VOLTS

1. BATT MASTR Switch .....ON
2. ALTR Switch.....ON
3. AVION MASTER Switch .....ON

VII. BEFORE TAKEOFF

1. N-Number ..... VERIFY CORRECT AIRCRAFT
2. BATT MASTR Switch ..... VERIFY ON
3. ALTR Switch ..... VERIFY ON
4. FUEL PUMP ..... ON
5. LEFT/RIGHT MAG Switches ..... VERIFY ON
6. Flight Instruments ..... CHECK
7. Standby Flight Instruments ..... CHECK
8. CAS Messages ..... CONSIDER ANY ILLUMINATED
9. PFD Annunciations ..... CONSIDER ANY ILLUMINATED
10. System Messages (Messages Softkey) ..... CONSIDER
11. Transponder ..... ALT
12. Radios ..... SET
13. FUEL Selector ..... PROPER TANK (30 MINS)
14. Engine Indications ..... CHECK
15. ALTERNATE AIR ..... CLOSE
16. MIXTURE ..... SET
17. Seat Backs ..... ERECT
18. Seats ..... ADJUSTED AND LOCKED IN POSITION
19. Belts/Harness ..... FASTENED/CHECK
20. Empty Seats ..... SEAT BELTS SECURELY FASTENED
21. Flaps ..... SET
22. Stabilator and Rudder Trims ..... SET
23. Controls ..... FREE and CORRECT
24. PERFORM R.A.D.E CHECK
    - Runway ..... TAKEOFF DISTANCE
    - Airspeed ..... TAKEOFF AIRSPEED
    - Departure ..... DEPARTURE PROCEDURE
    - Emergencies ..... REVIEW TAKEOFF EMERGENCIES
25. Door ..... LATCHED
26. Air Conditioner (if installed) ..... OFF

NOTE

TAS AURAL ALERTS WILL BE MUTED WHEN GPS ALTITUDE IS LOWER THAN 400 FT AGL.

VIII. IFR BEFORE TAKEOFF

1. Comm 1 and Comm 2 ..... TEST and SET
2. Nav 1 and Nav 2 ..... TEST and SET
3. CDI ..... SET
4. GPS ..... TEST and SET
5. Marker Beacons ..... TEST and SET
6. Clearance ..... REVIEW
7. Local Approach Procedure ..... REVIEW(FOR EMERGENCY)

IX. TAKEOFF

1. Flaps ..... UP or 25°
2. Trim ..... SET
3. Fuel Pump ..... ON
4. Lights ..... AS REQUIRED
5. Pitot Heat ..... AS REQUIRED
6. Window ..... CLOSED

*****BELOW ITEMS ON RUNWAY*****

7. Brakes ..... APPLY & HOLD(unless excess runway is avail)
8. THROTTLE ..... FULL POWER (2240 RPM MIN)
9. Takeoff Time ..... RECORD
10. Engine Instruments ..... CHECK
11. Brakes ..... RELEASE
12. Rotation Airspeed ..... 60 KIAS

X. AFTER TAKEOFF (SAFE ALTITUDE)

1. Flaps ..... UP
2. Engine Temperature ..... NORMAL
3. Throttle ..... SET
4. Mixture ..... AS REQUIRED

XI. CLIMB

1. Throttle ..... FULL OPEN
2. Engine Temperature ..... MONITOR
3. Mixture ..... LEAN (AS REQUIRED)
4. Best rate (flaps up) ..... 76 KIAS
5. Best angle (flaps up) ..... 64 KIAS
6. Enroute ..... 87 KIAS
7. FUEL PUMP ..... OFF (at desired altitude)
8. Lights ..... AS REQUIRED

XII. CRUISE

1. Power ..... SET
2. Mixture ..... ADJUST
3. FUEL SELECTOR ..... PROPER TANK (30 MINS)

NOTE
THE ELECTRIC FUEL PUMP SHOULD BE TURNED ON BEFORE SWITCHING TANKS, AND SHOULD BE LEFT ON FOR A SHORT PERIOD THEREAFTER.

XIII. DESCENT

1. THROTTLE ..... AS REQUIRED
2. AIRSPEED ..... AS REQUIRED
3. MIXTURE ..... AS REQUIRED

NOTE
IF THE POWER IS AT IDLE DURING DESCENT VERIFY POWER WITH THE THROTTLE EVERY 30 SECONDS.

XIV. BEFORE LANDING

1. COM/NAV Radios & Avionics ..... CHECK & SET
2. Altimeter/Standby Altimeter ..... SET
3. Seat Backs ..... ERECT
4. Seat Belts, Harnesses ..... FASTEN/ADJUSTED
5. Armrests ..... STOWED
6. FUEL PUMP ..... ON
7. FUEL Selector ..... PROPER TANK
8. FLAPS ..... SET (102 KIAS max)
9. ALTERNATE AIR ..... AS REQUIRED
10. MIXTURE ..... FULL RICH
11. AIR COND Switch (if installed) ..... OFF
12. Landing Light ..... AS REQUIRED
13. PARK BRAKE ..... Verify OFF
14. Toe Brakes ..... DISCONNECT
15. Autopilot ..... DISCONNECT (Above 200 FT AGL)

XV. GO-AROUND

1. MIXTURE ..... FULL RICH
2. THROTTLE ..... FULL OPEN
3. Control Wheel ... BACK PRESSURE TO OBTAIN POSITIVE CLIMB ATTITUE
4. FLAPS ..... RETRACT INCREMENTALLY

XVI. AFTER LANDING

CLEAR OF RUNWAY

1. FLAPS ..... RETRACT
2. Air Conditioner (if installed) ..... AS DESIRED
3. FUEL PUMP ..... OFF
4. STROBE LIGHTS Switch ..... AS REQUIRED
5. LANDG LIGHT Switch ..... AS REQUIRED
6. Trim ..... SET
7. Transponder ..... AS REQUIRED

XVII. STOPPING ENGINE

1. PARK BRAKE ..... SET
2. FLAPS ..... RETRACT
3. FUEL PUMP ..... OFF
4. EMERG BATT Switch ..... OFF
5. AVION MASTER ..... OFF
6. Air Conditioner (if installed) ..... OFF
7. Electrical Switches ..... OFF
8. ALTR Switch ..... OFF
9. THROTTLE ..... CLOSED
10. MIXTURE ..... IDLE CUT-OFF
11. LEFT/RIGHT MAG Switches ..... OFF
12. Interior Lights (at night) ..... OFF
13. Exterior Lights ..... OFF
14. BATT MASTR Switch ..... OFF
15. STANDBY INSTRUMENT ..... VERIFY SHUTDOWN

CAUTION

THE FLAPS MUST BE PLACED IN THE UP POSITION FOR THE FLAP STOP TO SUPPORT WEIGHT. PASSENGERS SHOULD BE CAUTIONED ACCORDINGLY.

NOTE

IN CASE THE STANDBY INSTRUMENT REMAIS "ON" DUE TO IMPROPER SHUTDOWN, THE UNIT SWITCHES TO INTERNAL BATTERY AND DEPLETES IT. TO TURN OFF THE ASPEN EBD, PRESS THE "SHUT DOWN" COMMAND FROM MAIN MENU PAGE 6 OR HOLD THE RED "REV" BUTTON FOR 20 SECONDS. TO TURN OFF THE GARMIN G5, PRESS AND HOLD THE POWER BUTTON FOR FIVE SECONDS.

XVIII. BEFORE LEAVING THE AIRCRAFT

1. Hobbs time ..... RECORD
2. Tach time ..... RECORD
3. Wings ..... TIE DOWN
4. Tail ..... TIE DOWN
5. Post-flight inspection ..... ACCOMPPLISH
6. CLOSE FLIGHT PLAN ..... AS REQUIRED

I. NORMAL TAKEOFF

1. Takeoff Emergency Procedure ..... REVIEW
2. Wing flaps ..... UP or 10°
3. Mixture ..... RICH
4. Trim ..... SET (TAKEOFF POSITION)
5. Takeoff Clearance ..... OBTAIN
6. Aircraft ..... ALIGN ON CENTERLINE
7. Take-off Time ..... RECORD
8. Ailerons ..... SET (CROSSWIND CORRECTION)
9. Brakes ..... APPLY & HOLD
10. Throttle ..... FULL POWER (2240 RPM MIN)
11. Engine Instruments ..... CHECK (GREEN ARC)
12. Brakes ..... RELEASE
13. Directional Control ..... MAINTAIN
14. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
15. At 60 KIAS ..... SMOOTHLY ROTATE TO CLIMB ATTITUDE
16. Pitch Attitude ..... ESTABLISH Vy
17. Airspeed ..... ACCELERATE TO 76 KIAS (Vy)
18. Brakes ..... APPLY (TO STOP WHEEL ROTATION)
19. REMAIN ALIGNED WITH RUNWAY
20. Normal Climb ..... ESTABLISH 87 KIAS (500 FT AGL)
21. After Takeoff Checklist ..... COMPLETE (1000 AGL)
22. TRAFFIC PATTERN
    a. Airspeed ..... 90 KIAS
    b. Throttle ..... 1800-2000 RPM
23. NORMAL CRUISE
    a. Airspeed ..... AS REQUIRED
    b. Throttle ..... SET
    c. Mixture ..... LEAN

II. SOFT-FIELD TAKEOFF AND CLIMB

1. Takeoff Emergency Procedure ..... REVIEW
2. Wing flaps ..... 25° (second notch)
3. Mixture ..... RICH
4. Trim ..... SET (TAKEOFF POSITION)
5. Takeoff Clearance ..... OBTAIN
6. Taxi onto the runway ..... BACK ELEVATOR PRESSURE
7. Aircraft ..... ALIGN ON CENTERLINE (AVOID STOPPING)
8. Take-off Time ..... RECORD
9. Ailerons ..... SET (CROSSWIND CORRECTION)
10. Throttle ..... FULL POWER (2240 RPM MIN)
11. Engine Instruments ..... CHECK (GREEN ARC)
12. Nose high attitude ..... ESTABLISH AND MAINTAIN
13. Directional Control ..... MAINTAIN
14. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
15. Lift off ..... LOWEST POSSIBLE AIRSPEED
16. ACCELERATE IN GROUND EFFECT TO:
    a. Vx ..... 64 KIAS (OBSTRUCTION)
    b. Vy ..... 76 KIAS (NO OBSTRUCTION)
17. Brakes ..... APPLY (TO STOP WHEEL ROTATION)
18. REMAIN ALIGNED WITH RUNWAY
19. Wing flaps ..... UP (500 FT AGL AND 64 KIAS)
20. Normal Climb ..... ESTABLISH 87 KIAS (500 FT AGL)
21. After Takeoff Checklist ..... COMPLETE (1000 AGL)
22. TRAFFIC PATTERN
    a. Airspeed ..... 90 KIAS
    b. Throttle ..... 1800-2000 RPM
23. NORMAL CRUISE
    a. Airspeed ..... AS REQUIRED
    b. Throttle ..... SET
    c. Mixture ..... LEAN

III. SHORT-FIELD TAKEOFF AND CLIMB

1. Takeoff Emergency Procedure ..... REVIEW
2. Wing flaps ..... 25° (second notch)
3. Mixture ..... RICH
4. Trim ..... SLIGHTLY AFT OF NEUTRAL
5. Takeoff Clearance ..... OBTAIN
6. Aircraft ..ALIGN ON CENTERLINE (USE ALL AVAIL. RUNWAY)
7. Take-off Time ..... RECORD
8. Ailerons ..... SET (CROSSWIND CORRECTION)
9. Brakes ..... HOLD
10. Throttle ..... FULL POWER (2240 RPM MIN)
11. Engine Instruments ..... CHECK (GREEN ARC)
12. Brakes ..... RELEASE
13. Directional Control ..... MAINTAIN
14. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
15. Rotate ..... 55 KIAS
16. CLIMB AT Vx 64 KIAS UNTIL OBSTACLE IS CLEARED OR 50 FEET
17. Pitch Attitude ..... ESTABLISH Vy 76 KIAS
18. Brakes ..... APPLY (TO STOP WHEEL ROTATION)
19. REMAIN ALIGNED WITH RUNWAY
20. Wing flaps ..... RETRACT SLOWLY (500 FT AGL AND 64 KIAS
21. Normal Climb ..... ESTABLISH 87 KIAS (500 FT AGL)
22. After Takeoff Checklist ..... COMPLETE (1000 AGL)
23. TRAFFIC PATTERN
    a. Airspeed ..... 90 KIAS
    b. Throttle ..... 1800-2000 RPM
24. NORMAL CRUISE
    a. Airspeed ..... AS REQUIRED
    b. Throttle ..... SET
    c. Mixture ..... LEAN

IV. NORMAL APPROACH AND LANDING

1. Airspeed ..... 90 KIAS 1800-2000 RPM
2. Before Landing Checklist
    a. COM/NAV Radios & Avionics ..... CHECK & SET
    b. Altimeter/Standby Altimeter ..... SET
    c. Seat Backs ..... ERECT
    d. Seat Belts, Harnesses ..... FASTEN/ADJUSTED
    e. Armrests ..... STOWED
    f. FUEL PUMP ..... ON
    g. FUEL Selector ..... PROPER TANK
    h. FLAPS ..... SET (102 KIAS max)
    i. ALTERNATE AIR ..... AS REQUIRED
    j. MIXTURE ..... FULL RICH
    k. AIR COND Switch (if installed) ..... OFF
    l. Landing Light ..... AS REQUIRED
    m. PARK BRAKE ..... Verify OFF
    n. Toe Brakes ..... DISCONNECT
    o. Autopilot ..... DISCONNECT (Above 200 FT AGL)
3. Abeam Landing Point
    a. Throttle ..... 1300 to 1500 RPM
    b. Airspeed ..... SLOW TO 85 KIAS (LEVEL FLIGHT)
    c. Flaps ..... 10°
    d. Trim ..... ADJUST
4. Base
    a. Flaps ..... 25°
    b. Airspeed ..... 75-80 KIAS
    c. Trim ..... ADJUST
5. Final
    a. Flaps ..... 40°
    b. Airspeed ..... 66 KIAS (+ GUST CORRECTION)
    c. Trim ..... ADJUST
6. Side Slip ..... ESTABLISH (FOR CROSSWIND LANDING IF REQUIRED)
7. Throttle ..... REDUCE (GRADUALLY
8. Touchdown ..... ALIGNED / OVER CENTERLINE
9. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
10. Directional Control ..... MAINTAIN
11. Nose Wheel ..... LOWER GENTLY
12. Brakes ..... AS REQUIRED

V. POWER-OFF 180° APPROACH/LANDING

1. Airspeed.....90 KIAS 1800-2000 RPM
2. Before Landing Checklist
    a. COM/NAV Radios & Avionics.....CHECK & SET
    b. Altimeter/Standby Altimeter ..... SET
    c. Seat Backs .....ERECT
    d. Seat Belts, Harnesses..... FASTEN/ADJUSTED
    e. Armrests .....STOWED
    f. FUEL PUMP .....ON
    g. FUEL Selector..... PROPER TANK
    h. FLAPS.....SET (102 KIAS max)
    i. ALTERNATE AIR ..... AS REQUIRED
    j. MIXTURE.....FULL RICH
    k. AIR COND Switch (if installed) ..... OFF
    l. Landing Light..... AS REQUIRED
    m. PARK BRAKE.....Verify OFF
    n. Toe Brakes ..... DISCONNECT
    o. Autopilot ..... DISCONNECT (Above 200 FT AGL)
3. DOWNWIND KEY POSITION
    a. Throttle ..... IDLE
    b. Airspeed ..... REDUCE TO 76 KIAS Glide
    c. Trim.....ADJUST
4. BASE TURN ..... MEDIUM OR STEEPER BANK
5. BASE KEY POSITION
    a. Flaps .....10°
    b. Airspeed ..... 76 KIAS
    c. Trim.....ADJUST
6. FINAL
    a. Flaps ..... 40° (WHEN NEEDED)
    b. Airspeed ..... 66 KIAS (+ GUST CORRECTION)
    c. Trim.....ADJUST
7. Side Slip.....ESTABLISH (FOR CROSSWIND LANDING IF REQUIRED)
8. Touchdown..... ALIGNED / OVER CENTERLINE WITHIN 200 FT
9. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
10. Directional Control ..... MAINTAIN
11. Nose Wheel ..... LOWER GENTLY
12. Brakes ..... AS REQUIRED

VI. SOFT FIELD APPROACH AND LANDING

1. Airspeed ..... 90 KIAS 1800-2000 RPM
2. Before Landing Checklist
   - a. COM/NAV Radios & Avionics ..... CHECK & SET
   - b. Altimeter/Standby Altimeter ..... SET
   - c. Seat Backs ..... ERECT
   - d. Seat Belts, Harnesses ..... FASTEN/ADJUSTED
   - e. Armrests ..... STOWED
   - f. FUEL PUMP ..... ON
   - g. FUEL Selector ..... PROPER TANK
   - h. FLAPS ..... SET (102 KIAS max)
   - i. ALTERNATE AIR ..... AS REQUIRED
   - j. MIXTURE ..... FULL RICH
   - k. AIR COND Switch (if installed) ..... OFF
   - l. Landing Light ..... AS REQUIRED
   - m. PARK BRAKE ..... Verify OFF
   - n. Toe Brakes ..... DISCONNECT
   - o. Autopilot ..... DISCONNECT (Above 200 FT AGL)
3. Abeam Landing Point
   - a. Throttle ..... 1300 to 1500 RPM
   - b. Airspeed ..... SLOW TO 85 KIAS (LEVEL FLIGHT)
   - c. Flaps ..... 10°
   - d. Trim ..... ADJUST
4. Base
   - a. Flaps ..... 25°
   - b. Airspeed ..... 75-80 KIAS
   - c. Trim ..... ADJUST
5. Final
   - a. Flaps ..... 40°
   - b. Airspeed ..... 66 KIAS (+ GUST CORRECTION)
   - c. Trim ..... ADJUST
6. Side Slip ..... ESTABLISH (FOR CROSSWIND LANDING IF REQUIRED)
7. Throttle ..... 1000-1200 RPM
8. Flare ..... DISSIPATE FORWARD SPEED
9. Touchdown ..... GENTLY ALIGNED WITH CENTERLINE
10. Throttle ..... AS REQUIRED
11. Elevator ..... HOLD NOSEWHEEL OFF GROUND
12. Aileron Deflection ..... ADJUST (CROSSWIND CORRECTION)
13. Brakes ..... MINIMUM REQUIRED
14. Elevator Back Pressure ..... MAINTAIN

VII. SHORT FIELD APPROACH AND LANDING

1. Airspeed.....90 KIAS 1800-2000 RPM
2. Before Landing Checklist
   a. COM/NAV Radios & Avionics.....CHECK & SET
   b. Altimeter/Standby Altimeter.....SET
   c. Seat Backs.....ERECT
   d. Seat Belts, Harnesses.....FASTEN/ADJUSTED
   e. Armrests.....STOWED
   f. FUEL PUMP.....ON
   g. FUEL Selector.....PROPER TANK
   h. FLAPS.....SET (102 KIAS max)
   i. ALTERNATE AIR.....AS REQUIRED
   j. MIXTURE.....FULL RICH
   k. AIR COND Switch (if installed).....OFF
   l. Landing Light.....AS REQUIRED
   m. PARK BRAKE.....Verify OFF
   n. Toe Brakes.....DISCONNECT
   o. Autopilot.....DISCONNECT (Above 200 FT AGL)
3. Abeam Landing Point
   a. Throttle.....1300 to 1500 RPM
   b. Airspeed.....SLOW TO 85 KIAS (LEVEL FLIGHT)
   c. Flaps.....10°
   d. Trim.....ADJUST
4. Base
   a. Flaps.....25°
   b. Airspeed.....75-80 KIAS
   c. Trim.....ADJUST
5. Final
   a. Flaps.....40°
   b. Airspeed.....66 KIAS (+ GUST CORRECTION)
   c. Trim.....ADJUST
6. Side Slip.....ESTABLISH (FOR CROSSWIND LANDING IF REQUIRED)
7. Throttle.....IDLE (LANDING ASSURED)
8. Touchdown.....LITTLE OR NO FLOAT
9. Alignment.....OVER CENTERLINE
10. Flaps.....UP IMMEDIATELY
11. Brakes.....MAXIMUM **DO NOT LOCK**
12. Elevator.....MAXIMUM AFT
13. Aileron Deflection.....ADJUST (CROSSWIND CORRECTION)
14. Directional Control.....MAINTAIN

VIII. POWER OFF STALL (CLEAN)

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Throttle ..... IDLE (SLOWLY)
    b. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS
5. Pitch ..... STALL ATTITUDE (LEVEL OR 20°)
6. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT.
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
7. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
8. Pitch ..... Vy ATTITUDE / POSITIVE CLIMB
9. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
10. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
11. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
12. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
13. Normal Cruise ..... ESTABLISH

IX. POWER OFF STALL (LANDING CONFIGURATION)

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Flaps ..... 40° (ONE NOTCH AT A TIME)
    b. Throttle ..... 1200 RPM (SLOWLY)
    c. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS
5. Pitch ..... STALL ATTITUDE (LEVEL OR 20°)
6. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT.
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
7. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
8. Pitch ..... RAISE TO Vx ATTITUDE
9. Flaps ..... 25° (POSITIVE CLIMB)
10. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
11. Flaps ..... 10° (POSITIVE CLIMB)
12. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
13. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
14. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
15. Normal Cruise ..... ESTABLISH

X. POWER ON STALL (CLEAN)

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... SLOW TO 60 KIAS (ROTATION AIRSPEED)
5. Takeoff Power
    a. Mixture ..... AS REQUIRED
    b. Throttle ..... FULL (SLOWLY)
6. Pitch ..... STALL ATTITUDE (LEVEL OR 20°)
7. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT.
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
8. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
9. Pitch ..... Vx ATTITUDE / POSITIVE CLIMB
10. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
11. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
12. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
13. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
14. Normal Cruise ..... ESTABLISH

XI. POWER ON STALL (TAKEOFF)

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Flaps ..... 25° (ONE NOTCH AT A TIME)
    b. Airspeed ..... SLOW TO 60 KIAS (LEVEL FLIGHT)
    c. Throttle ..... FULL (SLOWLY)
4. Pitch ..... STALL ATTITUDE (LEVEL OR 20°)
5. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT.
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
6. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
7. Pitch ..... RAISE TO Vx ATTITUDE
8. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
9. Flaps ..... 10° (POSITIVE CLIMB)
10. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
11. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
12. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
13. Normal Cruise ..... ESTABLISH

XII. ACCELERATED STALL

1. Altitude ..... ABOVE 3,000 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1800 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... 80 KIAS
5. Throttle ..... IDLE (SLOWLY)
6. Bank ..... 45°
7. Pitch ..... MAINTAIN ALTITUDE
8. Stall Indications
    a. Onset (ANNOUNCE) ..... BUFFETING OR DECAY OF CONTROL EFFECT
    b. Full (ANNOUNCE) .... NOSE DOWN OR HIGH SINK RATE
9. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
10. Pitch ..... Vy ATTITUDE / POSITIVE CLIMB
11. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
12. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
13. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
14. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
15. Normal Cruise ..... ESTABLISH

XIII. SECONDARY STALL (CLEAN)

1. Altitude ..... ABOVE 3,000 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Throttle ..... IDLE (SLOWLY)
    b. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS
5. Pitch ..... STALL ATTITUDE
6. Stall Indications
    a. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
    b. Pitch..... INCREASE TO INDUCE A SECONDARY STALL
7. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
8. Pitch ..... Vx ATTITUDE / POSITIVE CLIMB
9. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
10. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
11. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
12. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
13. Normal Cruise ..... ESTABLISH

XIV. SECONDARY STALL (LANDING CONFIGURATION)

1. Altitude ..... ABOVE 3,000 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Flaps ..... 45° (ONE NOTCH AT A TIME)
    b. Throttle ..... IDLE (SLOWLY)
    c. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS
5. Pitch ..... STALL ATTITUDE
6. Stall Indications
    a. Full (ANNOUNCE) .... NOSE DOWN OR HIGH SINK RATE
    b. Pitch..... INCREASE TO INDUCE A SECONDARY STALL
7. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
8. Pitch ..... RAISE TO Vx ATTITUDE
9. Flaps ..... 25° (POSITIVE CLIMB)
10. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
11. Flaps ..... 10° (POSITIVE CLIMB)
12. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
13. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
14. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
15. Normal Cruise ..... ESTABLISH

XV. ELEVATOR TRIM STALL

1. Altitude ..... ABOVE 3,000 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Flaps ..... 45° (ONE NOTCH AT A TIME)
    b. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS
5. Throttle ..... APPLY GO-AROUND POWER (SLOWLY)
6. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
7. Recovery
    a. Pitch Down ..... BREAK STALL
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
    d. Wings Level ..... COORDINATED FLIGHT
8. Pitch ..... RAISE TO Vx ATTITUDE
9. Flaps ..... 25° (POSITIVE CLIMB)
10. Airspeed..... ACCELERATE TO Vx (64 KIAS)
11. Flaps ..... 10° (POSITIVE CLIMB)
12. Airspeed..... ACCELERATE TO Vy (76 KIAS)
13. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
14. Level Off ..... NO ALTITUDE LOSS
    a. Pitch..... ADJUST
    b. Trim..... ADJUST
15. Normal Cruise ..... ESTABLISH

XVI. CROSSED CONTROL STALL

1. Altitude ..... ABOVE 3,000 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Flaps ..... VERIFY UP
    b. Throttle ..... IDLE (SLOWLY)
    c. Airspeed ..... SLOW TO 66 KIAS (LEVEL FLIGHT)
4. Establish Glide ..... 66 KIAS 30° BANK
5. APPLY INSIDE RUDDER, MAINTAIN 30° BANK WITH OPPOSITE AILERON
6. ADD BACK PRESSURE TO INDUCE A STALL
7. Stall Indications
    a. Onset (ANNOUNCE)..... BUFFETING OR DECAY OF CONTROL EFFECT.
    b. Full (ANNOUNCE) ....NOSE DOWN OR HIGH SINK RATE
8. Recovery
    a. Pitch Down ..... BREAK STALL
    a. Wings Level ..... COORDINATED FLIGHT
    b. Mixture ..... AS REQUIRED
    c. Throttle ..... FULL (SLOWLY)
9. Pitch ..... Vy ATTITUDE / POSITIVE CLIMB
10. Airspeed ..... ACCELERATE TO Vx (64 KIAS)
11. Airspeed ..... ACCELERATE TO Vy (76 KIAS)
12. Flaps ..... VERIFY UP / POSITIVE CLIMB RATE
13. Level Off ..... NO ALTITUDE LOSS
    a. Pitch ..... ADJUST
    b. Trim ..... ADJUST
14. Normal Cruise ..... ESTABLISH

XVII. MANEUVERING DURING SLOW FLIGHT

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... 60-55 (APPROXIMATELY)
5. Altitude ..... LEVEL, CLIMB OR DESCEND
6. Trim ..... ADJUST
7. Maneuver ..... TWO 90° OPPOSITE TURNS
8. Flaps ..... EXTEND 45° INCREMENTAL
9. Airspeed ..... 55-50 (APPROXIMATELY)
10. Altitude ..... LEVEL, CLIMB OR DESCEND
11. Trim ..... ADJUST
12. Maneuver ..... TWO 90° OPPOSITE TURNS
13. Recovery
    a. Mixture ..... RICH
    b. Throttle ..... FULL (SLOWLY)
14. Flaps ..... 25°
15. Trim ..... ADJUST
16. Altitude ..... MAINTAIN
17. Trim ..... ADJUST
18. Airspeed ..... ACCELERATE to Vy 76 KIAS
19. Flaps ..... UP
20. Trim ..... ADJUST
21. Normal Cruise ..... ESTABLISH

XVIII. DEMONSTRATION OF FLIGHT CHARACTERISTICS AT VARIOUS CONFIGURATIONS AND AIRSPEEDS

Clean Configuration Demonstration

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 1500 RPM (AS REQUIRED)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... Va-100 KIAS (MAINTAIN ALTITUDE)
5. Describing Required
    a. Pitch
    b. Power
    c. Trim
6. Airspeed ..... Vg-76 KIAS (MAINTAIN ALTITUDE)
    a. Noting ..... POWER SETTING
7. Airspeed ..... MCA-53 KIAS (MAINTAIN ALTITUDE)
    a. Noting ..... POWER SETTING
    b. Verbally Acknowledge ..... STALL INDICATIONS
8. Decrease Pitch
    a. Accelerate to Faster Airspeed Until Establishing Level Flight
    b. Noting
        i. Altitude Loss
        ii. New Airspeed
9. Return to Va at Altitude and Heading Specified by the Evaluator

Landing Configuration Demonstration

10. Airspeed ..... Va-100 KIAS (MAINTAIN ALTITUDE)
11. Describing Required
    a. Pitch
    b. Power
    c. Trim
12. Flaps ..... 40º INCREMENTALLY <Vfe (MAINTAIN ALTITUDE)

13. Airspeed.....66 KIAS (MAINTAIN ALTITUDE)
    a. Noting.....POWER SETTING
14. Airspeed..... MCA-48 KIAS (MAINTAIN ALTITUDE)
    a. Noting.....POWER SETTING
    b. Verbally Acknowledge..... STALL INDICATIONS
15. Decrease Pitch
    a. Accelerate to Faster Airspeed Until Establishing Level Flight
    b. Noting
        i. Altitude Loss
        ii. New Airspeed
16. Recovery
    a. Mixture..... FULL
    b. Throttle..... FULL (SLOWLY)
17. Flap..... 25º
18. Trim.....ADJUST
19. Altitude.....MMAINTAIN
20. Airspeed.....ACCELERATE TO Vx (64 KIAS)
21. Flaps 10º
22. Trim.....ADJUST
23. Airspeed.....ACCELERATE TO Vy (76 KIAS)
24. Flaps ..... UP
25. Trim.....ADJUST
26. Return to Va at Altitude and Heading Specified by the Evaluator

XIX. STEEP TURNS

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 2300 RPM (APPROXIMATELY)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... 100 KIAS
5. Enter 360° Coordinated Turn ..... SLOWLY INCREASE BANK
    a. Increase Back Elevator ..... MAINTAIN ALTITUDE
    b. Increase Power ..... MAINTAIN ENTRY AIRSPEED
    c. Trim ..... AS REQUIRED
6. Roll-Out ..... ENTRY HEADING
    a. Lead Roll-Out ..... 1/2 OF BANK ANGLE
    b. Release Back Elevator ..... MAINTAINE ALTITUDE
    c. Reduce Power ..... MAINTAIN ENTRY AIRSPEED
7. Reverse Direction Turn ..... COORDINATED FLIGHT
8. Roll-Out ..... ENTRY HEADING
    a. Lead Roll-Out ..... 1/2 OF BANK ANGLE
    b. Release Back Elevator ..... MAINTAINE ALTITUDE
    c. Reduce Power ..... MAINTAIN ENTRY AIRSPEED
9. Normal Cruise ..... ESTABLISH

PRIVATE 45° / COMMERCIAL 50°

XX. LAZY EIGHTS

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 2300 RPM (APPROXIMATELY)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... ESTABLISH 100 KIAS
5. Throttle ..... DECREASE 50 TO 100 RPM
6. Enter Climbing Turn ..... COORDINATED FLIGHT
    a. 45° POINT
        1. Pitch Attitude ..... MAXIMUM
        2. Bank ..... INCREASE
    b. 90° POINT
        1. Pitch Attitude ..... LEVEL FLIGHT
        2. Bank ..... APPROX. 30°
        3. Airspeed ..... 5 TO 10 KIAS ABOVE STALL
    c. 135° POINT
        1. Pitch Attitude ..... LOWEST
        2. Bank ..... DECREASING
    d. 180° POINT
        1. Pitch Attitude ..... LEVEL
        2. Altitude ..... SAME AS ENTRY ALTITUDE
        3. Airspeed ..... SAME AS ENTRY ALTITUDE
        4. Heading REVERSE OF ENTRY HEADING
    e. Reverse Direction ..... WITHOUT PAUSE
7. Normal Cruise ..... ESTABLISH

XXI. CHANDELLES

1. Altitude ..... ABOVE 1,500 FT AGL
2. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump ..... OFF
    b. Fuel Selector ..... PROPER TANK
    c. Mixture ..... RICH
    d. Throttle ..... 2300 RPM (APPROXIMATELY)
3. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
4. Airspeed ..... ESTABLISH 100 KIAS
    a. ENTRY
        1. 30° Bank ..... ESTABLISH
        2. Simultaneously:
            i. PITCH UP
            ii. THROTTLE FULL
    b. 90° POINT ..... MAXIMUM PITCH ATTITUDE
        1. Begin Roll-Out ..... CONSTANT RATE
        2. Check Coordination ..... VERIFY
    c. 180° POINT
        1. Roll-Out Opposite Heading
        2. Speed ..... JUST ABOVE A STALL
        3. Coordination ..... CHECK
    d. Altitude ..... MAINTAIN
5. Normal Cruise ..... ESTABLISH

XXII. STEEP SPIRAL

1. Altitude.....THREE TURNS, AND RECOVER ABOVE 1500 FT AGL
2. Select .....
3. First Clearing Turn .....90° (MAINTAIN ALTITUDE)
    a. Electric Fuel Pump.....OFF
    b. Fuel Selector .....PROPER TANK
    c. Mixture .....RICH
    d. Throttle ..... 1800 RPM (APPROXIMATELY)
4. Second Clearing Turn .....90° (MAINTAIN ALTITUDE)
5. Airspeed..... 90 KIAS
6. Throttle ..... IDLE
7. Glide .....90 KIAS (TRIM)
8. Enter The Spiral.....UPWIND
    a. Bank..... SHALLOWEST
    b. Pitch Attitude .....HIGHEST
    c. Coordination ..... INSIDE RUDDER
9. Crosswind
    a. Bank.....INCREASING
    b. Pitch Attitude ..... DECREASING
    c. Elevator Pressure .....INCREASING
    d. Coordination ..... INSIDE RUDDER
    e. Wind Drift Correction..... OUTSIDE THE TURN
10. Downwind
    a. Bank..... DECREASING
    b. Pitch Attitude ..... LOWEST
    c. Elevator Pressure .....HIGHEST
    d. Coordination ..... INSIDE RUDDER
11. Base
    a. Bank..... DECREASING
    b. Pitch Attitude .....INCREASING
    c. Elevator Pressure ..... DECREASING
    d. Coordination ..... INSIDE RUDDER
    e. Wind Drift Correction..... INSIDE THE TURN
12. Upwind
    a. Bank..... SHALLOWEST
    b. Pitch Attitude .....HIGHEST
    c. Elevator Pressure ..... LOWEST
    d. Coordination ..... INSIDE RUDDER
    e. Engine..... CLEAR (CRUISE POWER)
13. Complete Three Turns
14. Recovery..... ABOVE 1500 FT AGL

XXIII. GROUND REFERENCE MANEUVERS

PRIVATE PILOT

1. Electric Fuel Pump ..... OFF
2. Mixture ..... RICH
3. Throttle ..... 2300 RPM
4. Airspeed..... ESTABLISH 100 KIAS
5. Maneuvering Area ..... CLEAR
6. Select Reference Points ..... UNPOPULATED AREA

7. **TURNS AROUND A POINT (approx. ¼ mile radius)**
    a. ENTERY ALTITUDE 600 TO 1000 FT AGL
    b. ENTER DOWN WIND
    c. BANK ANGLE APPROXIMATELY 45° AT STEEPEST POINT
    d. MAINTAIN CONSTANT RADIUS AROUND SELECTED POINT
    e. COMPLETE TWO LEFT TURNS
    f. EXIT AT SAME POINT OF ENTRY
    g. REVERSE COURSE AS DIRECTED

8. **RECTANGULAR COURSE**
    a. ENTRY ALTITUDE 600 TO 1000 FT AGL
    b. ENTER 45° TO THE DOWN WIND LEG
    c. MAKE THE FIRST TURN TO THE LEFT
    d. ESTABLISH ADEQUATE WIND DRIFT CORRECTION
    e. EXIT STRAIGHT-OUT OR 45°TO THE DOWNWIND

9. **S-TURNS**
    a. ENTRY ALTITUDE 600 TO 1000 FT AGL
    b. ENTER DOWNWIND
    c. MAKE FIRST SERIES OF TURNS TO THE LEFT
    d. CONSTANT RADIUS HALF CIRCLE EACH DIRECTION
    e. EXIT DOWNWIND
    f. REVERSE COURSE AS DIRECTED

XXIV. EIGHTS ON PYLONS

COMMERCIAL PILOT

1. Altitude ..... 1500 FT AGL
2. Electric Fuel Pump ..... OFF
3. Mixture ..... RICH
4. Throttle ..... ADJUST
5. Airspeed ..... ESTABLISH 100 KIAS
6. Maneuvering Area ..... CLEAR
7. Select Prominent Pylons ..... UNPOPULATED AREA
8. **DETERMINE PIVOTAL ALTITUDE (ESTABLISH DESCENDING TURN)**
    a. Above Pivotal Altitude ..... REF LINE MOVES REARWARD
    b. At Pivotal Altitude ..... AIRCRAFT PIVOTS ON REF LINE
    c. Below Pivotal Altitude ..... REF LINE MOVES FORWARD
9. ENTER THE MANEUVER
    a. Diagonally Crosswind
    b. At Pivotal Altitude
    c. Airspeed 100 KIAS
10. ALLOW MINIMUM OF LATERAL AXIS MOVEMENT ON PYLON
11. APPROX. 3-5 SECONDS OF LEVEL FLIGHT BETWEEN PYLONS
12. ESTABLISH WIND DRIFT CORRECTION BETWEEN PYLONS
13. REVOERY
    a. Climb Vy ..... FULL POWER
    b. Specified Altitude ..... MAINTAIN
    c. Trim ..... ADJUST
    d. Normal Cruise ..... ESTABLISH

EMERGENCY OPERATIONS

I. ENGINE POWER LOSS DURING TAKEOFF

***If sufficient runway remains for a complete stop:**

1. Airspeed.....MAINTAIN SAFE AIRSPEED
2. Landing..... LAND and STOP STRAIGHT AHEAD
3. Brakes..... AS REQUIRED

***If insufficient runway remains:**

1. Airspeed.....MAINTAIN SAFE AIRSPEED
2. Flaps ..... AS REQUIRED

NOTE
Make only shallow turns to avoid obstructions.

***If sufficient altitude has been gained to attempt a restart:**

1. Airspeed..... MAINTAIN 76 KIAS
2. FUEL Selector ..... SWITCH to tank containing fuel
3. FUEL PUMP .....Check ON
4. MIXTURE.....RICH
5. ALTERNATE AIR.....OPEN

***If power is not regained, proceed with power-off landing.**

II. POWER OFF LANDING

1. Airspeed..... MAINTAIN 76 KIAS
2. Air Conditioning (if installed) ..... OFF
3. Landing Pattern ..... ESTABLISH 1000 FT ABOVE FIELD ON DOWNWIND

***When committed to landing:**

4. Airspeed..... 66 KIAS
5. Flaps .....AS DESIRED
6. THROTTLE .....CLOSE
7. MIXTURE.....IDLE CUT-OFF
8. LEFT/RIGHT MAG Switches..... OFF
9. BATT MASTR Switch..... OFF
10. ALTR Switch..... OFF
11. FUEL Selector ..... OFF
12. Seat belts and shoulder harnesses ..... TIGHTEN

III. ENGINE POWER LOSS IN FLIGHT

1. Airspeed..... MAINTAIN 76 KIAS
2. FUEL Selector..... SWITCH to tank containing fuel
3. FUEL PUMP .....ON
4. MIXTURE.....RICH
5. ALTERNATE AIR.....OPEN
6. LEFT/RIGHT MAG Switches..... Turn OFF then ON one at a time

***When power is restored:**

7. ALTERNATE AIR.....CLOSE
8. FUEL PUMP .....OFF

***Land as soon as practical and investigate cause of power loss.**

***If power is not restored prepare for power-off landing.**

IV. AFTER FORCED LANDING

1. DO NOT ATTEMPT TO TAKEOFF
2. CALL SPARTAN
    a. 918-831-5345 (DISPATCH)
3. REPORT
    a. CONDITION OF (SELF, PASSENGER, AND AIRCRAFT)
    b. LOCATION (OF AIRCRAFT)
    c. PHONE NUMBER (WHERE YOU CAN BE REACHED)

V. ENGINE FIRE DURING START

1. START Switch ..... CONTINUE TO CRANK ENGINE
2. MIXTURE.....IDLE CUT-OFF
3. THROTTLE .....OPEN
4. FUEL PUMP .....OFF
5. FUEL Selector.....OFF

***Abandon if fire continues**

VI. ENGINE FIRE IN FLIGHT

1. FUEL Selector ..... OFF
2. THROTTLE ..... CLOSED
3. MIXTURE ..... IDLE CUT-OFF
4. FUEL PUMP ..... OFF
5. HEAT/DEF (Defroster) ..... OFF

***If fire persists:**

6. Airspeed..... INCREASE in attempt to blow out fire

***Proceed with POWER OFF LANDING procedure.**

VII. ELECTRICAL FIRE IN FLIGHT

1. EMERG BATT Switch..... VERIFY ARM
2. BATT MASTR Switch ..... OFF
3. ALTR Switch..... OFF
4. Vents..... CLOSED
5. HEAT/DEF (Defroster) ..... OFF
6. Fire..... EXTINGUISH
7. Vents..... OPEN
8. Airspeed (if needed) .....INCREASE to maximize ventilation ariflow
9. Emergency Descent (If needed)..... TO A SAFE ALTITUDE

***Land as soon as possible**

VIII. OIL PRESSURE

Indication: Master Warning, Triple Chime, Flashing Red Oil Pressure Indication

Low Oil Pressure:

1. THROTTLE ..... MINIMUM REQUIRED
   ***If accompanied by high oil temperature, Land as soon as possible.**
   ***If accompanied by normal oil temperature, Land as soon as practical.**

High Oil Pressure:

1. THROTTLE ..... MINIMUM REQUIRED
   ***Land as soon as practical**

NOTE

If possible, always retain glide capability to the selected landing area in case of total engine failure

IX. OIL TEMPERATURE

Indication: Master Warning, Triple Chime, Flashing Red Oil Temperature Indication

1. THROTTLE ..... MINIMUM REQUIRED
2. MIXTURE ..... FULL RICH
3. Airspeed ..... INCREASE if practical
   ***Land as soon as possible and investigate the problem, prepare for power off landing.**

NOTE

If possible, always retain glide capability to the selected landing area in case of total engine failure

X. LOSS OF FUEL FLOW

CAUTION
IF NORMAL ENGINE OPERATION AND FUEL FLOW IS NOT IMMEDIATELY RE-ESTABLISHED, OR IF THE ENGINE QUITS, THE ELECTRIC FUEL PUMP SHOULD BE TURNED OFF. THE LACK OF FUEL FLOW INDICATION COULD INDICATE A LEAK IN THE FUEL SYSTEM, OR FUEL EXHAUSTION. LAND AT THE NEAREST SSUITABLE AIRPORT AS SOON AS POSSIBLE AND HAVE THE CAUSE INVESTIGATED.

***If caused by fuel depletion in one tank:**

1. FUEL PUMP Switch .....ON
2. FUEL Selector .....SELECT OTHER TANK (FULLEST)
3. FUEL PUMP Switch .....OFF

***If caused by engine driven fuel pump failure:**

1. THROTTLE .....CLOSE
2. FUEL PUMP Switch .....ON
3. THROTTLE ..... RE-ESTABLISH (as required)
4. MIXTURE..... RE-ESTABLISH (as required)

XI. FUEL QUANTITY LOW

Indication: Master Warning, Triple Chime, Flashing Red Oil Temperature Indication

WARNING
AVOID UNUSUAL ATTITUDES SUCH AS PROLONGED SLIPS TOWARDS THE LOW QUANTITY TANK AS THIS WILL DECREASE THE TIME REMAINING PRIOR TO FUEL STARVATION.

***If one tank has low fuel quantity:**

1. FUEL Selector.....ON FULLEST TANK

***Land as soon as practical.**

***If both tanks have low fuel quantity:**

1. FUEL Selector.....ALTERNATE TANKS TO MAINTAIN FUEL SUPPLY TO THE ENGINE

***Land as soon as possible.**

NOTE
THE PILOT SHOULD ONLY RESET A TRIPPED CIRCUIT BREAKER IF THE SYTEM/COMPONENT IS CONSIDERED ESSENTIAL FOR SAFETY OF FLIGHT. PRIOR TO RESETTING THE CIRCUIT BREAKER, WAIT AT LEAST ONE MINUTE AND VERIFY THERE IS NO SMOKE OR BURNING SMELL. IF THE CIRCUIT BREAKER OPENS A SECOND TIME, LEAVE THE CIRCUIT BREAKER OUT. HAVE A MAINTENANCE INPECTION PERFOMRED PRIOR TO RESETTING THE CIRCUIT BREAKER. DO NOT RESET ANY NON-ESSENTIAL CIRCUIT BREAKERS IN FLIGHT.

XII. ALTERNATOR FAILURE

Indication: Master Warning, Triple Chime

CAUTION
THE ALTR CIRCUIT BREAKER SHOULD NOT BE OPENED MANUALLY WHEN THE ALTERNATOR IS FUNCTIONING PROPERLY.

1. Verify Failure .....CHECK ALTR AMPS Indication
2. ALTR Switch..... OFF
3. ALTR Circuit Breaker (Row 1, Col. 13) ..... RESET If Tripped
4. ALTR FIELD Circuit Breaker (Row 2, Col. 13)..... RESET
5. ALTR Switch.....ON

***If alternator still failed;**

1. ALTR Switch..... OFF
2. Electrical Power Remaining .....30 minutes or less
3. Electrical Load.....SHED in less than 3 minutes
   a. NON ESS BUS Circuit Breaker (Row 1, Col. 1) ..... PULL
   b. LIGHTING BUS Circuit Breaker (Row 1, Col. 2) ..... PULL
   c. AVION MASTER Switch ..... OFF

***To ensure 30-minutes of battery life;**

1. Battery Discharge ..... -13 Amps Maximum
2. Pitot Heat..... 14 Minutes Usage Maximum
3. Com Radio.....3 Mins Usage Maximum
4. Fuel Pump ..... 2 Mins Usage Maximum

***Land as soon as possible.**

XIII. COMPLETE ELECTRICAL FAILURE

Indication: Single Chime

NOTE
THE VOLTS INDICATION ON THE EIS WINDOW AUTOMATICALLY CHANGES TO THE EMERGENCY BUS VOLTAGE (E VOLTS) WHEN OPERATING EXCLUSIVELY ON THE EMERGENCY BUS.

NOTE
COOLING AIR FOR PFD, GIA1 AND THE TRANSPONDER WILL BE LOST WHEN OPERATING EXCLUSIVELY ON THE EMERGENCY BUS AS INDICATED BY THE PFD FAN FAIL AND AV FAN FAIL ADVISORY CAS MESSAGE.

1. EMERG BATT Switch..... Verify ARM
2. Standby Flight Instrument ..... Verify OPERATIONAL
3. Aircraft Control ..... Use PFD and Standby Instrument
4. BATT MASTR Switch ..... OFF
5. ALTR Switch..... OFF

***Prior to landing:**

6. Landing Light ..... INOPERATIVE

***Approximately 30 minutes of electrical power is available.**
***Land as soon as possible.**

List of operative equipment while on the emergency bus:

- PFD (reversionary mode)
- Engine Instruments (except oil pressure)
- COM 1
- NAV 1
- Standby Instrument
- Audio Panel
- Avionics Lighting/Dimming

XIV. EMERGENCY BATTERY VOLTAGE

Indication: Master Warning, Triple Chime, Flashing Red E VOLTS Indication

WARNING
COMPLETE ELECTRICAL FAILURE IS IMMINENT

***Land as soon as possible.**

XV. PFD FAILURE

Indication: PFD display goes blank.

1. Standby Instrument.....Verify OPERATION
2. Aircraft Control .....Use Standby Instrument
3. DISPLAY BACKUP button on audio panel..... PUSH (button extended)
4. Aircraft Control .....Use MFD and Standby Instrument
5. COM2 .....ACTIVATE and TUNE as necessary
6. NAV2 .....ACTIVATE and TUNE as necessary
7. COM2/MIC ..... SELECT on Audio Panel
8. DME .....SELECT NAV2 in DME TUNING Window

***Exit and avoid IFR conditions as soon as practical.**

NOTE
IF THE PFD FAILS, THE MFD WILL EMAIN IN NORMAL MODE. PUSHING THE DISPLAY BACKUP BUTTON ON THE AUDIO PANEL ALLOWS THE MFD TO DISPLAY ADAHRS INFORMATION BUT LOSE THE EIS PAGE AND CERTAIN MAP FUNCTIONS. THE FOLLOWING FETURES WILL BECOME INOPERATIVE IF THERE IS A COMPLETE LOSS OF PFD FUCTIONALITY:

- AUTOPILOT
- COM1 (YELLOW X'D BUT 121.5 MHZ REMAINS AVAILABLE
- NAV1
- GPS1
- TRAFFIC

NOTE
IF PFD FAILURE OCCURS WHILE OPERATING ON NAV1 DME, THE NAV1 DME INFROMATION WILL CONTINUE TO BE AVAILABLE. IF THE PILOT SUBSEQUENTLY SELECTS NAV2 DME, NAVE1 DME CANNOT BE RESELECTED.

XVI. MFD FAILURE

Indication: MFD display goes blank.

NOTE

PFD SHOULD AUTOMATICALLY REVERT TO THE REVERSIONARY MODE DISPLAY.

1. DISPLAY BACKUP on audio panel..... PUSH (button extended)
   ***Exit and avoid IFR conditions as soon as practical.**

NOTE

THE FOLLOWING FEATURES WILL BECOME INOPERATIVE IF THERE IS A COMPLETE LOSS OF MFD FUNCTIONALITY.

- COM2 (YELLOW X'D BUT 121.5 MHZ REMAINS AVAILABLE
- NAV2
- GPS2
- GDL 69 SXM (Garmin Datalink – XM)
- DME
- ADF
- ESP

NOTE

IF THE GFC700 AUTOPILOT WAS ENGAGED PRIOR TO MFD FAILURE, IT WILL REMAIN ENGAGED IN ITS CURRENT LATERAL AND VERTICAL MODES. THE MODES CANNOT BE CHANGED AND IF THE AUTOPILOT IS DISENGAGED, IT CANNOT BE RE-ENGAGED.

XVII. ADAHRS FAILURES

ADAHRS TOTAL FAILURE ON GROUND

***On Ground:**

Indication: Sky/Ground presentation removed, course pointer straight up, yellow-x's and amber text on all air data, attitude and heading indicators.

1. System Messages (Messages Softkey) .....CONSIDER
2. ADAHRS Circuit Breaker (Row 2, Col. 8) ..... RESET

***If ADAHRS data still invalid: Avoid flight in IFR conditions.**

NOTE

FOR PARTIAL ADAHRS FAILURES, A YELLOW-X AND AMBER TEXT WILL APPEAR OVER THE AFFECTED PARAMETER(S).

ADAHRS TOTAL FAILURE IN FLIGHT

***In Flight:**

Indication: Sky/Ground presentation removed, course pointer straight up, yellow-x's and amber text on all air data, attitude and heading indicators.

1. Standby Instrument..... VERIFY NO FAILURE INDICATIONS
2. Attitude and Heading..... Use Standby Instrument

NOTE

THE FOLLOWING FEATURES WILL BECOME INOPERATIVE IF THERE IS A COMPLETE LOSS OF ADAHRS FUNCTIONALITY:

- AUTOPILOT (including ESP)
- TAS

NOTE

FOR PARTIAL ADAHRS FAILURES, A YELLOW-X AND AMBER TEXT WILL APPEAR OVER THE AFFECTED PARAMETER(S).

---

1. Course..... Set using CRS knob on PFD
2. System Messages (Messages Softkey) .....CONSIDER
3. ADAHRS Circuit Breaker (Row 2, Col. 8) ..... RESET

***IF ADAHRS data still invalid: Avoid Flight in IFR conditions.**

XVIII. ERRONEOUS OR LOSS OF ENGINE AND FUEL DISPLAYS

Indication: Yellow-x over affected engine parameter or fuel display

NOTE
ERRONEOUS INDICATIONS MAY BE DETERMINED BY COMPARING A DISPLAY WITH OTHER SYSTEMS INFORMATION.

1. Set power based on throttle lever position, engine sound and speed
2. Monitor other indications to determine the health of the engine.
3. Use known power settings from POH power setting tables for approximate fuel flow values.
4. Use other system information, such as annunciator messages, fuel totalizer quantity and flow, to safely complete the flight.
   ***If indications for any of the following are invalid:**
   - All Engine Parameters
   - VOLTS
   - ALTR AMPS
   - BATT AMPS
   - FUEL QTY
5. GEA circuit breaker (Row 2, Col. 3)..... RESET
   ***If all GEA parameters are still unavailable, land as soon as practical.**

XIX. ERRONEOUS OR LOSS OF WARNING/CAUTION CAS MESSAGES

Indication: Yellow-x is shown over the CAS message window or CAS message present when not expected or CAS message not present when expected.

1. If a yellow-s is placed over the CAS message window, monitor engine and airframe indications.

NOTE

SEE SECTION 3.1 OF THIS HANDBOOK (POH) FOR A LIST OF CAS WARNING, CAUTION AND ADVISORY MESSAGES THAT MAY BE INOPERATIVE.

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2. If a CAS message appears that is not expected, treat it as if the condition exists.
3. If an abnormal condition exists but the CAS system has not been activated, use other available information to confirm the condition exists. If it cannot be determined that the condition does not exist, treat the situation as if the condition does exist and take appropriate action.

NOTE

CAS MESSAGES ARE INHIBITED FOR MANY PARAMETERS ON THE EIS DISPLAY OF THE MFD. THE MASTER WARNING AND MASTER CAUTION INDICATIONS AND ASSOCIATED CHIMES ARE STILL ACTIVATGED WHENEVER ANY INDICATED PARAMETER ENTERS THE RED OR AMBER BANDS.

***If a yellow-x appears over the CAS message window, land as soon as practical.**

XX. COM1 AND COM2 FAILURE

Indication: Inability to communicate/receive on COM1 and COM2.

NOTE

IF POWER IS LOST TO THE AUDIO PANEL A FAIL-SAFE COMMUNICATIONS PATH BECOMES AVAILABLE BETWEEN THE PILOT'S HEADSET/MICROPHONE AND COM1

1. AUDIO MKR circuit breaker (Row 2, Col. 9) ..... PULL
   ***Exit and avoid IFR conditions as soon as practical.**

XXI. DUAL GPS FAILURE

Indication: Amber "DR" annunciation on HIS, Amber "DR" superimposed over airplane symbol on moving map.

1. Navigation ..... Use alternate source of navigation (ILS, LOC, VOR, DME, ADF)

***If no alternate navigation sources are available:**

Dead Reckoning (DR) Mode – Active when the airplane is greater than 30 NM from the destination airport in flight plan.

1. Navigation ..... Use the airplane symbol and magenta course line on the MAP display and the amber CDI on the HIS.

WARNING

INFORMATION NORMALLY DERIVED FROM GPS TURNS AMBER AND BECOMES MORE INACCURATE OVER TIME. AMBER CDI DISAPPEARS AFTER 20 MINUTES.

WARNING

TAWS IS INOPERATIVE.

NOTE

DR MODE USES HEADING, AIRSPEED AND LAST KNOWN GPS POSITION TO ESTIMATE THE AIRPLANE CURRENT POSITION. ALL MAPS WITH AN AIRPLANE SYMBOL SHOW A GHOSTED AIRPLANE AND A "DR" LABEL. TRAFFIC INFORMATION SYSTEM (TIS) AND TRAFFIC ADVISORY SYSTEM (TAS) ARE NOT DEPENDENT ON FPS INFORMATION. THE POSITION OF DISPLAYED TRAFFIC RELATIVE TO THE AIRPLANE SYMBOL ON THE MAP IS STILL ACCURATE.

Loss of Integrity (LOI) Mode – Active when GPS integrity is insufficient for the current phase of flight.

1. Navigation .....Crosscheck / use other navigation sources as required

NOTE

ALL INFORMATION DERIVED FROM GPS OR DR IS REMOVED FROM THE DISPLAYS. THE AIRPLANE SYMBOL IS REMOVED FROM ALL MAPS. THE MAP WILL REMAIN CENTERED AT THE LAST KNOW POSITION. "NO GPS POSITION" IS SHOWN IN THE CENTER OF THE MAP. TAWS AND TAS ARE INOPERATIVE.

XXII. AVIONICS COOLING FAN FAILURES

Indication: CAS Advisory, Single Chime, AV FAN FAIL and/or PFD FAN FAIL and/or MFD FAN FAIL

***If failure occurs on ground:**

Do not fly until issue is resolved.

***If failure occurs in flight:**

Fix issue prior to next flight.

XXIII. ELECTRIC PITCH TRIM FAILURE

Indication: Red boxed PTRM on PFD

NOTE

LOSS OF THE ELECTRIC PITCH TRIM SERVO WILL NOT CAUSE THE AUTOPILOT TO DISCONNECT. MONITOR PITCH ATTITUDE FOR UNUSUAL BEHAVIOR. BE ALERT TO POSSIBLE AUTOPILOT OUT-OF-TRIM CONDITIONS (SEE AUTOPILOT OUT OF TRIM PROCEDURE THIS SECTION (POH)) AND EXPECT RESIDUAL CONTOL FORCES UPON DISCONNECT. THE AUTOPILOT WILL NOT RE-ENGAGE AFTER DISCONNECT WITH FAILED PITCH TRIM.

1. Autopilot..... DISCONNECT

XXIV. ELECTRIC PITCH TRIM RUNAWAY

Indication: An unexpected pitch deviation from the desired flight path and red PTRM annunciation

NOTE

AFTER THE AUTOPILOT IS DISENGAGED, IT CAN NO BE RE-ENGAGED UNTIL THE ELECTRIC PITCH TRIM SYSTEM REGAINS FUNCTIONALITY.

1. Control Wheel .....GRASP FIRMLY
2. Attitude Indicators ..... CROSSCHECK
3. A/P DISC Switch.....DEPRESS and HOLD
4. PITCH TRIM Circuit Breaker (Row 3, Col. 1) ..... PULL
5. Pitch Trim.....RETRIM MANUALLY

XXV. AUTOPILOT OVERSPEED RECOVERY

Indication: MAXSPD annunciation at the top of the PFD airspeed tape

This autopilot mode is active whenever the aircraft actual or projected airspeed exceeds the maximum approved autopilot operating speed of 140 KIAS.

1. THROTTLE ..... REDUCE POWER as required
2. Autopilot Pitch Reference..... RESET to slow the aircraft
3. Autopilot.....DISCONNECT if required

NOTE

OVERSPEED RECOVERY MODE PROVIDES A PITCH UP COMMAND (TO A MAXIMUM LEVEL FLIGHT ALTITUDE) TO DECELERATE THE AIRPLANE BELOW THE MAXIMUM APPROVED AUTOPILOT OPERATING SPEED. THE AUTOPILOT MUST BE ENGAGED FOR IT TO FOLLOW THE PITCH-UP COMMANDS OF THE FLIGHT DIRECTOR. OVERSPEED RECOVERY IS NOT ACTIVE IN ALTITUDE HOLD (ALT), GLIDESLOPE (GS) OR GLIDEPATH (GP) MODES. THE SPEED REFERENCE CANNOT BE ADJUSTED WHILE IN OVERSPEED RECOVERY MODE.

XXVI. AUTOPILOT UNDERSPEED RECOVERY

Indication: MINSPD annunciation at the top of the PFD airspeed tape and USP ACTIVE annunciation on PFD

This autopilot mode is active whenever the autopilot is engaged and the airspeed has decreased below a minimum threshold.

1. THROTTLE .....INCREASE POWER as required
2. Flaps Position .....CONSIDER

XXVII. AUTOPILOT OUT-OF-TRIM

Indication: Amber, ← AIL, AIL →, ↑ ELE, or ↓ ELE on PFD

CAUTION

DO NOT ATTEMPT TO OVERPOWER THE AUTOPILOT IN THE EVENT OF A MISTRIM. THE AUTOPILOT SERVOS WILL OPPOSE PILOT INPUT AN WILL TRIM OPPOSITE THE DIRECTION OF PILOT INPUT (PITCH AXIS ONLY). THIS COULD LEAD TO A SIGNIFICANT OUT-OF-TRIM CONDITION. DISCONNECT THE AUTOPILOT USING THE A/P DISC / TRIM INTER SWITCH IF MANUAL CONTOL IS DESIRED.

1. If AIL → or ← AIL annunciation .....Verify SLIP/SKID INDICATOR CENTERED
2. If ELE ↑ or ↓ annunciation .....Suspect elevator trim issue
3. Control Wheel ..... GRASP FIRMLY with both hands

CAUTION

BE PREPARED TO APPLY A SUSTAINED CONTROL FORCE IN THE DIRECTION OF THE ANNUNCIATION ARROW. FOR EXAMPLE, AN ARROW POINTING TO THE RIGHT WITH AIL ANNUNCIATION INDICATES THAT SUSTAINED RIGHT WING DOWN CONTROL WHEEL FORCE WILL BE REQUIRED UPON AUTOPILOT DISCONNECT

4. AP DISC Switch..... DEPRESS
5. Affected trim system ..... RETRIM
6. Autopilot.....RE-ENGAGE if available

   If the mistrim indication re-occurs, disconnect the autopilot for the remainder of the flight or until the offending condition is resolved.

XXVIII. ABNORMAL FLIGHT DIRECTOR MODE TRANSITIONS

Indication: Flashing lateral or vertical mode annunciations on PFD

NOTE
UPON LOSS OF A SELECTED MODE, THE SYSTEM WILL REVERT TO THE DEFAULT MODE FOR THE AFFECTED AXIS, EITHER ROL OR PIT.

***Loss of selected vertical mode**

1. Autopilot Mode Controls.....SELECT ANOTHER VERTICAL MODE

***If on an instrument approach:**

1. Autopilot..... DISCONNECT (if coupled) and continue manually
   Or execute missed approach

***Loss of selected lateral mode**

1. Autopilot Mode Controls..... SELECT ANOTHER LATERAL MODE

If on an instrument approach:

1. Autopilot..... DISCONNECT (if coupled) and continue manually
   Or execute missed approach

XXIX. AUTOPILOT PREFLIGHT TEST FAILURE

Indication: Red Boxed PFT on PFD

1. AUTOPILOT Circuit Breaker (Row 3, Col. 2) ..... PULL
2. PITCH TRIM Circuit Breaker (Row 3, Col. 1) ..... PULL
3. AUTOPILOT and PITCH TRIM Circuit Breakers ..... RESET SIMULTANEOUSLY

NOTE
WHEN THE AUTOPILOT CIERCUIT BREAKER IS PULLED, THE RED PFT ANNUNCIATION WILL BE REMOVED AND THE AUTOPILOT WILL BE UNAVAILABLE. ONE ATTEMPT AT RESETTING THE CIRCUIT BREAKERS IS ALLOWED.

XXX. LOSS OF NAVIGATION INFORMATION

Indication: Amber VOR, VAPP, GPS, BC, LOC or GS flashing on PFD

NOTE
IF A NAVIGATION SIGNAL IS LOST WHILE THE AUTOPILOT IS TRACKING IT, THE AUTOPILOT WILL ROLL THE AIRCRAFT WINGS LEVEL AND DEFAULT TO ROLL MODE (ROL).

1. Autopilot..... SELECT ANOTHER LATERAL MODE
2. Nav Source ..... SELECT A VALID NAV SOURCE
3. Autopilot..... SELECT NAV

***If on an instrument approach at the time the navigation signal is lost:**

1. Missed Approach..... EXECUTE
   (A second approach may be attempted using other nav aids.)

XXXI. PITOT HEAT FAILURE

Indication: Master Caution, Double Chime, PITOT HEAT FAIL

1. PITOT HEAT Switch ..... OFF
2. PITOT HEAT Circuit Breaker (Row 2, Col. 2)..... RESET
3. PITOT HEAT Switch .....ON

***If Pitot Heat still inoperative:**

1. Exit and Avoid Instrument Meteorological Conditions.

XXXII. STARTER ENGAGED

Indication: Master Warning, Triple Chime, START ENGD

***If on the ground:**

1. THROTTLE .....REDUCE
2. ENG START Circuit Breaker (Row 1, Col. 10)..... PULL
3. ENGINE .....SHUTDOWN

***If in flight:**

1. THROTTLE .....REDUCE
2. ENG START Circuit Breaker (Row 1, Col. 10)..... PULL

***Land as soon as possible**

XXXIII. SPIN RECOVERY

1. Rudder .....FULL OPPOSITE TO DIRECTION OF ROTATION
2. Control Wheel .....FULL FORWARD WHILE NEUTRALIZING ALERONS
3. THROTTLE ..... IDLE
4. RUDDER..... NEUTRAL (when rotation stops)
5. Control Wheel .....SMOOTH BACK PRESSURE to recovery from dive

XXXIV. OPEN DOOR

***To close the door in flight:**

1. Airspeed..... REDUCE to less than 87 KIAS
2. Cabin vents .....CLOSE
3. Storm window .....OPEN
4. Upper latch (if open)..... Close Latch
5. Side latch (if open) ..... PULL on Armrest While Closing Latch
6. If Both Latches Open..... CLOSE Side Then Top Latch

XXXV. ENGINE ROUGHNESS

1. ALTERNATE AIR.....OPEN

***If roughness continues after one minute:**

2. MIXTURE..... Adjust for Maximum Smoothness
3. ALTERNATE AIR.....CLOSE
4. FUEL PUMP .....ON
5. Fuel Selector.....SWITCH TANKS
6. Engine Indicators.....CHECK
7. LEFT/RIGHT MAG Switches.....Individually Select OFF and ON

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

***Prepare for power-off landing.**

NOTE
IF POSSIBLE, ALWAYS RETAIN GLIDE CAPABILITY TO THE SELECTED LANDING AREA IN CASE OF TOTAL ENGINE FAILURE.

XXXVI. CO DETECTOR WARNING

Indication: Master Warning, Triple Chime, CO LVL HIGH

***If the CO Detector Warning or Caution activates in flight:**

1. Press the CO RST softkey (on the engine page) to reset the CO Detector.

***If the Warning or Caution continues:**

1. Shut off the heater, air conditioning or any other opening to the engine compartment.
2. Open a fresh air source immediately.
3. Don't smoke.

***Land as soon as possible.**

NOTE

THE AMBER MFD ALERT WILL REMAIN UNTIL THE CO LEVEL DROPS BELOW 50 PARTS PER MILLION (PPM) BY VOLUME OF CARBON MONOXIDE CONCENTRATION. DO NO RECYCLE THE UNIT THROUGH THE CIRCUIT BREAKER. A THREE-MINUTE DELSAY IS REQUIRED FOR THE CO SENSOR TO STABILIZE AFTER EACH POWER-UP.

XXXVII. EMERGENCY DESCENT

1. First Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
   b. Electric Fuel Pump ..... ON
   c. Fuel Selector ..... PROPER TANK
   d. Mixture ..... RICH
2. Second Clearing Turn ..... 90° (MAINTAIN ALTITUDE)
3. THROTTLE ..... IDLE SLOWLY
4. FLAPS ..... 40°
5. Initiate turning decent between 30° and 45° bank, while clearing traffic
6. Airspeed ..... 95 KIAS
7. Trim ..... ADJUST

***RECOVERY**

1. Pitch ..... ESTABLISH LEVEL FLIGHT
2. THROTTLE ..... 2300 RPM
3. FLAPS ..... UP
4. Trim ..... ADJUST

XXXVIII. RADIO FAILURE (FOR VFR ONLY)

***LANDING AT A TOWER CONTROLLED AIRPORT**

1. Squawk 7600 and continue to announce intentions over radio.
2. If within or cleared into class D airspace
    a. Proceed as previously directed by ATC
    b. Maintain visual contact with control tower
    c. Acknowledge light gun signals, Rock wings / flash landing Lt.
3. If NOT cleared into class D airspace
    a. Remain outside or above class D airspace
    b. Determine direction and flow of traffic
    c. Join traffic pattern at 45° angle to downwind leg
    d. Maintain visual contact with control tower
    e. Acknowledge light gun signals, Rock wings / flash landing Lt.

***LANDING AT UNCONTROLLED AIRPORT**

1. Squawk 7600 and continue to announce intentions over radio
2. Fly over airport at 1500 FT AGL
3. Determine direction and flow of traffic
4. Join traffic pattern at 45° angle to downwind leg
5. Watch out for traffic and land as soon as practical

***NOTIFY SPARTAN DISPATCH AFTER LANDING AT:**
918-831-5345 (DO NOT TAKE OFF)

XXXIX. LANDING WITH A FLAT MAIN TIRE

1. Approach ..... Normal
2. Flaps ..... 45°
3. Touchdown ..... Good Tire First, Hold Airplane Off Flat Tire As Long As Possible With Aileron Control
4. Directional Control ..... Maintain (Using Brake On Good Wheel as Required

XL. BLOWN TIRE ON RUNWAY

1. Maintain directional control with rudder and brake
2. Taxi clear of active runway if possible

XLI. RUNNING OFF HARD SURFACE

1. Bring aircraft to a stop
2. Notify tower (it towered airport)
3. Shut off engine
4. Wait for assistance off of the soft surface

XLII. HARD LANDING

1. Terminate flight
2. Return to parking area
3. Notify dispatch and down aircraft (IMMEDIATELY)

XLIII. DIVERSION TO ALTERNATE AIRPORT FOR WEATHR OR EMERGENCY

1. Select alternate airport and alter course toward it
2. Consider returning to KRVS
3. Calculate new ETA and fuel requirements
4. Contact FSS and notify them of your amended flight plan
5. Land at selected airport
6. DO NOT TAKEOFF without AUTHORIZATION
7. SECURE AIRCRAFT
8. CALL SPARTAN DISPATCH OPERATIONS (918-831-5345)
9. CALL FSS, NOTIFY THEM OF SITUATION, AND CLOSE FLIGHT PLAN

XLIV. LOST PROCEDURE

1. Climb to 5500 ft MSL or 500 ft below clouds (whichever is lower)
2. Set heading indicator with compass (maintain heading)
3. Using prominent landmarks, locate position on chart
4. Perform VOR cross-check
5. Verify location on sectional
6. Calculate new ETA and Fuel requirement
7. Proceed to destination if fuel supply allows
8. Contact FSS and amend flight plan if necessary
9. If unable to proceed, contact the nearest FSS, Tower or Approach Control on listed frequency or use 121.5
10. Call Dispatch IMMEDIATELY upon landing.

INSTRUMENT PROCEDURES

I. PROCEDURE TURN OUTBOUND

1. Time.....START
2. Turn .....TO INTERCEPT COURSE
3. Throttle .....SET APPROACH AIRSPEED / POWER
4. Tune.....TO OUTBOUND RADIAL / FREQUENCY
5. Talk..... REPROT IF REQUIRED

ACCOMPLISH PRE-LANDING CHECKLIST, REVIEW / BRIEF MISSED APPROACH PROCEDURE

II. FINAL APPROACH INBOUND

1. Time.....START
2. Landing Gear .....CHECK

(VERIFY ON COURSE BEFORE DESCENT)

3. Throttle ..... SET
4. Pitch..... ADJUST
5. Trim ..... ADJUST
6. Tune..... RADIO / RADIAL
7. Talk..... REPORT FAF INBOUND

III. MDA LEVEL OFF

1. Throttle .....AS REQUIRED
2. Pitch..... LEVEL FLIGHT
3. Trim ..... ADJUST
4. Time.....MONITOR (INBOUD)

IV. MISSED APPROACH

1. Pitch..... ESTABLISH Vy ATTITUDE
2. Throttle ..... FULL (SMOOTHLY)
3. Mixture .....RICH
4. Trim ..... ADJUST
5. Climb .....ESTABLISH (80 KIAS)
6. Talk.....REPORT (MISSED APPROACH)

SIMULTANEOUSLY RAIS PITCH AND ADD POWER

COLD WEATHER OPERATION

For cold weather operation a winterization plate is installed on the inlet opening of the oil cooler duct on the left rear engine baffle. This plate should be installed whenever the ambient temperature reaches 50°F or less or whenever oil temperature cannot be maintained at or above 140°F during continuous operation. The plate should be removed and stored in the cockpit when the ambient temperature exceeds 50°F.

LIGHT GUN SIGNALS

LIGHT GUN SIGNALS			
COLOR AND TYPE OF SIGNAL	MOVEMENT OF VEHICLES, EQUIPMENT, AND PERSONNEL	AIRCRAFT ON THE GROUND	AIRCRAFT IN FLIGHT
STEADY GREEN	Cleared to cross, proceed, or go	Cleared for takeoff	Cleared to land
FLASHING GREEN	Not applicable	Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
STEADY RED	Stop!	Stop!	Give way to other aircraft and continue circling
FLASHING RED	Clear the taxiway/runway	Taxi clear of the runway in use	Airport unsafe, do not land
FLASHING WHITE	Return to starting point on airport	Return to starting point on airport	Not applicable
ALTERNATING RED AND GREEN	Exercise extreme caution!	Exercise extreme caution!	Exercise extreme caution!

LOST COMMUNICATIONS AT KRVS ONLY

LOST COMMUNICATIONS AT RVS ONLY - If you lose two-way radio communications in-flight, it is suggested that you remain outside the Class Delta surface area; and, if you have a cell phone, call the tower **(918) 298-5960**. You will receive weather, pattern entry, and other instructions. If you do not have a cell phone or are unable to squawk 7600, if feasible, land at a non-towered airport (i.e. Pogue, KOWP) and then call the tower. This is a much safer alternative than entering the pattern and rocking your wings, given the amount of student traffic in the area. If you are unable to land at a non-towered airport, Squawk 7600, enter a midfield downwind for the flow of traffic and watch the tower for light gun signals. If you are in closed traffic, make a full stop landing and exit towards your parking area, remember to hold short of all runways until you receive signals from the tower. Standard no-radio pilot procedures are specified in 14 CFR 91.129.