

So, there we were...

Air Facts Journal

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It was three days before my private pilot checkride. Every lesson was intense. We were banging out the Practical Test Standards one maneuver at a time. Back to back to back. My instructor, Minch, was making the most of my money. I would get back to the airport with my mind buzzing, and my forearms sore. I had not been arm wrestling Sylvester Stallone—that would have been easier. No, I was fighting Mother Nature, trying to make this crazy contraption of spinning gizmos obey my commands.

Here we go again: another quick stop, followed by a maximum performance takeoff, followed by an air taxi, followed by a left crosswind departure over the active... YOUR ENGINE JUST QUIT!!!!



In an autorotation, there's no time to think – reactions are what counts.

Holy crap! Without thinking... Down collective! Aft cyclic! Right pedal! Pick a place to set her down, hopefully into the wind and aim for that spot! Check the airspeed: 55 knots, rotor RPM happily in the green and aim for that spot! It all has to be rehearsed to perfection. This is the maneuver that will make or break you—literally! In the event of a real engine failure, you don't have time to assess the situation, get out, raise the hood and try to figure out why the mice have stopped turning the wheels. Get that collective down, get that cyclic back, and work your way back down to terra firma, with a nice flare and gentle ground roll at the end.

Autorotations are maneuvers that sound and look really scary to the non-pilot. Before I started my training, I had watched many YouTube videos on the subject. I was pretty nervous about my first one. There are quite a few videos showing botched autos. After all, this is an emergency procedure. And an emergency in an aircraft is never a good thing.

When we initiated my first auto, I was expecting my pants to come up over my head, and it was not that way at all. It was pretty tame, considering what I was expecting to feel. Don't get me wrong: doing an auto does feel different than most maneuvers in the helo, but it's nothing like the first drop of Goliath at Six Flags. Now, a 180 degree auto is a different story, but we'll save that one for later.

There are several factors to perfecting an autorotation, but the real test of success is survival. This applies to the pilot, passengers, and the bird! In training, we practice power-recovery autos (PRAs) for the first part of training. That means that prior to making contact with the ground, we bring the power back in and terminate the maneuver in a hover. This is done for several reasons. First, autos can be dangerous, especially for newbies. There is a lot going on: dropping out of the sky and using the stored energy in the rotor, with precise timing, to arrest your speed and descent and come to a nice screeching halt.

The last portion of the full maneuver, the touchdown landing, is arguably the most difficult: it requires precise timing, and coordination of all of your limbs. That's why it is saved for more advanced pilots. Of course, if it were a real engine failure, terminating in a hover would not be possible. You would take the ship all the way to the ground, hopefully safely and successfully.

The other reason we use PRAs is because full-down autos are hard on the ship. The skids take a beating, both on their underside and at the joints. They have replaceable "shoes" on the bottom to take the beating, but these are expensive to replace. The joints suffer because the rapid application of weight spreads the skids apart. And as you can imagine, during training there are quite a few hard impacts from not-quite-perfect recoveries, some of which I reluctantly claim.

Anyway, back to my story. So, there we were doing all sorts of procedures and maneuvers, mixed in with intentional distractions and occasional quizzes on rules, regulations, and aeronautical facts. My checkride includes a cross-country leg, one that is at least 25 miles away from the departure airport. This takes you away from your home airport, where most everything is practiced. It takes you out of your comfort zone, to best explain things.

We were cruising along a major freeway, so I was not too concerned about my heading IFR (I Follow Roads). I was concentrating on my altitude and rotor RPM, because there is little room for error during the checkride. We flew over an intersecting freeway, and headed south. I was tasked with trying to locate another airport, without the use of GPS. I was concentrating on finding that airport when all of a sudden...YOUR ENGINE JUST QUIT! Crap again!

As I recall these events, keep in mind that an auto from 1,000 feet above the ground happens in seconds. The whole event, from initiation to skidding to a stop, usually lasts about

30 seconds. The first two seconds and the last five seconds generally determine the success of the procedure.

I immediately reacted correctly with down collective, aft cyclic, and right pedal. I knew the wind was off my starboard side, so I started to turn right. Minch immediately started yelling, "Left, Left!" In my confusion I switched and started banking the ship to the left, but didn't know why. I still needed to land into the wind, so I had to make three left turns, for a total of 270 degrees of turn to line up with an empty farm field that would be the perfect spot for an emergency landing.

As I turned for my final approach I could see the huge transmission towers ahead of me. (In hindsight, I should have seen them much sooner, and known they were there). Electrical lines and helicopters have a strange relationship, but I'll also save that for another story. In my situation, heading toward the wires was a very bad idea, hence Minch's reaction to turn left.

I started the flare above the field, ending with a smooth power recovery into a hover. Minch relayed a few things to me concerning the success of the auto, why we didn't turn right, and what to expect on the checkride. I started to move forward, and Minch asked me to make a right turn, so we could take off away from the power lines and continue our practice.



Not what a helicopter pilot wants to see out the window.

It was at that time that we saw it—a small, delicate, unsuspecting white grocery bag just relaxing in the green grass, minding its own business. Somehow this bag escaped the task for which it was designed, to carry groceries back to the home of the hungry, and settled down in the middle of this grassy field. As the helicopter passed by, it instantly awoke this sleeping bag and sent it flying. Minch and I both saw the launching of the bag at the same time, and we jinxed each other with expletives.

Minch grabbed the cyclic, and tried to steer us away from the bag, to no avail. The bag was on a mission, and the fast-turning rotors were its destination. We both watched helplessly as the bag struck the main rotor. Even with the amazingly loud sounds of the engine, rotor

system and wind noise, we could still hear that bag as it smacked one of the three rotor blades that were keeping us in the air.

Being a music teacher, I have long understood my ability to hear things that most don't. It's not that I have super-human hearing; it's that I can distinguish new or different sounds that don't fit what's going on around them. This bag was no exception. I had around 40 hours in a helicopter at this point, and I knew what the beast was supposed to sound like. This was not it. I could hear that damn chunk of thin plastic mess in my rotor system somewhere, but could not see it or tell exactly where it was. I was looking at the links, the head, the tail rotor—nothing. But, I could still hear it, clinging on to our blade with its every last bit of grip.

Minch immediately took control, and just to confirm I said, "You have the controls," to which Minch almost laughed, "Yeah, I have the controls." He swung us around in a manner only a 20,000 hour pilot would, and quickly and gently set us down in the grass. At this point it was pretty obvious that the tail rotor was OK, and the bag was partially stuck in the main rotor. He idled the engine down, in an attempt to throw the bag out of the rotor. A big piece of bag flew out.

I asked Minch if we were going to shut down, but he didn't want the Los Angeles TV stations out with their cameras covering a "downed helicopter" in a farmer's field where we didn't have permission to land. So, he picked her up, confirmed control, and made a normal but swift takeoff in the direction of the airport. We couldn't feel the bag in the rotor, as it didn't affect the flight controls or make it dangerous to fly. After Minch confirmed normal control, he handed the helicopter back off to me. "I have the controls" followed always by, "You have the controls."

I made a normal landing, and Minch got out as I began to disengage the rotor system and slow the blades to a stop. I could almost hear Minch chuckling as he reached up to grab the poor blade that had been wrapped in petroleum byproducts. He cleared the blade, checked for damage, and crossed in front of the helo to present me with my new trophy: a piece of two-inch plastic shredded bag. This little booger was responsible for all of that heartache. Thankfully, we were OK and the helicopter survived as well, only to leave us with memories of what it could have been.