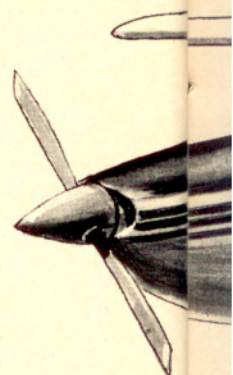


# When the World



*Engines do fail, and the time to figure out what to do next is while you're still on the ground*

BY GORDON D. JONES

AOPA 539191

ILLUSTRATION BY DOUG PARKHURST

"Portland tower . . . United, ah, 173 heavy. Mayday! Mayday! The engines are flamin' out and we're goin' down. We are not going to be able to make the airport."

This was the last transmission received from United Airlines Flight 173 before it crashed in a residential district, some seven miles short of the runway at Portland International Airport at 6:15 p.m. on December 28, 1978.

Some of the first newscasts of the accident erroneously put the blame on a malfunction of the landing gear. Although this may have been a contributing factor, it was not the *cause*. Nor was the weather to blame. It was a beautiful, clear, cold night—CAVU and almost calm. It was not because of inexperience on the part of the pilot. He was an experienced pilot, 52 years old, with thousands of hours in type.

The primary cause of the accident was lack of fuel, resulting in complete loss of power to all engines.

There are indications that the fuel gauges were faulty. Only six minutes before the flame-out the pilot confirmed by radio that he had ". . . 1,000 pounds of fuel . . ." However, no fuel was found in the cells after the crash, nor was any spilled on the ground. Thus, no fire.

The problem with the landing gear had given the crew and passengers nearly an hour's warning to prepare for the emergency. During this time, the aircraft was in close proximity to the airport and in constant radio and radar contact. The tower had alerted

emergency ground crews to prepare for a crash landing. Ambulances, police, foam and fire trucks were standing by, ready at Runway 28 Left, which is 11,000 feet long. Everything was set up to help make this as safe an emergency landing as possible, but the aircraft never made the runway. It landed seven miles short, in a small clump of fir trees at 157th and East Burnside Streets in suburban Portland, Ore.

Fortunately, most survived—because the airplane was successfully force landed. A number of pilots who read this will one day face the inevitability of an off-airport, power-off landing. It is more likely to be in a lightplane with two or three on board than in a DC-8 with 178 passengers. And for you, it may not come in the next six months, but it may happen sometime during your flying lifetime. Sometime when you least expect it, you might be forced to land someplace other than an airport. Think you can handle it? Okay, when was the last time you really practiced it? I mean *really practiced* it?

Well, if it's been that far back (so far that you have to pause and think) chances are you're a little rusty in recalling the four basic rules of procedure that determine how successful your forced landing is going to be. In case you've forgotten these vital steps let's briefly review them.

1. *Maintain control of the aircraft and airspeed, establish glide for minimum rate of descent.* If your power failure occurs on takeoff or climbout you may not have time for anything

but this first rule. It is the cardinal one. OBEY IT.

2. *Determine the cause of the power failure and correct if possible.* In most instances it will be something simple like a fuel selector valve, mixture control, master switch, etc. Here is where those hours of cockpit time will prove their worth. You should know the location and correct position of all valves, switches, controls, fuses thoroughly—so thoroughly that you can manage them with one hand while checking the panel instruments and gauges, maintaining attitude and airspeed, scanning the terrain below for the best landing site, and maintaining attitude and airspeed (repetition intentional). It is in this second phase of the procedure that the greatest number of variations takes place, according to the degree of sophistication of the particular aircraft you're flying—that is, number of seats, horses, props, gear, etc. When all else fails, read your plane's manual. (Time spent doing this prior to the actual emergency has proven to be the most beneficial.)

3. *Choose the best landing site available.* This can often be accomplished simultaneously with step 2. Once you have picked the spot, stay with it. Many a safe forced landing has been lost because the pilot saw a better spot at the last minute and decided to change his course. Naturally, if you're high in the sky when the trouble starts, you have a better chance of seeing the perfect uphill, upwind, freshly mowed pasture. But altitude can be deceptive and can lull you into a false sense of



# Gets Quiet



security. So make your choice quickly, surely, and stay with it.

A forced landing on a dark, moonless night can add further complications. The pilot of Flight 173 picked what must have appeared to him to be only a small, thin island of darkness in a sea of residential lights. Fifty feet more to the right, and he would have plowed through a huge apartment complex with hundreds of people inside. Fifty feet to the left would have put him in direct line with twenty or more homes, where the families were just sitting down to dinner. He picked the best, safest possible spot to set it down.

You should always be aware of the type of terrain you're flying over—at least as to whether it's densely populated or not; flat, rolling or mountainous; dry land or water.

At night, close to a large city, any dark area is apt to be an open field, park, schoolyard, body of water, or tree-covered area. All are safer for landing than urban centers full of houses and buildings.

One more time: Choose the best available site, and *don't change your mind!*

4. *Concentrate on making a normal descent and approach pattern.* Altitude is a prime factor in this planning stage. If you have enough of it, get over the center of the selected site as soon as possible and circle it. Continue circling down to the decision height. (This is the point at which you cut off at about a 45° angle to set up your near-normal base leg and approach). Before you reach that point, you will

obviously have already determined the wind direction and safest approach to the touchdown point.

If your emergency occurred at less than 800 feet agl or so, you won't be able to establish anything close to a normal pattern. You will have to find a spot within the limits of your glide-path, preferably straight ahead and probably not more than 75 degrees left or right of the nose. All this time, of course, you're remembering to maintain attitude and airspeed, right? **RIGHT.**

5. *Complete your approach, cockpit check, and land.* If everything up to this point has gone according to plan (with a little luck thrown in), you have an excellent chance of being able to land the aircraft without serious injury to yourself or your passengers.

Assuming that since the first dreadful silence you've continued to try to correct the difficulty and restart the engine, quit now. You've got more important things to do.

Keep your approach a little high (you can usually slip it or add flaps to lose excessive altitude, but *no way* are you going to stretch it if you're short.)

Complete your cockpit check. GUMP-flaps-belts-switch—Gas: off; Undercarriage: retracted on anything other than smooth surface; Mixture: idle cutoff; Prop: full-feathered or flat—use your judgment on this. If featherable, you'll glide farther; if flat, you'll land slower. Flaps: full down for lowest possible speed at touchdown; Belts: secure and tight on all occupants, seats pushed back and locked; Switch: master

switch off. One final step in some aircraft: it's advisable to release the door latch just prior to impact. [Read the operating manual for your aircraft for any special forced landing procedures—Ed].

Barring extreme circumstances, if you practice making simulated forced landings with these five points in mind, when and if it becomes necessary, your odds for survival will be greatly improved.

Emergencies are never without some element of panic, even among experienced pilots. But the dangers of panic can be kept to a minimum if a pilot has practiced emergency procedures often enough to make his reaction to them automatic and ingrained. This is part of professionalism.

With the increasing use of more sophisticated aircraft for student instruction, there has been a noticeable decline on the part of many instructors in the practice of complete power-off approaches for normal landings. This may be fine for prolonging engine life by lessening the damage from too-rapid cooling, but it does little to aid the critical judgment of a pilot when forced to make a dead-stick landing. Engines (even the expensive ones) are replaceable—pilots are not. An occasional power-off approach in simulating a forced landing is, in my book, well worth the possible loss of an hour or two off the TBO.

You've just learned (or reviewed) how to spell **SUCCESS** with five C's. . . . C-ontrol . . . C-orrect . . . C-hoose . . . C-oncentrate . . . C-omplete. □