

Season 6
Wow! That was Close.
T-38 Aerodynamic Braking, 1963

The T-38 did not have a drag chute, but it operated well and braked well on a normal 10,000 ft. runway. However, to decrease stopping distance and to conserve brake wear, flight tests had determined aerodynamic braking was very effective in slowing the aircraft. In most normal landings very little actual braking was required.

Aerodynamic braking was taught and used until about 50% of the way through my first class as an instructor in the T-38. The procedure was to land at the normal speed for the aircraft weight. As indicated airspeed decreased below the 1 "G" stall speed, the control stick would be moved steadily to the full rear position. The T-38 being light weight and light on the nose would assume a very nose high attitude, and therefore, would get maximum parasitic and induced drag which would decrease landing roll distance and the use of brakes. You could almost call it a built in drag chute.

A large percentage of the runways in the world are fairly level. Some are uphill and some are downhill. I've already mentioned the runway problem at Kirtland AFB. The west side parallel runway at Reese, AFB, had its own little glitches. About 1,500' down the runway past the normal touchdown spot, landing to the south, the runway had a fairly prominent downhill dip for a total altitude change of around 30' or so. The runway would go up the other side of the dip and then be level for about 5,000' to the end.

Reese was also famous for its high west Texas winds. The saying around the USAF was, "If you learned to fly at Reese AFB, you could fly anywhere". At Reese, we would fly unrestricted solo for crosswinds that would cancel even dual flying at most other ATC bases (another story).

The incident starts with a little truism of aerodynamics. Whether you are in the air or on the ground, ground speed and airspeed are not the same. If you are on the ground going 50 knots ground speed and the wind is blowing 30 knots, your airspeed is 80 knots. Yes, you can also feel this in your car. A lot of new students thought that once the wheels were on the ground, the airplane is through flying. Not so. As long as there is a suitable wind across the wings and tail, the airplane can be maneuvered, on the ground, quite nicely. Students were taught to fly the plane until they were down to taxi speed.

Whether or not an aircraft will stall, or will not maintain level flight, depends on the AoA of the wing. I have done all kinds of maneuvers in all types of planes when the plane was flying at speeds far below the one "G" stall speed. You simply had to work with gravity and not against it. Above all, DON'T stall the aircraft.

Now this little incident was very hairy and most likely lasted less than 1-2 seconds, but in high adrenalin slow motion it seemed like a lifetime. As in all accidents, or serious incidents, the makings of this incident was a sequence of events, that if any of them were to be interrupted, the incident/accident would not occur. This is also called "the domino theory".

On the day in question, the winds at Reese were gusty crosswinds in the dual only range. In other words, they were even too high for our liberal solo flying conditions. The landing in question was the last landing of this mission. This meant the aircraft was down to light fuel weight which also

made it quite light. The landing and touchdown were normal. Indicated air speed was decreasing through 100 KIAS and the student initiated aerodynamic breaking. Simultaneously, several things happened. We arrived at the downhill lip, we were in ground effect which reduces drag and increases the lift capacity of the wing, going downhill required less than 1 "G" lift, we were hit with a high 45 degree angle to the runway strong gust of wind and the T-38 became airborne. It was blown sideways off the runway and over the dirt. As soon as we became airborne, I had instantly throttle burst the two J-85 engines into full afterburner, grabbed the control stick and screamed "I've got it". I did not know the condition of the ground we were over, but the uphill slope had to be very close. Dropping the nose would most likely nose dive us into the hillside. We were well below altitude and/or airspeed limits to consider aircraft ejection.

During the initial launch into the air, the plane started a slow roll to the right; I added left aileron and a lot of left rudder. My last glance at the airspeed indicator showed 70KIAS (Knots Indicated Air Speed). This was 30 knots or so below the ground effect one "G" stall speed and we were only about 20' above the ground. I expect we had lost the benefit of the wind gust. All I could see was the movie clip of the "F-100 Sabre Dance". The J-85, however, was not the J-57. Even though the J-85 was a fast response engine and the first one I flew that could be throttle burst without serious engine heat damage, the sounds I remember sounded like I could count faster than the engine was spooling up.

The roll to the right was correcting and I reversed controls to try to stop at wings level and VERY nose high. The plane, however, was now so slow I could only slow the rate of roll. Even with full controls applied, we continued to slowly roll to the left. A quick left glance revealed the very close, hard and almost grass free West Texas dirt. I could hear the increasing whine of the spooling up engine. In my mind, it was a race between which would happen first. Would the wingtip drag the rapidly approaching rock hard West Texas dirt or would both of those little J-85's go into afterburner and give us that thrust to weight ratio advantage we so desperately needed.

The white rocket was in a desperate tug of war between the force of gravity and the limits of man's technology. Only God now knew the pending outcome. I was now in adrenalin induced super slow motion. Those turbine whines were increasing so agonizingly slow! Then it was just like the giant released his death grip on the slingshot. The burners lighted and the light T-38 leaped forward like the rocket it was. The wings rolled level and the landing gear never touched dirt.

"R-o-c-k-i-n-g-c-h-a-i-r R-e-q-u-e-s-t closed" "R-o-c-k-i-n-g-c-h-a-i-r cleared closed". A closed landing pattern is when you do a 180 degree climbing turn to re-enter the downwind leg of an overhead traffic pattern. I brought it around for a full stop; and no, I did not use aerodynamic breaking.

I seriously doubt if there was another aircraft in the inventory then, or for many years to come, which could have done this maneuver. Even though we have jet engines with far greater thrust, their compressor and turbine sections are much larger/heavier. New fuel control technology allows any of the engines to withstand a throttle burst, but mass is mass and heavier compressor and turbine combos can only spool up so fast. It is truly unbelievable how long a second is.

Charlie Schaufler or Donnie Clemmons, I believe, was on mobile control. From his point of view, my left wing was already well below ground level. He, the junior controller and student pilot recorder were simply waiting for the fireball, but he said he was amazed to see the struggling plane

launch above ground level like a rocket from a silo. Charlie said he almost swallowed his microphone.

I wrote an Operational Hazard Report (OHR) on the incident. Reese immediately suspended aerodynamic braking. An emergency safety supplement was sent out to all T-38 operators and permanently terminated aerodynamic braking as an operating procedure for the T-38. Full back stick was still allowed for aerodynamic braking, but only after the nose wheel was on the ground and left there.

It is 49 years later, and writing this still gave me a rush!