

6 Minutes for SafetyTopic:

Engine Failure / Forced Landing Considerations

Forced landings can result from several different causes. Most result from some type of engine malfunction or engine failure due to fuel starvation. Recommend treating any engine malfunction or low fuel state as if it were imminent engine failure, especially if the POH / AFM states to land as soon as possible ("single engine / single seat" mentality). Examples are illumination of the chip detector light / fuel filter light / fuel low light(s) or an indication of low oil pressure, abnormal engine operations, actual engine failure, etc.

For the purposes of this discussion, we assume the forced landing to be off-airport.

Psychological hazards to be aware of:

1. Reluctance to accept situation
2. Desire to save aircraft
3. Undue concern about personal safety

Concepts of crash safety:

1. Maintain integrity of the cockpit area
2. Avoid body contact with interior structure (tighten shoulder harness and lap belt)
3. Use aircraft structure and vegetation to dissipate crash energy
4. Consider groundspeed and stopping distance when picking a landing spot

Emergency landing area awareness:

1. Highways / roads – be aware of power lines / traffic
2. Rivers (Refer to common ditching procedures AIM 6-3-3, see Six Minutes Ditching Procedures)
3. Lake / reservoir shore lines (Refer to common ditching procedures AIM 6-3-3, see Six Minutes Ditching Procedures)
4. Swaths cut through trees usually indicates the presence of power lines
5. Mountain meadows (can have rugged terrain)
6. Logging roads / jeep trails are usually narrow / winding
7. Small trees are better than big ones
8. Rescue accessibility is better near roads

The aircraft is replaceable, you aren't. Do what is necessary to protect you.

At first indication of an engine malfunction or failure:

1. Load – Dump
2. If engine is still operating: Climb if possible (Buys time and glide distance – how high depends on how far you need to go for a suitable landing site)
3. If the engine fails and a restart is to be attempted:
 - a. Proceed with air start procedures IAW your specific aircraft POH / AFM

4. If a restart is not advisable or is abandoned:
 - a. Prop – Feather to extend glide
 - b. Attain best glide speed
 - c. Time permitting: transmit mayday, position, condition, and squawk 7700 (emergency)
 - d. Look for suitable landing area
 - e. Tighten lap belt and shoulder harness
 - f. Consider wind direction / appropriate configuration
 - i. Flap options for crosswind versus headwind landings
 - g. Fuel and electrics – off prior to touchdown (to reduce fire hazard)
 - h. Consider opening door(s) (viable post-landing escape if damage to fuselage occurs)
 - i. Control sink rate / flare uphill
 - j. Emergency ground (or water) egress

- ☪ Survival equipment
 - Water, and signaling capability