



# FLIGHT-WATCH



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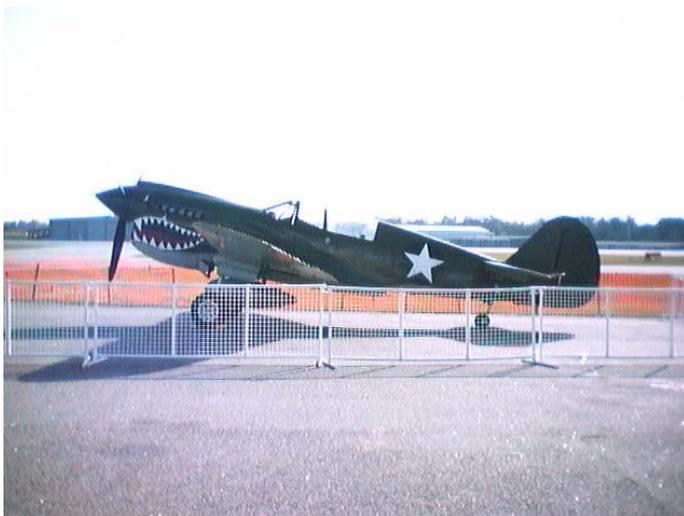
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## WHEN DOES A SIMULATED EMERGENCY BECOME REAL?

The Practical Test Standards (PTS) for the private pilot rating and also the commercial pilot rating require that the examiner test the applicant in emergency operations. This is Area of Operation X in the Private PTS and Area of Operation VIII in the Commercial PTS. One of the most common simulated emergencies is a partial or complete loss of engine power. For decades the procedure has probably been the same amongst student pilots. The instructor retards the throttle, declares: "Engine out procedure" or "You've just lost your engine," and the student dutifully applies carburetor heat (if called for by the AFM), trims the aircraft for best glide speed, and searches for a suitable landing site.

In the multi-engine environment, the applicant or student may lose an engine before the aircraft reaches minimum controllable airspeed (VMC) or may lose the engine after takeoff. If the former case, the student is expected to abort the takeoff, apply braking, and keep the airplane on the centerline of

the runway. In the second situation, the student is expected to identify the failed engine, bank into the good engine, feather the propeller on the inoperative engine, and climb at the appropriate airspeed (assuming the airplane will climb). The instrument rating checkride, if accomplished in a multi-engine airplane, provides for a simulated engine failure during level flight and a single-engine instrument approach.



How is the instructor or pilot examiner to simulate an engine failure? My experience has been the instructor or pilot examiner generally retards the throttle to simulate an engine failure. Retarding the throttle gives the student and the instructor the option of reapplying power on the "dead" engine in the event there is some confusion in the cockpit or the student fails to react promptly or correctly to the situation. However, I am aware that some former military instructors think that the best way to simulate an engine failure is to turn the fuel selector to the "off" position. The argument behind this procedure is that it is not as obvious to the student as retarding

the throttle. It is more subtle and requires more analysis and thought on the part of the student to deal with the situation. While those arguments may be correct, turning the fuel selector to the “off” position can, in fact, lead to an actual emergency.



With the fuel selector valve in the “off” position, the fuel in the fuel line between the engine and the fuel selector is burned, and this leaves a void in a fuel line. Returning the fuel selector valve to the “on” position is not going to result in regaining engine power instantaneously. Rather, the engine-driven fuel pump will have to draw fuel from the fuel selector valve back to the engine, and this may take some time. There is also the possibility that an engine restart may not be achieved, and a forced landing could be in the future of the student and instructor.

The PTS provisions for both the private pilot and commercial pilot license reference the aircraft flight manual and Advisory Circular 61-21 in relation to the manner and method of simulating an engine failure. I am not aware of any aircraft flight manual that advocates turning the fuel selector valve to the “off” position in order to simulate an engine failure. Generally, when the AFM calls for turning the fuel selector valve to the off position, the engine has already failed, and a forced landing is imminent. Because there are some instructors who seem to believe that turning the fuel selector valve to the

“off” position is an appropriate method to simulate an engine failure, this article has been written to alert the readers of Flightwatch to the fact that there was at least one recent reported accident involving an instructor employing this procedure.

Another area to consider is the applicant for a multi-engine rating shutting down and restarting an engine during a multi-engine checkride. If the aircraft is not equipped with an accumulator to drive the propeller blades from the feathered position to a low pitch (high RPM) position, and in the event the checkride takes place during the summer when temperatures are hot, there is the possibility that the engine may not successfully be restarted, and the aircraft may not be able to maintain altitude on only one engine. Some thought should be given prior to the administration of the checkride about the manner and circumstances under which an engine shut down and restart will be accomplished.

Generally, on an instructional flight, the instructor is the pilot-in-command of the aircraft and has the responsibility for the safe outcome of the flight. Conversely, on a checkride, the applicant is generally the pilot-in-command. If the applicant bears the responsibility for the safe outcome of the flight, some discussion with the pilot examiner or inspector may be appropriate to ensure that a simulated emergency does not become a real emergency during the checkride.



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