

Flight Advisor Corner by Hobie Tomlinson

April 2013

Flying Multi-Engine Aircraft (Pt. XI)

AMEL/S PTS - Intro 2

As we continue our series on flying FAR Part 23 (CFR 14, Chapter 1, Subchapter C, and Part 23) certified, small multi-engine airplanes, we are looking at the training issues involved in completing a multi-engine transition course.

This month we will pick up our discussion with the **Special Emphasis Areas** imbedded in the **Introduction Section** of the PTS as we continue working our way through the Multiengine **Practical Test Standards (PTS) FAA-S-8081-12C (Commercial Pilot for Airplane Single- and Multi-Engine Land and Sea)** that became effective on June 1, 2012.

The 4-Cylinder Twins – GA-7 Cougar @ CSS3



Lyc. 0-320-D1D Eng. @ 160HP/ea. ~ 115 Produced (1978-1979)

Wikipedia Image

Flight Advisor Corner by Hobie Tomlinson

Special Emphasis Areas are those knowledge areas of aircraft operations that are considered critical to flight safety (i.e. prevalent accident causal factors) and which Designated Pilot Examiners (**DPEs**) **shall** place special emphasis upon during the applicant's practical test. Unfortunately, these areas are sometimes overlooked by flight instructors due to the fact that they are contained in the introduction section of the Practical Test Standards (**PTS**) rather than in the Task listings. These areas are as follows:

- 1) **Positive Aircraft Control** means that the applicant is continually able to control the aircraft's flight path and energy state sufficiently to accomplish all the required Practical Test Standards (PTS) tasks within the specified tolerances.
- 2) **Positive Exchange of the Flight Controls Procedure** means that a positive three-step process occurs whenever the flight controls of the aircraft are exchanged. This process is labeled "Double Closed-Loop" communication. The process is well-proven and a highly recommended procedure for confirming the exchange of the flight controls. (For example, the "initiating" pilot states "I've (you've) got the flight controls;" the "non-initiating" pilot repeats "You've (I've) got the flight controls;" and lastly the "initiating" pilot repeats "I've (you've) got the flight controls," while visually verifying that the exchange of the flight controls has actually occurred. It is vitally important in two-crewmember operations (especially during training and/or checking) that there is always a clear understanding between the crewmembers as to who actually has control of the aircraft. *(The old joke that the "most dangerous cockpit" in aviation is one containing two Flight Instructors or Check Airman probably has a factual historical basis!)*
- 3) **Stall/Spin Awareness** is considered an important enough item to be referenced both in the "**Special Emphasis Areas**" and as individual **Task E**, under **Area of Operation VII (Slow Flight and Stalls)**. The applicant is expected to exhibit adequate knowledge of the elements related to spin awareness by explaining the following in relation to multi-engine airplanes:
 - a. Aerodynamic Factors related to spins.
 - b. Flight Situations where unintentional spins may occur.
 - c. Procedures for Recovery from unintentional spins.

Note: Airplane Multi-Engine (**AMEL/S**) training accidents involving unintentional spins have typically been initiated by either poorly performed/failed Velocity – Minimum Control (**V_{mc}**) demonstrations and/or simulated Engine Inoperative (**EI**) flight. *As many Light Multi-Engine aircraft can quickly develop unrecoverable "flat spin" modes, this is an area in which to insure that adequate knowledge and training exists, use of proper procedures occurs and that sufficient caution is used!*

Flight Advisor Corner by Hobie Tomlinson

- 4) **Collision Avoidance** is becoming even more significant in light of the impending contract tower closings across the country. The applicant should have adequate knowledge in at least the following areas:
 - a. Recommended “Scanning” Techniques for spotting traffic
 - b. Typical Visual Problems associated with sighting conflicting traffic
 - c. Aircraft “Right of Way” rules for conflicting traffic
 - d. Proper Procedures for “Uncontrolled” Airports

- 5) **Wake Turbulence Avoidance** requires that the applicant have a working knowledge of the following:
 - a. Cause of wake turbulence
 - b. Types of Aircraft that generate significant wake turbulence
 - c. Expected Location of wake turbulence behind the generating aircraft
 - d. Wake Turbulence Avoidance strategies during takeoff and landing

- 6) **LAHSO (Land and Hold Short Operations)** need to be fully understood by the applicant to include the following:
 - a. Locations where LAHSO may be implemented
 - b. Who is Eligible to accept a LASHO clearance?
 - c. Who Initiates a LAHSO clearance?
 - d. Does a LASHO clearance need to be accepted?
 - e. How is the Landing Distance Available determined?
 - f. Pilot Responsibilities once a LASHO clearance accepted

- 7) **Runway Incursion Avoidance** is an area that is very important for all airports. This fact was verified by an unfortunate fatal accident which occurred at Rockland, Maine (KRKD) on November 16, 2012. Applicants should have a functional knowledge of at least the following:
 - a. Runway and Airport signage and marking
 - b. Proper Radio Procedures (for both controlled and uncontrolled airports)
 - c. Applicants Possess and Use a current Airport Diagram
 - d. Applicants Maintain Proper Vigilance for conflicting traffic (both aircraft and ground vehicles)
 - e. Knowledge of Airport “Right of Way” rules
 - f. Applicants Properly Use External Aircraft Lighting (especially when using or transiting airport runways)

- 8) **CFIT (Controlled Flight Into Terrain)** is another “Special Emphasis Area” which shows up in a second location in the PTS. This time the second area under which this topic appears is in the detailed description of the Designated Pilot Examiners (DPE) responsibilities while assessing the applicants “Single-

Flight Advisor Corner by Hobie Tomlinson

Pilot Resource Management” (SRM) skills. These procedures are detailed a little later in the PTS introduction section and will be discussed in more detail when we get to that portion of the introduction section. The CFIT knowledge area requires the applicant to be able to accurately assess the risks associated with terrain and obstacles, the ability to maintain an accurate awareness of terrain and obstacles, and the ability to use appropriate techniques and procedures in order to avoid controlled flight into terrain (or obstacles) by using all available resources. **Note:** A “Controlled Flight Into Terrain” training aid document is being made available by the FAA. This document will eventually be able to be obtained at the following website:

http://www.faa.gov/training_testing/training/media/cfit/volume1/titlepg.pdf.

- 9) **ADM (Aeronautical Decision-Making) and Risk Management** is a third area which shows up in two places in the PTS. It also occurs in more detail in the “Single-Pilot Resource Management” (SRM) area of the new PTS “introduction” section. We will discuss this subject in greater detail when we reach that section of the Introduction chapter. This knowledge area of the PTS requires the applicant to exhibit sound aeronautical decision-making skills during the planning and execution of the flight portion of the practical test.
- 10) **Wire Strike Avoidance** knowledge of the applicant should include at least the following items:
 - a. Location of the Primary “Strike Zone” (usually considered as being below 500 feet Above Ground Level)
 - b. Best Techniques for sighting wires (and other obstacles)
 - c. Necessity to properly overview any expected operational area before attempting low altitude and/or confined area flight operations
 - d. Necessity to maintain high Situational Awareness (SA) during all flight operations
- 11) **Checklist Usage** requires the applicant to perform and/or explain the following functions:
 - a. Possesses and Uses the correct Checklists for the make and model of aircraft being provided for the practical test
 - b. Familiar with Single-Pilot Checklist Protocols
 - i. Flow Procedures and Checklist use during Normal Operations
 - ii. “Read and Do” Checklist use during Abnormal and Emergency Operations (Hopefully only simulated!)
 - iii. Knows required Emergency Checklist “Memory Items”
 - c. Knowledgeable about Normal, Abnormal, and Emergency Checklist procedures
- 12) **Temporary Flight Restrictions (TFRs)** require the applicant to have knowledge in the following areas:

Flight Advisor Corner by Hobie Tomlinson

- a. Able to access the TFR website to ascertain if the planned practical test flight will be impacted by any TFRs
- b. Able to assess the details of an existing TFR to determine
 - i. The location, the horizontal, and the vertical extent of the TFR
 - ii. Operations within the TFR which are possible (or if totally banned)
 - iii. If some operations are still possible within the TFR, what are the operational requirements and/or constraints (i.e. IFR flights only)

13) Special Use Airspace (SUA) has considerable overlap with **Task E** (National Airspace System) located under **Area of Operation I** (Preflight Preparation). The SUA area requires the applicant to have adequate knowledge of the following:

- a. The various types of Special Use Airspace.
- b. Special Use Airspace charting and how to determine its
 - i. Location
 - ii. Lateral limits
 - iii. Vertical limits
 - iv. Controlling Agency
 - v. Communications Frequency (or telephone number)
- c. Special Use Airspace
 - i. Pilot requirements
 - ii. Equipment requirements
 - iii. Air Traffic Control Communication requirements
 - iv. Air Traffic Control Authorization requirements
 - v. Air Traffic Control Services (provided or available)
 - vi. Weather Minimums Required for Operations within the SUA

14) Aviation Security requires the applicant possess at least a basic knowledge of the following:

- a. The Transportation Security Agency's (TSA) interaction with General Aviation
- b. TSA Security Protocols for airports served by scheduled Air Carriers to include
 - i. Security Identification Area (SIDA) locations
 - ii. Badging requirements
 - iii. Challenge" procedures for persons not displaying proper ID
 - iv. Proper Gate/Fence access procedures
- c. TSA Security Protocols for airports not served by scheduled air carriers and/or uncontrolled airports to include the following:
 - i. Adequately Securing unattended aircraft
 - ii. Proper Gate/Fence access procedures
 - iii. Maintaining a Heightened Security Awareness

Flight Advisor Corner by Hobie Tomlinson

- d. Awareness of the requirement for Annual TSA Security Training for all pilots holding a Certified Flight Instructors (CFI) Certificate, whether currently active or not

15) Single-Pilot Resource Management (SRM) is the next to last knowledge area and also shows up in two locations in the Practical Test Standards. SRM's second location in the PTS occurs later in the "Introduction" section, where it occupies four pages of explanatory text. We will go into greater detail in discussing Single-Pilot Resource Management when we reach that portion of the Introduction Section. For now it will suffice to say that the applicant must be able to understand and manage all resources available to the single-pilot prior to and during the flight portion of the practical test in order to ensure the flights successful outcome. (These resources include both those resources on-board the aircraft and those resources that are external to the aircraft.) The six areas which comprise Single-Pilot Resource Management are as follows:

- a. Aeronautical Decision-Making
- b. Risk Management
- c. Task Management
- d. Situational Awareness
- e. Controlled Flight Into Terrain Awareness
- f. Automation Management

16) Other Areas are those special knowledge areas which are deemed appropriate to any phase of the practical by the Designate Pilot Examiner or other person administering the test. These areas would most likely be driven by special considerations related to the specific make and model of aircraft being used for the practical test. Examples are the following two aircraft that have special knowledge areas that have been deemed important enough by the FAA to have warranted the issuance of a Special Federal Aviation Regulation (**SFAR**).

- a. Robinson R-22/R44 Helicopter (SFAR 73)
 - i. Energy Management
 - ii. Mast Bumping
 - iii. Low rotor RPM
 - iv. Low G hazards
 - v. Rotor RPM Decay
- b. Mitsubishi MU-2M Turboprop AMEL Aircraft (SFAR 108)
 - i. Aircraft uses wing spoilers (instead of ailerons) for roll control
 - ii. No person may act as a crewmember on this aircraft type without complying with the training requirements of SFAR 108

The Practical Test Standards (PTS) specifically state that all Special Emphasis Areas listed are essential to flight safety and will be evaluated by the Designated Pilot examiner

Flight Advisor Corner by Hobie Tomlinson

or other person(s) administering the test, even though they may not be specifically addressed under a dedicated Task listing within the PTS.

Removal of the “Airplane Multi-Engine VFR Only” Limitation covers those tasks which must have satisfactory performance by the Applicant who desires to have the “VFR Only” limitation removed from his/her existing Airplane Multi-Engine Rating. While this limitation is becoming relatively rare, it is typically held by pilots who either have obtained their Multi-Engine Rating prior to their obtaining an Instrument Rating, or who have obtained their Multi-Engine Rating in an aircraft that was not authorized (or equipped) for instrument flight.

The removal of the “VFR Only” limitation at the Commercial Pilot certificate level requires that the Applicant satisfactorily perform the following Area of Operation Tasks from the Commercial AMEL and AMES PTS, while utilizing a Multi-Engine Airplane that has a Manufacturer’s Published **Vmc** speed:

- **Area of Operation X** (Multi-Engine Operations)
 - **Task C** – Engine Failure During Flight (By Reference to Instruments)
 - **Task D** – Instrument Approach – One Engine Inoperative (By Reference to Instruments)

Removal of the “Limited to Center Thrust” Limitation covers those tasks which must have a satisfactory performance by the Applicant who desires to have the “Limited to Center Thrust” limitation removed from his/her existing Airplane Multi-Engine Rating. While this limitation is also becoming relatively rare, it is typically held by pilots who have obtained their Multi-Engine Rating in a Cessna 337 Multi-Engine Airplane (“Push - Pull” engine configuration) or Military Pilots who have obtained their Civilian Pilot Certificate via the “Military Competency” route while they were only current in an aircraft such as the McDonald-Douglas F-4 Phantom (centerline thrust engine configuration).

The removal of the “Limited To Center Thrust” limitation at the Commercial Pilot certificate level requires that the Applicant satisfactorily perform the following Areas of Operation Tasks from the Commercial AMEL and AMES PTS utilizing a Multi-Engine Airplane that has a Manufacturer’s Published **Vmc** speed:

- **Area of Operation I** (Preflight Preparation)
 - **Task H** – Principles of Flight – Engine Inoperative (**EI**)
- **Area of Operation IX** (Emergency Operations)
 - **Task B** – Engine Failure During Takeoff Before Vmc (Simulated)
 - **Task C** – Engine Failure After Lift-Off (Simulated)
 - **Task D** – Approach and Landing with an Inoperative Engine (**EI**) (Simulated)

Flight Advisor Corner by Hobie Tomlinson

- **Area of Operation XI** (Multi-Engine Operations)
 - **Task A** – Maneuvering with One Engine Inoperative (EI)
 - **Task B** – Vmc Demonstration

(Note: Applicants that hold an Instrument Rating and have not demonstrated instrument proficiency in a Multi-Engine Airplane with a Manufacturer’s published Vmc speed *shall* also satisfactorily demonstrate the additional tasks listed above under the “Removal of the Airplane Multi-Engine VFR Only Limitation” heading.)

This appears to be a good place to break for this month. Next time we will pick up our discussion with the **Commercial Pilot – Airplane Practical Test Prerequisites** imbedded in the **Introduction Section** of the PTS as we continue working our way through the Multiengine **Practical Test Standards (PTS) FAA-S-8081-12C (Commercial Pilot for Airplane Single- and Multi-Engine Land and Sea)** that became effective on June 1, 2012.

The Thought for this Month: *“Some people aren’t used to an environment where excellence is expected” – Steve Jobs, (1955 – 2011) – Apple CEO.*

So until next month, be sure to *Think Right to FliRite!*

The 4-Cylinder Twins – UC-1 Twin Bee @ KLCI



Lyc IO-360-B1D Eng. @ 180HP ea. ~ 23 Produced (1965-1987) N9509U is S/N 021
Hobie Tomlinson Image