

GRAMPAW PETTIBONE

Will It Stall?

In the October issue I printed the following problem sent to me by an Ensign in VA-17-A.

"A plane is approaching an airstrip preparatory to landing. It is FIFTY (50) feet high and traveling at an indicated airspeed of EIGHTY (80) knots. The plane stalls at an indicated airspeed of SEVENTY (70) knots. There is a FORTY knot headwind.

"SUDDENLY—the FORTY knots of wind stops—completely—and definitely!!

"WHAT WILL HAPPEN TO THE PLANE?"

1. Will it stall?—or—
2. Will it continue its approach in a normal manner?
3. Will it lose FORTY knots airspeed the moment the wind stops?
4. Will the airspeed indicator in the aircraft indicate FORTY knots lower at the instant the wind stops?"

I wish that I could print all the letters that came in with answers to this problem, but that would take the entire magazine and then some. However, these statistics may be of interest. Of those who wrote in, 56% said that the aircraft would stall, or make an uncontrolled descent to the runway; against 44% who maintained that the only change would be an instantaneous increase of 40 knots in ground speed.

On both sides of the argument the readers were quite sure of their answers, and many upbraided me for not giving my answer when the problem first appeared. Those who were sure the plane would continue its approach in a normal manner were somewhat more prone to sign their names to their letters than those in the "will stall" group.

In the intervening weeks since the problem appeared, I have learned that it is very difficult to get anyone to change his mind on this problem once he thinks he has the correct solution. Its even harder if he has a bet on with someone and has the wrong answer.

After buying some ear plugs and making arrangements to be out of the office when the magazine comes out, I've finally decided to give my answer. Here it is:

The problem as stated introduces a condition so artificial that you must forget some of the rules that you learned early in flight training and navigation concerning the normal relationship between wind, groundspeed, and airspeed. In actual flight the situation described in the problem does not occur. Winds



do not cease instantaneously, they die down.

We can duplicate such a situation in the laboratory, but just for fun, let's imagine that we have constructed a giant fan at the end of a 5000-foot runway. We rev the fan up to a point where it is blowing wind down the runway at a speed of 40 knots. In front of this fan we construct a tremendous frame that houses a guillotine-like door which can be dropped to cut off the flow of air in a second or less. A fighter coming over the end of the runway at an altitude of 50 feet is indicating 80 knots just as it reaches the point where the wind velocity measures exactly 40 knots. As the plane arrives at this point the electric eye which we have installed just off the runway is actuated and in turn sends an electrical impulse which drops the door in front of the fan.

The wind ceases! The plane loses the lift and drag imparted by that airflow. Lift is now insufficient to maintain flight. Thrust greatly exceeds drag. All the relationships which existed before we shut off the wind are now out of balance. The plane drops like a rock. This surprises the daylight out of the pilot because he is close enough to the ground to be very conscious of his ground speed and this dropping occurs at the same time that his ground speed begins to build up.

If we assume that his airplane is stable, the nose will tend to pitch down

under the influence of the increased angle of attack caused by the settling velocity. If he manages to keep his wings level and eases the stick back just before he hits he may get away with a very hard landing. If not, he'll probably drive the oleo struts right through the wings.

During all this time the pilot is too startled and too busy to look at his airspeed indicator, but even if he had that wouldn't have been too much help. Airspeed indicators measure a difference in pressures and the lag in changing the pressure in the lines would cause this instrument to give an erratic reading. If he had a *perfect* airspeed indicator which was instantaneously responsive to changes in airspeed, it of course would have read 40 knots at the instant the wind ceased and would then have commenced a rapid increase.

One Less Excuse

A lot of Navy time and money is going into the SNJ modification which provides the plane with a lockable tail wheel. For too many months to remember "Groundloops in the SNJ" have been the most frequent single accident type.

It is hoped that this change will result in a sizeable reduction in the number of groundloop accidents. Some changes in habit patterns of long standing will be necessary when pilots make their first cross wind landings in SNJ's with the lockable tail-wheel. Previously a great many SNJ groundloops were caused or aggravated by pilots kicking rudder *too* hard and thus allowing the steerable tail-wheel to swivel freely. So far at least one case has been recorded of a pilot failing to take *sufficient* corrective rudder action in an SNJ with a lockable tail wheel.



Grampaw Pettibone says:

I'm afraid the groundloop is here to stay, but let's hope that we don't have quite so many in the SNJ. Be sure you know whether the one you are flying has a lockable tail wheel, and that you know how to use it. Don't bank on this feature to keep you out of trouble if you've made a poor approach. *Go around again* for that the best insurance against a landing accident. However, if you are on the runway and the plane starts to swerve, you can take quick action with brake and rudder, and you don't need to let your old habit pattern of being very gentle with the rudder interfere with your correction.

Some Bird

During an hour and forty minute familiarization flight a Reserve Ensign managed to crowd in the following violations:

1. Immediately after take-off he made a pass at a two plane section of SNJ's conducting an instrument flight.
2. Instead of proceeding to the assigned area, he headed for his home town.
3. Since he was on probation for a previous flatting incident, he was specifically briefed to remain above 2000 feet except when in the landing pattern. Despite this he flew low over his home town and buzzed cars on the highway west of the town.
4. Then he performed a few unusual maneuvers at low altitude and made a pass at a farmer's car, missing it by about 10 feet.
5. After buzzing a farmhouse and a barn, he started down a gully below the tree-top level.
6. Shortly afterwards he severed two power lines which paralleled the main highway.
7. After landing his damaged plane back at his home field, he stated that he thought he had "hit a duck or some sort of bird." This statement showed considerable imagination, since there was about 20 feet of copper wire trailing from the airplane.

While the senior officer present was inspecting the plane the Ensign finished writing out his "duck or bird" statement and left for home.

Grampaw Pettibone says:

By the time this is printed this lad will have faced an Aviator's Disposition Board in accordance with the provisions of BuPers Circular Letter 206-47, and unless I miss my guess, his wings will have been permanently clipped.

Ah, for the good old days of public hangings. We could all have gone and taken a picnic lunch.

Taxpayers Cheer Again

"Dear Grampaw Pettibone:

When the pilots in VA-35 read your story in the August issue of NAVAL AVIATION NEWS about a TBM pilot bouncing one wheel on the runway in a successful attempt to jar the other wheel down, the boys thought it was pretty smart and resourceful.

Today we had a chance to try it out. An Ensign was circling NAAS CHARLESTOWN, R.I., in a TBM-3E with the right wheel down and the left wheel up. He had exhausted all the conventional emergency procedures to get the wheel down, but with no success. He was instructed then to try his luck with the bounce method, which we had been holding in the medicine bag as a last resort pill to end all ills. But alas, after three skillful bounces on the duty runway that would have topped a "drunken" clown's exhibition in a flying circus, the stubborn wheel refused to budge. The pilot was as disappointed

as all the spectators, but he was still game.

He was next instructed to lighten the plane by burning as much fuel as possible and keep repeating emergency procedures. Finally, diving at 250 knots and coming back sharply on the stick for a reading of 6 G's—at the same time pushing down on the wheel lever—the wheel suddenly popped loose.

A normal landing was made. The Ensign admitted that the "G" force was a little more than he had intended pulling, but a close check of the airplane revealed no structural strain.

So, it seems that the same magic won't always work on temperamental aircraft no matter how clever. It all goes to prove that each case is a little different, and the pilot has to brew his own pot of tricks.

C.O., VA-35

Ten Miles Up

Here's a very interesting pilot's statement which accompanied an accident report on an FJ-1 that crashed during the Bendix Air Race:

"I was enroute from Long Beach to Cleveland, participating in the jet division of the Bendix Air Race. To determine fuel consumption as accurately as possible, I was plotting fuel aboard vs. range in nautical miles, and observing the trend of this line as the flight progressed. At Salina, Kansas, my fuel aboard began to approach the minimum "fuel on board" curve, and it became apparent that it would be necessary to obtain better mileage per pound of fuel to reach Cleveland. Wind predictions indicated Northwesterly cross-winds in this area, developing into a 45-knot quartering tail wind in the Toledo, Cleveland area.

I therefore decided to climb to 41,000 feet to obtain better fuel consumption, reasoning that if I experienced any difficulty due to lack of oxygen, I could immediately descend to a lower altitude. The slope of my fuel plot began to shallow out slightly, but the situation was still marginal. Upon reaching Burlington, I felt very alert and comfortable and climbed to 42,000 feet. My oxygen safety pressure valve was turned on, and everything appeared to be functioning properly.

I was very anxious to finish the race, and as I came closer and closer to my destination, my excitement in winning the race far outweighed my better judgment. I had convinced myself that my safety pressure regulator was sufficiently effective to permit to exceed the oxygen ceiling by just a "few thousand feet," and thereby obtain a few extra knots of wind and conserve my fuel. At this point, high clouds had restricted visibility to a cone of approximately 30 or 40 degrees from the vertical, and I was devoting all of my attention to navigation, and trying to get a good ground speed check. I failed to devote any further attention to oxygen and altitude.

I do not remember the last half hour of the flight too clearly. The wind predictions

had been erroneous, and I was apparently getting a strong southerly crosswind and possibly a component of head wind. I became confused and felt very tired, but the possibility of anoxia did not occur to me. I tried to contact Cleveland and advise them that I was approaching the "push-over" point, but I could not speak clearly and failed to establish contact.

Somewhere short of the south leg of Toledo radio, I suddenly felt very cold and faint and my skin began to crawl. I suddenly realized with dismay that I was anoxic. I cracked my emergency oxygen valve and pushed over. I don't believe that I actually lost consciousness at any time. I was aware of the plane's rapid descent in a steep spiral but I made no effort to level the wings. I do not know how low the plane got, but I soon found myself in a shallow climbing turn at 10,000 or possibly 20,000 feet.

My fuel gauge read almost empty, and I was headed south. I felt very dazed and slightly ill. I tuned in Cleveland radio and found that I was south of my track. Toledo radio indicated I had passed Toledo. Visibility was five or six miles at my altitude. I headed Northeast toward the shore line and tried to establish my position. The country below was heavily wooded, and I failed to sight an airport in the vicinity. When my fuel gauge read empty, I decided to land in a nearby field, wheels up. I turned off my switches, oxygen valves, stopped my engine, touched down in a level attitude with full flaps and skidded over the ground for approximately 850 or 900 feet. Then a slight hill launched the plane into the air again and the plane headed for a wooded area.

I tried to keep the plane pointed between two large trees and pulled my arresting hook release handle. The plane struck a barbed wire fence and passed into the wooded area. Although the plane was traveling very slowly when it entered the wooded area, the right wing struck a rather large tree, making an indentation of approximately six inches in the right leading edge of the wing. The left wing contacted another tree as the plane came to rest. I sustained no injury whatsoever. I climbed out of the plane to survey the damage. I disconnected the battery, pulled all circuit breakers, and hung the "guns loaded" sign on the gun-sight, (although the "belts" had not been fed to the guns).

In exceeding the 40,000-foot oxygen ceiling, I realize that I violated specific instructions from my Commanding Officer. The only explanation I can offer, which I fully realize is a very weak one, is that I never intended to exceed 38,000 feet during the flight, but by a snap decision in flight, and a reluctance to drop out of the race, I elected to climb higher and by exercising caution, to finish the race with a safe margin of fuel at my destination."

Grampaw Pettibone says:

This fellow's experiences should serve as a warning to all high altitude fliers. His oxygen equipment was functioning fine until he decided to go "a few thousand feet" beyond the safe limits.

I'm sure he realizes now just how lucky he is to be alive after this close shave.