

## WHAT MIGHT YOU DO IF FACED WITH THIS SCENARIO?

According to the NTSB, the pilot departed on an IFR flight in near-zero visibility with mist, light freezing rain, and moderate mixed and clear icing. After the Cessna Model 525 CitationJet took off, and as it entered a climbing right turn to a track of about 260 degrees, the pilot reported to ATC she was at 1000 feet, climbing to 10,000 feet. The flight remained on a track of about 260 degrees and continued to accelerate and climb for 38 seconds. The pilot then declared an emergency, stating she had an attitude indicator failure. At that moment, radar data depicted the airplane at 3500 feet msl and 267 knots.

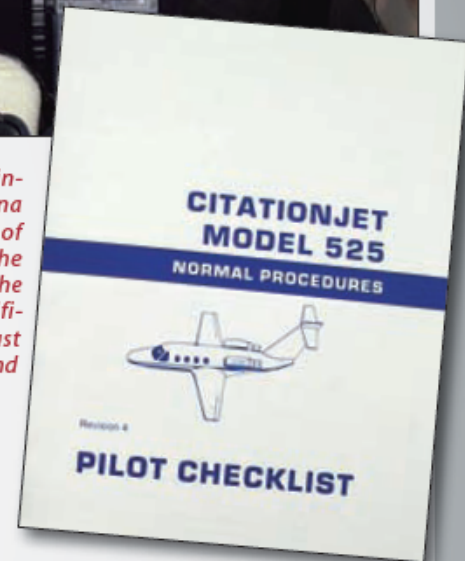
Thirteen seconds later, the pilot radioed she wasn't sure which way she was turning. The transmission ended abruptly. Radar data indicated that at the time the transmission ended, the airplane was in a steep, rapidly descending left turn. The airplane wreckage was fragmented due to impact and subsequent explosive forces, and located in a wooded area about six miles south-southwest of the departure airport. Examination of the accident site revealed a near-vertical high-speed impact consistent with an in-flight loss of control. On-site examination of the airframe remnants did not show evidence of pre-impact malfunction. Examination of recovered engine remnants revealed evidence that both engines were producing power at the time of impact and no pre-impact malfunctions with the engines were noted.

The failure, single or dual, of the attitude indicator is listed as an abnormal event in the manufacturer's Pilot's Abbreviated Emergency/Abnormal Procedures. The Cessna Citation was equipped with three different sources of attitude information: one incorporated in the primary flight display unit on the pilot's side, another single instrument on the copilot's side, and the standby attitude indicator. In the event of a dual failure, on both the pilot and copilot sides, aircraft control could be maintained by referencing to the standby attitude indicator, which is in plain view of the pilot. The indicators are powered by separate sources and, during the course of the investigation, no evidence was identified that indicated any systems, including those needed to maintain aircraft control, failed.

The pilot called for a weather briefing while en route to the airport 30 minutes prior to departure and acknowledged the deteriorating weather during the briefing. Additionally, the pilot was eager to depart, as indicated by comments that she made before her departure that she was glad to be leaving and that she had to go. Witnesses indicated that as she was departing the airport she failed to activate taxi and runway lights, taxied on grass areas off taxiways, and announced incorrect taxi instructions and runways. Additionally, no FAA authorization for the pilot to operate an aircraft between 29,000 feet and 41,000 feet, in RVSM



*Depicted above is the instrument panel of a Cessna Model 525 CitationJet of the same vintage as the accident aircraft. Note the backup mechanical artificial horizon mounted just below the glareshield and slightly left of center.*



airspace, could be found; the IFR flight plan was filed with an en route altitude of FL380. The fact that the airplane was operating at night in IMC and the departure was an accelerating climbing turn, along with the pilot's demonstrated complacency, created an environment conducive to spatial disorientation. Given the altitude and speed of the airplane, the pilot would have only had seconds to identify, overcome and respond to the effects of spatial disorientation.

The NTSB determined the probable cause of this accident to be the pilot's spatial disorientation and subsequent failure to maintain airplane control.

You first thought may be that you would not launch into such weather at all. You may be right. But assuming the pilot was qualified and the airplane capable of shedding the ice it was encountering, your next thought might be a conscious decision to focus on the back-up instrumentation when responding to the attitude indicator failure, and to execute a known plan to divert back to the departure airport or to a nearby departure alternate. Certainly, if you made such decisions consciously beforehand and had your cockpit set up to make good on your decisions, a successful outcome would be much more assured.