SUPERIOR
AVIATION GATEWAY

MULTI-ENGINE FLIGHT TRAINING SUPPLEMENT

N5529V

INTRODUCTION

To maximize the effectiveness of your flight program, SAG's Twin Cessna T303 Crusader Training Supplement contains a condensed overview of multi-engine aerodynamics, portions of the T303 Crusader POH, and flight procedures. You must have a complete knowledge of all information contained in this supplement prior to the start of your program. This information will assist you with your training and flight check.

It is critical that you memorize the following:

• Emergency Engine Failure Checklists.
• V-Speeds.
• Answers to all questions contained in the "Oral Review" section in the back of the supplement.

The information in this supplement is highly condensed and serves as a good quick reference, but it must not be used as a substitute for the FAA-approved pilot's operating handbook required for safe operation of the airplane.

On our website, www.SuperiorAviationGateway.com, under the 'Flight Bag' tab you will find:

- Checklists for Preflight, Normal and Emergency
- Weight & Balance
- This Flight Supplement
- Complete Aircraft POH

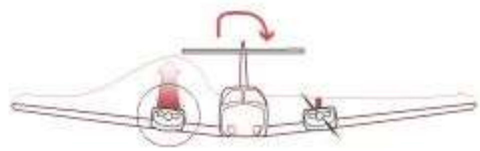
ENGINE-OUT AERODYNAMICS

Aerodynamic Effects of an Engine Failure

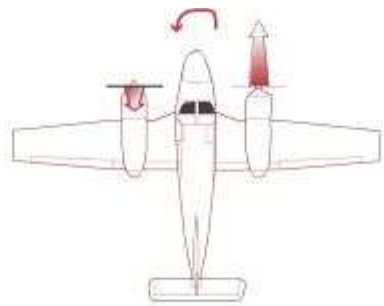
When an engine failure occurs in a multi-engine aircraft, asymmetric thrust and drag cause the following effects on the aircraft's axes of rotation:

Pitch Down (Lateral Axis) Loss of accelerated slipstream over the horizontal stabilizer causes it to produce less negative lift, causing the aircraft to pitch down. To compensate for the pitch down effect, additional back pressure is required.

Roll Toward the Failed Engine (Longitudinal Axis) The wing produces less lift on the side of the failed engine due to the loss of accelerated slipstream. Reduced lift causes a roll toward the failed engine and requires additional aileron deflection into the operating engine.



Yaw Toward the Dead Engine (Vertical Axis) Loss of thrust and increased drag from the windmilling propeller cause the aircraft to yaw toward the failed engine. This requires additional rudder pressure on the side of the operating engine. "Dead foot, dead engine."



ENGINE INOPERATIVE CLIMB PERFORMANCE

Climb performance depends on the excess power needed to overcome drag. When a multiengine airplane loses an engine, the airplane loses 50% of its available power. This power loss results in a loss of approximately 80% of the aircraft's excess power and climb performance. Drag is a major factor relative to the amount of excess power available. An increase in drag (such as the loss of one engine) must be offset by additional power. This additional power is now taken from the excess power, making it unavailable to aid the aircraft in climb. When an engine is lost, maximize thrust (full power) and minimize drag (flaps and gear up, prop feathered, etc.) in order to achieve optimum single-engine climb performance.

Approximate Drag Factors for the Cessna T303 Crusader

1. Flaps 10˚	-50 FPM
2. Flaps 30˚	-450 FPM
4. Gear Extended	-350 FPM

Under FAR Part 23: The FAA does not require multi-engine airplanes that weigh less than 6,000 pounds or have a Vso speed under 61 knots to meet any specified single-engine performance criteria. No single engine climb performance is required. Actual climb performance is documented by the manufacturer.
The Crusader's maximum takeoff weight is 5,150 lbs. and Vso is 58 KIAS. Review the POH for single engine climb performance under specific conditions.

Airspeeds for Max Single-Engine Performance

VXSE: The airspeed for the steepest angle of climb on single-engine.
VYSE : The airspeed for the best rate of climb on single-engine. (Or for the slowest loss of altitude on drift-down.)
VSSE: The airspeed to be used for intentional engine failures
Blueline: The marking on the airspeed indicator corresponding to VYSE at max weight.

SIDESLIP vs. ZERO SIDESLIP

During flight with one engine inoperative, proper pilot technique is required to maximize aircraft performance. An important technique is to establish a Zero Sideslip Condition.

Sideslip Condition (Undesirable)

Sideslip Condition:
Ball Centered & Wings Level, Aircraft Tracking North

When an engine failure occurs, thrust from the operating engine yaws the aircraft. To maintain aircraft heading with the wings level, rudder must be applied toward the operating engine. This rudder force results in the sideslip condition by moving the nose of the aircraft in a direction resulting in the misalignment of the fuselage and the relative wind. This condition usually allows the pilot to maintain aircraft heading; however, it produces a high drag condition that significantly reduces aircraft performance.

Zero Sideslip Condition (Best Performance)

Zero Sideslip Condition:
2˚-5˚ Bank into Operating Engine

The solution to maintaining aircraft heading and reducing drag to improve performance is the Zero Sideslip Condition. When the aircraft is banked into the operating engine (usually 2˚-5˚), the bank angle creates a horizontal component of lift. The horizontal lift component aids in counteracting the turning moment of the operating engine, minimizing the rudder deflection required to align the longitudinal axis of the aircraft to the relative wind. In addition to banking into the operating engine, the appropriate amount of rudder required is indicated by the inclinometer ball being "split" towards the operating engine side. The Zero Sideslip Condition aligns the fuselage with the relative wind to minimize drag and must be flown for optimum aircraft performance.

Single-Engine Service Ceiling

Single-engine service ceiling is the maximum density altitude at which the single-engine best rate of climb airspeed (VYSE) will produce a 50 FPM rate of climb with the critical engine inoperative.

Single-Engine Absolute Ceiling

Single-engine absolute ceiling is the maximum density altitude that an aircraft can attain or maintain with the critical engine inoperative. VYSE and VXSE are equal at this altitude. The aircraft drifts down to this altitude when an engine fails.

Climb Performance Depends on Four Factors

- Airspeed: Too little or too much will decrease climb performance.
- Drag: Gear, Flaps, Cowl Flaps, Flight Control Deflection, Prop, and Sideslip.
- Power: Amount available in excess of that needed for level flight. (Engines may require leaning due to altitude for max engine performance.)
- Weight: Passengers, baggage, and fuel load greatly affect climb performance.

Critical Engine

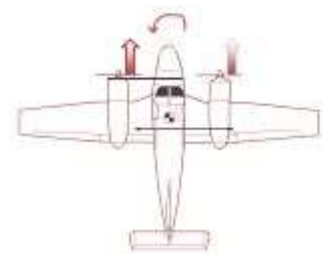
The critical engine is the engine that, when it fails, most adversely affects the performance and handling qualities of the airplane.

The Crusader is equipped with counter rotating propellers. The failure of either engine has the same effect on controllability. For this reason the Crusader does not have a critical engine.

On most multi-engine aircraft, both propellers rotate clockwise as viewed from the cockpit. By understanding the following factors when flying an aircraft that has both propellers rotating clockwise, it will be apparent that a left-engine failure makes the aircraft more difficult to fly than a right-engine failure. The clockwise rotation of the props contributes to the following factors that cause the left engine to be critical:

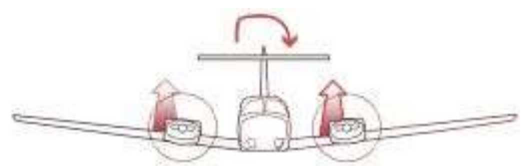
- P P-Factor
- A Accelerated Slipstream
- S Spiraling Slipstream
- T Torque

P-Factor (Yaw)



Both propellers turn clockwise as viewed from the cockpit. At low airspeeds and high angles of attack, the descending blade produces more thrust than the ascending blade due to its increased angle of attack. Though both propellers produce the same overall thrust, the descending blade on the right engine has a longer arm from the CG (or greater leverage) than the descending blade on the left engine. The left engine produces the thrust closest to center line. The yaw produced by the loss of the left engine will be greater than the yaw produced by the loss of the right engine, making the left engine critical.

Accelerated Slipstream (Roll and Pitch)



P-Factor causes more thrust to be produced on the right side of the propeller. This yields a center of lift that is closer to the aircraft's longitudinal axis on the left engine and further from the longitudinal axis on the right engine and also results in less negative lift on the tail. Because of this, the roll produced by the loss of the left engine will be greater than the roll produced by the loss of the right engine, making the left engine critical.

Spiraling Slipstream (Yaw)

A spiraling slipstream from the left engine hits the vertical stabilizer from the left, helping to counteract the yaw produced by the loss of the right engine. However, with a left engine failure, slipstream from the right engine does not counteract the yaw toward the dead engine because it spirals away from the tail, making the left engine critical.

Torque (Roll)

For every action, there is an equal and opposite reaction. Since the propellers rotate clockwise, the aircraft will tend to roll counterclockwise. When the right engine is lost, the aircraft will roll to the right. The right rolling tendency, however, is reduced by the torque created by the left engine. When the left engine is lost, the aircraft will roll to the left, and the torque produced by the right engine will add to the left rolling tendency requiring more aileron input, which increases drag, making the left engine critical.

Summary

On most light multi-engine aircraft when the critical engine is inoperative, both directional control and performance suffer more than when the non-critical engine is inoperative.

VMC

VMC is the minimum airspeed at which directional control can be maintained with the critical engine inoperative. VMC speed is marked on the airspeed indicator by a red radial line. Aircraft manufacturers determine VMC speed based on conditions set by the FAA under FAR §23.149:

1. Most Unfavorable Weight and Center of Gravity
2. Standard Day Conditions at Sea Level (Max Engine Power)
3. Maximum Power on the Operating Engine (Max Yaw)
4. Critical Engine Prop Windmilling (Max Drag)
5. Flaps Takeoff Position, Landing Gear Up, Trimmed for Takeoff (Least Stability)
6. Up to 5˚ of Bank into the Operating Engine

The above items are the conditions set by the FAA for determining Vmc during certification. Changes to the above conditions **may** change VMC, possibly significantly. The following summarizes how VMC **may** be affected by the above conditions:

1. Most Unfavorable Weight

The certification test allows up to 5˚ bank into the operating engine. In a given bank, the heavier the aircraft, the greater the horizontal component of lift that adds to the rudder force. As weight increases, the horizontal component of lift increases, which added to the rudder force, decreases VMC as the rudder does not have to exert as much force to counteract the yawing/turning moment.

1. Center of Gravity

As the center of gravity moves forward, the moment arm between the rudder and the CG is lengthened, increasing the leverage of the rudder. This increased leverage increases the rudder's effectiveness and results in a lower VMC speed. (Arm is defined as the perpendicular distance from the point of rotation to the line of action of the force. Or, in this case, the perpendicular distance from the center of gravity to the rudder).

2. Standard Day Sea Level

Standard conditions yield high air density that allows the engine to develop maximum power. An increase in altitude or temperature (a decrease in air density) will result in reduced engine performance and prop efficiency. This decreases the adverse yaw effect. VMC speed decreases as altitude increases.

3. Maximum Power On The Operating Engine

When the operating engine develops maximum power, adverse yaw is increased toward the inoperative engine. The pilot must overcome this yaw to maintain directional control. Any condition that increases power on the operating engine will increase Vmc speed. Any condition that decreases power on the operating engine (such as power reduction by the pilot, an increase in altitude, temperature, low density, or aging engine) will decrease VMC.

4. Critical Engine Prop Windmilling

When the propeller is in a low pitch position (unfeathered), it presents a large area of resistance to the relative wind. This resistance causes the engine to "windmill." The windmilling creates a large amount of drag and results in a yawing moment into the dead engine. When the propeller is "feathered," the blades are in a high pitch position, which aligns them with the relative wind, minimizing drag. A feathered prop will decrease drag and lower VMC.

5. Flaps Takeoff Position, Landing Gear Up, Trimmed for Takeoff

As per an FAA letter dated 20 May 2000 landing gear extended may raise, lower or have no effect on Vmc. http://www.boundvortex.com/downloads/Faa%20gear.pdf Extended flaps have a stabilizing effect that may reduce VMC speed.

6. Up to 5˚ Bank into the Operating Engine

When the wings are level, only the rudder is used to stop the yaw produced by the operating engine (sideslip condition). Banking into the operating engine creates a horizontal component of lift which aids the rudder force. With this horizontal component of lift and full rudder deflection, VMC is at the lowest speed. VMC increases with decreasing bank by a factor of approximately 3 knots per degree of bank angle.

At VMC rudder forces required to maintain directional control may not exceed 150 lbs. and it may not be necessary to reduce power on the operative engine. During the maneuver the airplane must not assume a dangerous attitude and it must be possible to recover within 20˚.

Note: Each aircraft is different and may be subject to different handling qualities than discussed here. Recovery from loss of directional control should always follow the guidelines of the POH and FAA Airplane Flying Handbook.

AIRCRAFT SYSTEMS – N5529V

Please read chapter 7 in the POH.

QUICK REFERENCE

ENGINES

Manufacturer: Teledyne Continental
Model: Left: TSIO-520-AE
Right: LTSIO-520-AE
Engine Type: Turbocharged, direct-drive, air-cooled, horizontally opposed, fuel injected, six cylinder engines

PROPELLERS

Manufacturer: McCauley
Propeller Type: Constant-speed, full-feathering, nonreversible and hydraulically-actuated with low pitch setting of 18.7 degrees to 19.6 degrees and a feathered setting of 80.0 degrees to 81.3 degrees.

FUEL

100LL (Blue) Fuel or 100 (Green) Fuel Approved
Total Capacity: 155 Gallons 77.5 Gallons per tank
Total Usable: 153 Gallons
Fuel Crossfeeding: Crossfeeding is limited to level flight only. If operating both engines from a single tank, cease crossfeed when fuel level is within 60 lbs. of empty in tank in use or 60 lbs of full in the tank

OIL

Oil Capacity: 8 quarts (sump), 9 quarts total per engine

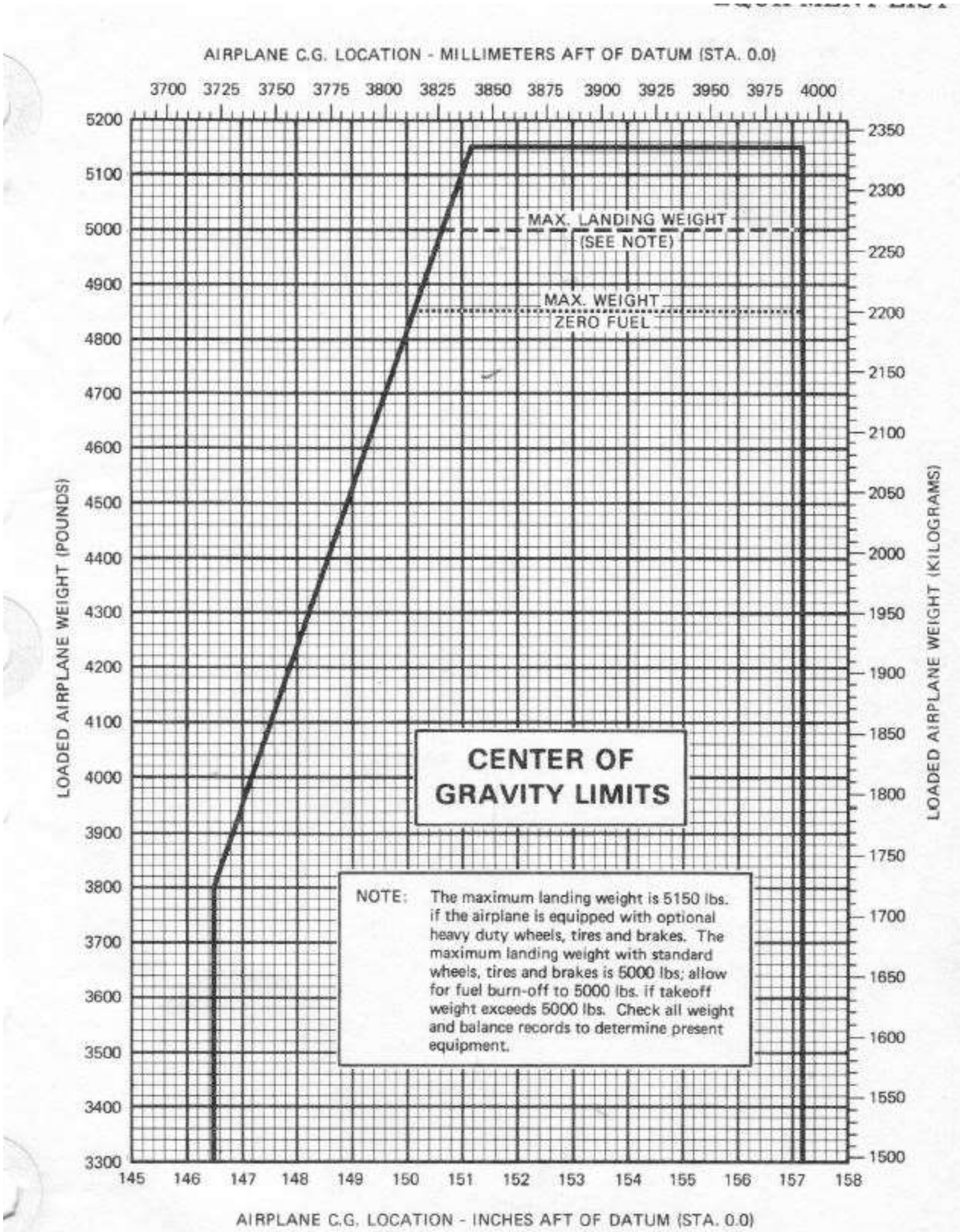
MAXIMUM CERTIFICATED WEIGHTS

Ramp:	5,175 lbs.
Takeoff:	5,150 lbs.
Landing:	5,000 lbs.
Zero Fuel:	4,850 lbs.
Baggage Compartments:	
Aft Baggage:	200 lbs.
Forward Baggage:	90 lbs.
Wing Locker Baggage:	120 lbs. per side with max of 60 lbs. under the door

V-Speed	KIAS	Description	Airspeed Indicator Marking
Vso	58	Stall speed in landing configuration	Bottom of White Arc
Vmc	65	Minimum controllable airspeed	Red Line
Vs	66	Stall speed with zero flaps	Bottom of Green Arc
Vr	80	Rotation speed	
Vx	80	Best angle of climb with 10 degrees flaps	
Vsse	80	Safe speed for intentional engine failure	
Vy	103	Best rate of climb	
Vyse	97	Best rate of climb single-engine	Blue Line
Vfe	175 150 125	0-10 degrees 10-20 degrees 20 to 30 degrees	Top of White Arc (Max with full flaps)
Vlo	175 150	Max Gear Extension Max Gear Retraction	
Vle	210	Max speed with gear extended	
Vno	175	Max structural cruising speed	Top of Green Arc
Vne	210	Never exceed speed	Red Line
Va	148 141 133	Maneuvering at 5,150 lbs. Maneuvering at 4,650 lbs. Maneuvering at 4,150 lbs.	
Vref		Final Approach Speed – 1.3 x Vso	
Single Engine Approach Speed - 90 KIAS			
Maximum demonstrated crosswind 20 Knots			

As of: 06/08/2018

ITEM	WEIGHT	ARM	MOMENT
EMPTY	3760.0	152.3	572.3
PILOT/F.S.		46.9	
CENTER SEATS		59.5	
AFT SEATS		71.7	
NOSE BAGGAGE		4.1	
AFT BAGGAGE		12.5	
WING LOCKERS			
RIGHT		5.8	
LEFT		5.8	
ZERO FUEL WEIGHT			
FUEL			
TOTAL RAMP			
TOTAL TAKE-OFF			
TOTAL LANDING			


AIRPLANE C.G. LOCATION - MILLIMETERS AFT OF DATUM (STA. 0.0)
3700 3725 3750 3775 3800 3825 3850 3875 3900 3925 3950 3975 4000
LOADED AIRPLANE WEIGHT (POUNDS)
5200 5100 5000 4900 4800 4700 4600 4500 4400 4300 4200 4100 4000 3900 3800 3700 3600 3500 3400 3300
LOADED AIRPLANE WEIGHT (KILOGRAMS)
2350 2300 2250 2200 2150 2100 2050 2000 1950 1900 1850 1800 1750 1700 1650 1600 1550 1500
MAX. LANDING WEIGHT (SEE NOTE)
MAX. WEIGHT ZERO FUEL
CENTER OF GRAVITY LIMITS
NOTE: The maximum landing weight is 5150 lbs. if the airplane is equipped with optional heavy duty wheels, tires and brakes. The maximum landing weight with standard wheels, tires and brakes is 5000 lbs; allow for fuel burn-off to 5000 lbs. if takeoff weight exceeds 5000 lbs. Check all weight and balance records to determine present equipment.
145 146 147 148 149 150 151 152 153 154 155 156 157 158
AIRPLANE C.G. LOCATION - INCHES AFT OF DATUM (STA. 0.0)

ORAL REVIEW

FAR Review

1. To maintain instrument currency, a pilot must have made six approaches and demonstrated proper holding procedures as well as radial and bearing tracking in the last six months.
2. An alternate is not required if the weather at your destination is forecast to be at least a 2000' ceiling and visibility of at least three miles. The forecast must be from one hour before to one hour after your estimated time of arrival.
3. If an alternate airport is needed, forecasted weather at ETA must be at least 600' ceiling and 2 miles visibility for a precision approach; an alternate airport that offers only a non-precision approach must be at least 800' ceiling and 2 miles visibility. An alternate cannot be based on a GPS approach. Reserve fuel of 45 minutes is required for IFR flights; 30 minutes for VFR day flights; and 45 minutes for VFR night flights. This reserve is required in addition to the fuel required to fly to your destination and alternate.
4. VOR limits:
   4 degrees for VOT, Ground Checkpoint & Dual Check
   6 degrees for an airborne check
5. VOR equipment must be checked every 30 days.
6. Transponders must be checked every 24 calendar months.

Inoperative Instruments and Equipment per FAR 91.213

SAG's aircraft do not operate under the guidance of a minimum equipment list (MEL). SAG's aircraft operate in accordance with the following FAR 91.213(d).

91.213(d) states that items may be inoperative as long as they are not part of:

1. Part of the VFR-day type certification instruments and equipment prescribed in the applicable airworthiness regulation. This is FAR 23. Some key items listed in FAR 23 that are installed on the PA34-200T a) stall horn b) CHT (due to cowl flaps)

2. Indicated as required on the equipment list of Kinds of Operations List (KOL).

3. Required by 91.205 (TOMATOFLAMES), or any other FAR.

4. Required to be operational by an AD.

Because this is only an excerpt, the complete subpart should be referred to if necessary:

(3) The inoperative instruments and equipment are –

(i) Removed from the aircraft, the cockpit control placarded, and the maintenance recorded in accordance with §43.9 of this chapter; or

(ii) Deactivated and placarded "Inoperative." If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with part 43 of this chapter;

(4) A determination is made by a pilot, who is certificated and appropriately rated under part 61 of this chapter, or by a person, who is certificated and appropriately rated to perform maintenance on the aircraft, that the inoperative instrument or equipment does not constitute a hazard to the aircraft.

Lost Comm Procedures (FAR 91.185)

If in VFR conditions, or if VFR conditions are encountered, squawk 7600, remain VFR and land as soon as practicable.

If in IFR conditions, squawk 7600 and Fly:

Route (First that Applies)	Altitude (Whichever is highest until descent is required for landing.)
Assigned	Minimum IFR Altitude
Vectored	Expected
Expected	Assigned
Filed	

FAR Review

1. To maintain instrument currency, a pilot must have made six approaches and demonstrated proper holding procedures as well as radial and bearing tracking in the last six months.

2. An alternate is not required if the weather at your destination is forecast to be at least a 2000' ceiling and visibility of at least three miles. The forecast must be from one hour before to one hour after your estimated time of arrival.

3. If an alternate airport is needed, forecasted weather at ETA must be at least 600' ceiling and 2 miles visibility for a precision approach; an alternate airpor t that offers only a non-precision approach must be at least 800' ceiling and 2 miles visibility. An alternate cannot be based on a GPS approach. Reserve fuel of 45 minutes is required for IFR flights; 30 minutes for VFR day flights; and 45 minutes for VFR night flights. This reserve is required in addition to the fuel required to fly to your destination and alternate.

4. VOR limits:
   - 4 degrees for VOT, Ground Checkpoint & Dual Check
   - 6 degrees for an airborne check

5. VOR equipment must be checked every 30 days.

6. Transponders must be checked every 24 calendar months.

7. Pitot static systems must be checked every 24 calendar months.

8. ELT equipment must be checked every 12 months, after half of the battery life, or after 1 hour of cumulative use.

9. An aircraft used for hire must have a 100 hour and an annual inspection.

10. In order to descend below the DH or MDA, all of the following conditions must exist:
   - A. The required flight visibility is met.
   - B. The aircraft is in a normal position to land.
   - C. (1) The runway environment is in sight – land.
     (2) Approach lights in sight – descend to 100' above touch down zone until runway environment is in sight.
     (3) Descend and land if red terminating bars or red side row bars are in sight.

11. Multi-engine aircraft with a VSO of 61 knots or less, or a gross weight under 6000 pounds do not have to demonstrate positive single-engine climb performance per FAR 23.

12. The minimum equipment list includes a list of equipment that may be inoperative for a particular phase of flight. If not required to have a MEL, comply with the minimum equipment prescribed by the FAR’s.

13. Standard Traffic Pattern Altitude (TPA) for multi-engine aircraft is 1000' AGL.

<u>Answer The Following Sample Oral Questions Prior To Arriving For Training</u>

1. Recite the V speeds.

2. What is the maximum demonstrated crosswind component?

3. Describe the T303 Crusader engines.
    - A. How many cylinders?
    - B. Who is the manufacturer?
    - C. What is the horsepower rating?
    - D. Does it have fuel injectors or a carburetor?
    - E. Is the engine turbo-charged or normally aspirated?
    - F. Why is the right engine labeled LTSIO- 520?
    - G. How are the cylinders arranged?
    - H. How is ignition provided?
    - I. What is the minimum and maximum oil capacities in the Crusader?

4. Describe the propeller system.
    - A. Who makes the propellers?
    - B. What does oil pressure do to the propeller?
    - C. Which lever manipulates oil pressure to the propeller?
    - D. Which unit regulates oil pressure to the propeller?
    - E. What is the function of the nitrogen cylinder?
    - F. What is the purpose of the spring in the prop dome?
    - G. Define constant speed.
    - H. What unit adjusts the propeller to maintain a constant RPM and how does it do it?
    - I. Define full feathering.
    - J. Will the propeller always feather?
    - K. What are centrifugal stop pins?
    - L. What is the true purpose of the centrifugal stop pins?

5. What is the correct action for a propeller over speed?

6. Describe the electrical system.

7. What are the indications of a failed alternator?

8. Will the engines continue to run with the alternator and battery master switches turned off?

9. Describe the vacuum system.
    A. Which instruments are vacuum operated?
    B. What are the normal vacuum operating limits?
    C. How many vacuum pumps does the PA-44 have?
    D. What indications would occur in the event of a vacuum pump failure?

10. Describe the stall warning system.

11. Describe the fuel system.

12. Explain how to cross feed fuel.

13. Describe the landing gear system.
    A. How is the landing gear actuated? Describe the pump.
    B. What keeps the gear in the up position?
    C. What keeps the gear in the down position?
    D. If Hydraulic pressure is suddenly lost in flight, what indication, if any, would you have?
    E. In what three situations will the landing gear horn activate?
    F. What unit will not allow the gear to be retracted on the ground?
    G. What is the procedure to extend the gear manually (Emergency Gear Extension)?
    H. What airspeed is of importance during manual gear extension?
    I. Are the brake and the landing gear hydraulics interconnected?
    J. If you lose gear hydraulics, will you still have brakes?
    K. What indicates that the gear is in transit and the hydraulic pump is activated?

14. What type of braking system is used by the Crusader?
    A. Where is the brake fluid serviced?

15. What type of flaps does the Crusader have?
    A. What are the flap settings on the Crusader?

16. What are the maximum taxi, takeoff, and landing weights?

17. What is the maximum baggage capacity?

18. Define VSSE.

19. What are the drag factors on light twins?

20. Who determines VMC for a particular aircraft?

21. Define VMC.
    A. Why is an aft CG used in determining VMC?

23. What are the factors in determining VMC?

24. Define critical engine and list the factors used to determine it.

25. When an engine fails, what causes an aircraft to sideslip and what action is required to correct this?

26. How much climb performance is lost when an engine fails?

27. What aircraft equipment checks are required under FAR Part 91?

28. Define absolute and single-engine service ceiling.

29. What documents are required to be on the aircraft?

30. Explain lost communications procedures.

31. Will the propeller feather below 800 RPM. Why or why not?

32. Explain the pitot static system.
    A. Does the PA-34 have an alternate static source? If so, how is it activated and what actions are necessary to acquire the most accurate reading?
    B. What instruments are pitot static?
    C. Where is the pitot static port located?

33. How do you prevent a heater overheat?

34. What is the fuel capacity? How many gallons are unusable?

35. What grade fuel is to be used in the PA-34?

36. How many fuel pumps are on the aircraft?

37. When are the electric fuel pumps to be used?

38. What are the various positions on the fuel selector control?

39. Explain the procedure for cross feeding fuel when operating the right engine from the left tank.

40. If an engine failure occurred at 5,000' MSL, or a high density altitude, what would you do to get max performance from the operating engine after performing the In-Flight Engine Failure Checklist?

41. If the CHT and oil temp approach the caution range, what can be done to assist in cooling?

42. Why does manifold pressure decrease approximately 1" every 1000' during climb?

43. When an engine is inoperative or feathered, what indications will be observed?

44. Why is the manifold pressure gauge not a good indicator in determining an inoperative engine?

45. What factors change airspeed?

46. Oxygen altitudes and requirements

47. What type of heater does this airplane have?