

Multi Engine Lesson Outline

1. AIRCRAFT SYSTEMS

- a. Engines, Ignition, Carb/Injected
- b. Propeller System (Feathering)
- c. Landing Gear System
- d. Brake System
- e. Fuel System
- f. Electrical System
- g. Vacuum System
- h. Oil, Hydraulic System
- i. Pitot Static System
- j. Heater System
- k. Flight Controls, Trim, Auto-Pilot

2. PERFORMANCE and LIMITATIONS

- a. Blue Line
- b. Vspeeds (Vyse, Vxse, Vsse)
- c. Accelerate Stop
- d. Accelerate Go
- e. Absolute and Service Ceiling
- f. Weight and Balance
- g. Single Engine Performance

3. PRINCIPLES of FLIGHT (SINGLE ENGINE)

- a. Critical Engine defn (conventional, counter)
- b. Critical Engine Factors (PAST)
- c. Vmc (red line)
- d. Zero Side-slip
- e. Proper control SE (bank, rudder, pitch)
- f. Drag (impacts)

4. Vmc

- a. Definition
- b. Factors affecting Vmc
- c. Conditions for certification (14CFR 23.149)
- d. Recognizing Vmc
- e. Vmc versus Stall Speed

5. NORMAL MANUEVERS

- a. Takeoff Engine Loss Briefing
- b. Normal and Short Field Takeoff
- c. Steep Turns
- d. Slow Flight
- e. Power-Off Stalls
- f. Power-On Stalls
- g. Accelerated Stalls
- h. Emergency Descent
- i. Go-Around
- j. Normal and Short Field Landing

6. SINGLE ENGINE MANUEVERS

- a. Single Engine Maneuvering
- b. Vmc Demo
- c. Drag Demo
- d. SE Instrument Approaches

7. EMERGENCY OPERATIONS (SINGLE ENGINE)

- a. Engine Loss on Take-Off Roll
- b. Engine Loss on Departure (500ft)
- c. Engine Loss at Altitude
- d. Engine Loss flows to Fix
- e. Engine Loss flows to Feather
- f. Engine Loss: Gear Down/Flaps Down configs
- g. Securing and Shutdown SE
- h. Air Restart (unfeather)

8. Addition Areas and Maneuvers

- a. tbd

9. Stage Preps/Checks

- a. CheckRide Prep: Practical Test Standards (PTS)
- b. CheckRide Prep: Oral Prep Areas Checklist

Multi Commercial Add-on (ASEL Commercial->AMEL Commercial)

- I. F. Performance and Limitations
- I. G. Operations of Systems
- I. H. Principles of Flight – Engine inoperative
 - Critical Engine
 - Density Altitude and Vmc and Vmc demo effects
 - Effects on weight and CG on control
 - Effects of bank angle and Vmc
 - Relationship of Vmc to Stall Speed
 - Reasons for Loss of Directional Control
 - Indications of Loss of Directional Control
 - Importance of proper Pitch, Bank, Coordination of Controls
 - Loss of Directional Control recovery
 - Engine Failure during take-off, planning, decisions, SE ops
- II. Preflight Procedures
- IV. A-D. Takeoff/Landing/Go-Around (normal/Short/Soft)
- V. Steep Turns 50°
- VII. A. Maneuvering during Slow Flight
- VII. B. Power-Off Stalls
- VII. C. Power-On Stalls
- VII. D. Accelerated Stalls
- VII. E. Spin Awareness
- VIII. A. Emergency Descent
- VIII. B. Engine Failure during Takeoff, before Vmc
- VIII. C. Engine Failure after Lift-Off
- VIII. D. Approach and Landing with Inoperative Engine
- VIII. E. Systems and Equipment Malfunctions
- VIII. F. Emergency Equipment and Survival Gear
- X. A. Maneuvering with 1 Engine Inoperative
- X. B. Vmc Demonstration
- X. C. Engine Failure during flight (by ref to instruments)
- X. D. Instrument Approach, Single Engine (by ref to instruments)