



Emergency Procedures Flight Clinic Flight Syllabus Items



This flight clinic aims to develop proficiency in emergency procedures beyond those demonstrated in CAPF 70-5 evaluations. Flight clinic sorties should make every effort not to take more than **1.5 hours** of Hobbs. Students must have completed the clinic's ground school. An authorized instructor must occupy the right seat (may not be a CFI) for the flight clinic. The pilot and the instructor should coordinate in advance for the flight to be customized to the local training area, the chosen aircraft, and the pilot's experience and training priorities. After the flight, the instructor and pilot should also confer to summarize what was learned and recommend whether the pilot should seek additional training. Flight training or proficiency activities are restricted to those listed below.

Regulatory Limitations

As a reminder, CAPR 70-1 (1 Oct 2020) states:

"9.11.8.5. Perform all portions of stalls, slow flight, and unusual attitude recoveries above 1,500 feet AGL. Simulated Forced Landings (SFL) outside gliding distance to a runway may be continued to no lower than 500 feet AGL over non-congested areas. CFLs may be continued to touchdown on hard surface runways at least 3,000 feet long with a CAP Instructor Pilot onboard or 5,000 feet long without a CAP Instructor Pilot on board."

Also, the following is prohibited:

"9.4.12. Simulated emergency procedures during instrument meteorological conditions or at night. Exception: partial panel instrument training and in-flight discussion of emergency procedures may be conducted during night visual meteorological conditions under the supervision of a CAP instructor pilot."

Precautions

Some of the maneuvers in this flight clinic produce more abrupt motions and are unusual. At any time, either the instructor or the pilot may call "knock it off" to terminate the maneuver. Afterward, either crew member can decide to return to base with no further training. The pilot and instructor should be careful when completing operational risk management (ORM).

All activities in this flight clinic shall be performed during day VFR.

Aircraft Operating Procedures

The instructor and pilot should review the operating procedures from the aircraft's pilot operating handbook (POH) appropriate to the activities that will be flown. Particular emphasis should be placed on **boldface** items that should be memorized. Time permitting, pilots should also demonstrate good checklist usage and CRM in each scenario.

Flight Items

The flight should consist of at least five of the following, but as many items as reasonably possible should be accomplished. The order is an approximate suggestion for efficiency but should be customized to each flight.

- Emergency Operation in Clouds: This item contains three sub-activities. These activities should be flown in a partial panel configuration appropriate to the aircraft for IFR pilots. For G1000 aircraft, this is AHRS and ADC failure. The suggested way to simulate this is with an overlay over the PFD. If this is not available, a partial panel can be substituted with a PFD failure. The instructor should simulate a vacuum pump failure for round-dial aircraft with an engine-driven vacuum pump. In all cases, pilots should wear appropriate view-limiting devices.
 - Executing a 180-degree turn in clouds: In this maneuver, the pilot is trying to react inadvertently flying into clouds by performing a standard rate turn of 180 degrees, with constant cruise airspeed and altitude.
 - Emergency descent through clouds: This maneuver simulates the case where a pilot has no option but to descend through a cloud layer. The pilot shall follow the appropriate procedure prescribed by the POH, descending no less than two thousand feet and terminating no lower than 1,500 feet AGL.
 - Recovery from a spiral dive in the clouds: The pilot attempted a descent through clouds but lost control in this maneuver. This should be treated as a recovery from unusual attitudes from FAA's ACS.
- Electrical fire: This scenario simulates the crew detecting (either by smell or visually) electrical fire, such as in the avionics. The crew should execute the appropriate checklist to attempt to extinguish the fire. However, in this scenario, the fire will persist. Therefore, the pilot should execute an emergency descent to maximize the descent rate. The emergency descent should follow appropriate procedures in the POH. If none exist, the instructor and pilot should coordinate how to execute the emergency descent before the flight. One suggestion is a descending spiral turn with full flaps and 45 degrees of flaps, flown at the top (fastest) of the white arc.
- Wing fire: In this scenario, the electrics such as navigation lights in wings have caught on fire. The pilot should then execute appropriate procedures to prevent the fire from spreading inwards and safely terminate the flight as soon as practicable.
- Simulated engine failure on takeoff: This maneuver must be executed at a safe altitude and above 2,000 feet AGL. The pilot will establish a climb following the appropriate climb checklist but at V_y instead of cruise climb. When prompted by the instructor, the pilot will reduce the throttle to idle and note the altitude. The pilot will then note how rapidly airspeed is decreasing and not act other than drop the nose to maintain the pre-agreed safe airspeed for 3 seconds to simulate the startle effect. Then, the pilot will perform a turn of 210 degrees towards the wind. After a momentary rollout at that heading, the pilot will turn 30 degrees of heading in the other direction to line up with the simulated runway. Once reaching the new heading, the pilot shall resume the best glide speed. The pilot will then note how much altitude was lost.
 - The aircrew shall agree on the chosen airspeed in advance. It should not be faster than the best glide speed and should be ten knots higher than the stall speed for a level turn at the chosen bank angle, as provided by the POH. Even though this maneuver is a descending turn, the pilot may be tempted to pull back at any point, so this minimum speed provides a safety buffer. The chosen airspeed must be kept constant throughout the turns.
 - The bank angle is another choice that the aircrew must make. A bank angle of 45 degrees is, in many cases, optimal. 30 and 60 can also be chosen to explore the flight

envelope. 60 degrees are best left after the pilot is comfortable with shallower banks in this maneuver.

- (IFR-rated pilots) Instrument approach with simulated system malfunctions: This maneuver should be flown according to FAA ACS standards. Partial panel is defined as appropriate to the chosen aircraft. For G1000 aircraft, that is an AHRS and ADC failure. This maneuver is suggested to pilots who have not executed it recently, such as in a CAPF 70-5 evaluation.
- Simulated engine failure at altitude to a landing: This activity simulates a total engine failure at a cruise altitude. The altitude chosen should reflect a typical cruise altitude appropriate to the area or the pilot's typical flights. In addition to performing appropriate POH procedures, the pilot will exercise judgment based on preflight planning, visual clues, EFB information, and other methods to determine how far they can glide and within that range what is the best location for a landing. It is suggested that an uncontrolled airport with low traffic is within gliding distance for the pilot to perform a landing. The pilot should touch down approximately a third down the runway and on the centerline. The pilot should also, if possible, position the aircraft on the downwind abeam the numbers. Hard breaking should not be performed. If a safe landing is not assured at any point, the pilot should perform, and the instructor should call for an aborted landing. Also, throughout the maneuver, the pilot should periodically clear the engine and enrichen the mixture gradually to maintain good engine operation. Also, in this scenario, flaps remain operational.
- Partial power or rough engine operation at altitude: This maneuver simulates the scenario where the engine operates rough or, for another reason, is unable to produce full thrust but is capable of producing some thrust. The instructor should pick a power setting approximately at 33% of engine brake horsepower, not enough to sustain altitude. The pilot will then demonstrate troubleshooting following appropriate POH procedures. The pilot will then simulate or perform a landing similar to the previous activity (engine failure at altitude).
- Landing without electrical power: In this activity, the pilot will land, assuming no electrical power is available. As a result, flaps have to remain up, and the pilot can only reference the backup instruments. To that end, the instructor will turn off the PFD by dimming it. This activity can be performed to a landing.
- Landing without elevator control: This activity must be performed entirely above 1,500 feet AGL. The pilot shall perform appropriate procedures from the aircraft's POH. The focus of the training is to simulate a traffic pattern and appropriate control of the descent rate using the throttle and using the trim to control airspeed and pitch. The maneuver will terminate after simulating a touchdown.
- Failed airspeed indicator: The instructor covers the airspeed indicator(s) in this scenario. In the case of a G1000 aircraft, the PFD is also dimmed. The pilot then proceeds to land the aircraft through a traffic pattern only with visual aids. This scenario develops the pilot's understanding of the current angle of attack by comparing the descent path as viewed from the cockpit using the spot method and the pitch angle. This scenario should be treated similarly to a power-off landing regarding regulatory runway length limits. In the case of a stall warning or any other stall indication, the pilot should immediately lower the angle of attack and, if necessary, perform a go-around.

Review – Post-flight discussing

- Performance expectations: Compare what the pilot thought would happen versus what actually happened.
- Every pilot should have established personal minimums. Review what these are and consider if they should be adjusted based on lessons learned from this flight.
- **Boldface** print in the POH represents information that needs to be memorized. Is there additional information that the pilot should commit to memory?
- Do it again – These maneuvers should be practiced often to maintain proficiency.