

CALLBACK

From NASA's Aviation Safety Reporting System



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Marginal Decisions



According to NTSB statistics, a high percentage of General Aviation weather related accidents are caused by pilots flying under Visual Flight Rules (VFR) into Instrument Meteorological Conditions (IMC). As noted in these ASRS reports, flight into IMC may start with a flight into marginal conditions.

"The sky is low, the clouds are mean" Emily Dickinson *NATURE*

The further a pilot flies into deteriorating weather the fewer options there are to maintain or return to VFR conditions. It appears that this PA-28 pilot used up all the options but one— luck.

■ While about 50 miles northeast of ZZZ, in marginal VFR [VMC], the ceiling suddenly dropped, or I flew into an area of lower clouds. I did a 180-degree turn and got out of it. I hit the "nearest airport" function on the Global Positioning System (GPS) with a view to landing, since the area was filled with hills and low mountains.... As I turned in the direction of the airport, I faced a steep hill with the clouds almost touching it. I went over the hill and into the clouds, and realized I didn't know what would be below me if I descended. I tried it anyway and broke out [between layers] to find myself, fortunately, parallel to a wooded ridge. I was genuinely afraid, and decided I would not try to descend further until I knew what was below me. I had checked the Automated Surface Observing System (ASOS) and knew that there was a ceiling at about 1,700 feet AGL there. I also knew that the terrain was flat with no towers just to the northeast. I flew to that area and let down, breaking out at about 1,700 feet and landing....

"Marginal VMC" or "Marginal VFR" may be recognized meteorological terms, but by treating marginal weather the same as IMC and flying IFR in such conditions, pilots can significantly increase the margin of safety. ▲

"The conditions worsened at an alarming rate...."

Armed with a forecast that conditions "should" remain VFR enroute and at the destination, this C172 pilot found himself surrounded by IMC.

■ After exiting the Class B, I requested a descent to maintain VFR as the cloud deck was getting denser. ATC approved a VFR descent. As I began my descent, I noticed that the broken layer was quickly closing. To avoid IMC, I climbed back to 5,000 feet. I informed Air Traffic Control (ATC) that I was on a VFR flight plan and was not instrument rated. I flew for another five minutes and then saw that what had been a broken layer had totally closed up. I circled back to find VFR conditions and discovered that the broken layer behind me had also closed up.... I talked with ATC to get an update for field conditions at any airport close to my route of flight. I was advised that my best bet would be ZZZ1... and...I received vectors toward the airport. I was in solid IMC conditions and under ATC control. Less than a mile from ZZZ1 while still in IMC conditions, approach informed me that the airport was now reporting an 800-foot overcast. I...asked for a better alternative. I then flew under ATC control...to ZZZ2.... I informed ATC that I had approximately ten hours of IFR training and, while I had not done an ILS approach, I had done a couple of GPS approaches.... I did not have my approach plates in my flight bag. Approach gave me a private frequency to talk with the controller who very kindly tracked my approach and descent. I broke out at approximately 1,400 feet and safely landed in significant crosswinds....

The weather was significantly worse than reported... and conditions worsened at an alarming rate. Clearly instrument conditions were not something that I intended or wanted to be in at any time....

While the pilot's previous exposure to instrument flight certainly helped, Air Traffic Control deserves credit for getting this pilot out of a marginal situation. ▲

Stuck On Top

In the aviation equivalent of painting oneself into a corner, this pilot left himself no way out. The decision to stay out of IMC must be made early, while there are still viable options available.

■ FSS said that there was a large band of rain showers and thunderstorms blocking my route.... I called back an hour or more later and [FSS] said that the area of rain had passed and that I shouldn't have any trouble going VFR.... Initially I was at 5,500 feet, but then I climbed to 7,500 feet to clear the hills and clouds. The further north I

ASRS Recently Issued Alerts On...

B757-200 slat composite failure
B1900D fire warning system anomaly
Western ARTCC communication problem
Eastern airport unmarked surface obstruction
A330 escape slide pressure regulator problem

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Air Carrier / Air Taxi Pilots	1919
General Aviation Pilots	768
Controllers	25
Cabin/Mechanics/Military/Other	138
TOTAL	2850

went, the more marginal the weather became. I climbed again trying to maintain VMC. I was talking with several controllers advising them of my problem and requesting higher altitudes to clear the clouds. Eventually I was at 18,300 feet. A controller advised me that I had less than 15 minutes of consciousness at that altitude. I was aware of my bad situation, but I felt that I could not descend into the clouds as I did not have an artificial horizon and I am not instrument rated. I knew that an instrument rating is required at 18,000 feet and above, but I couldn't descend into instrument conditions. The plane got out of control twice and into a spin, but I was able to spot a cloud base for reference and recover....

Thanks to a good deal of luck, the pilot was able to return to visual conditions (in controlled flight) and land without further incident. ▲

AN ICING WARMUP

Airframe icing is a well-documented hazard associated with winter weather. These recent ASRS reports suggest that it might be a good time to review the causes, probable locations, and effects of icing. Excellent articles on icing and winter flying are available from the FAA Office of System Safety and the Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation.

"I made a very poor decision...."

In a light aircraft, the best tactic for dealing with ice is avoidance. Once ice has been encountered, the only alternative is to get out of icing conditions. This C182 pilot was lucky to escape while his aircraft could still climb.

■ *During intercept of the final approach course, ice built up rapidly on the airframe. I was distracted by the moderate to severe mixed icing and allowed the aircraft to descend 400 feet below the minimum segment altitude. As a result of the altitude excursion and the accumulation of ice, I called a missed approach and requested vectors and a climb clearance to warmer VFR conditions to melt the ice....*

I put my passengers and myself in a dangerous situation which tested the limits of my ability and that of the aircraft. I made a very poor decision to attempt the approach considering the weather surrounding the destination. The single biggest factor, for which I was unprepared, was airframe icing. As pilots, we are trained for equipment failures, however icing presents a situation for which there is little training, and the only alternative is avoidance or escape.... I am ashamed and humbled as a pilot by these events. This scared...me and it will never happen again. ▲

Popsicle Piper

Thanks to this controller's professional guidance, a frost bitten Seneca was able to land safely and, apparently, not a moment too soon.

Marginal Clearance

This C210 pilot demonstrated that while a rating can make instrument flight legal, proficiency is required to make it safe.

■ *I was cleared for takeoff on Runway 29 and told to fly runway heading. Upon leaving the ground, I was in the fog immediately and became spatially disoriented. I fixated on my airspeed and did not realize I was in a left turn. At 500 feet MSL, I realized that I was on a heading of 210 degrees. I immediately turned left, just as ATC called about my deviation and reported that I had come within 100 feet of the tower. ▲*

■ *A Piper Seneca enroute at 4,000 feet...came up on frequency...in a non-radar area and was advised of moderate rime, mixed, and clear icing in the area with tops at 6,000 feet MSL. Soon the aircraft advised that he had picked up ice and would like to climb. I issued clearance to 6,000 feet. The aircraft reached 5,000 feet and advised that he could not climb any more due to icing. He requested 4,000 feet again and was cleared. I advised that he was still not in radar contact, but after two VOR checks it was determined that the aircraft was approximately 10 miles north of a small airport and 20 miles north of ZZZ. The pilot advised that he wanted to go to ZZZ. I gave a clearance to ZZZ at 4,000 feet.... After the aircraft was radar identified, I commenced vectors for the ILS 24. The pilot advised that he could not hold the assigned altitude...and was getting very loaded up with ice. I advised that the aircraft was above an antenna field 10 miles southeast of the airport and vectored him around the area.... The pilot picked up the airport visually and landed. After landing, an airport pickup with flashing beacon had to provide "follow me" assistance to the ramp due to ice on the plane's windshield. The aircraft reportedly had over one inch of ice all over the airframe in addition to thick ribs and long spikes of ice. ▲*

A Chilling Sendoff

Conditions that can lead to airframe icing may not be as obvious on the ground. In this report, an alert B757 flight attendant spotted unexpected wing ice that resulted from an unusual set of circumstances.

■ *We had just flown into ZZZ. The weather was clear and sunny. There was nothing to cause icing on the aircraft.... Just after pushback, a flight attendant informed us that there could be ice on top of the wings. I sent the First Officer back into the cabin to check and, surprisingly, we did have patches of ice on top of the wings (not visible from the ground). We called for deicing, deiced the aircraft, and departed.... It was a cool day (43-degrees F). Water had been sprayed on the aircraft by fire trucks as it taxied in (a salute to the previous Captain's retirement), and the wing fuel tanks were almost full from the previous flight (with super-cooled fuel next to the skin).... With the weather conditions we had, one would not expect any aircraft icing, but add in the other two unusual circumstances and icing did occur. ▲*