

The

Safety

Wire

March 2014

STEVIE RAY VAUGHAN died in a helicopter crash on August 27, 1990. On that day, one of most important guitarists of the 20th Century was taken from us prematurely. As a novice musician and huge blues fan, I was familiar with that accident even before I started flying helicopters.

Not into the blues? How about Otis Redding, famous for Motown hits like, "Sittin' on the Dock of the Bay" (yes, the song in *Top Gun*). That song was recorded three days before he and his band were killed in a Beechcraft H18. County music fan? How about Patsy Cline, 'Cowboy' Copas and Hawkshaw Hawkins of Grand Ole Opry fame. All three died in a Piper PA-24 Comanche leaving a benefit concert for another artist who had been killed. No matter what kind of music you listen to, it is likely that it was influenced somehow by Buddy Holly, J.P. Richardson (the Big Bopper) and Ritchie Valens. All three were killed in a Bonanza on a day referred to as, "The Day the Music Died".

In addition to these accidents all involving influential musicians, another thing they have in common is that all of the crashes were attributed to inclement weather, specifically inadvertent entry into instrument meteorological conditions (IMC) type scenarios. In other words, they all died because the pilot entrusted with their safety chose to fly into weather that they shouldn't have. Surely we wouldn't make the same mistake, right?

A study published by the University of Illinois looked at causal factors in IMC accidents. One interesting piece of data they uncovered was that when compared with other accident types, IMC accidents were more likely to have a passenger on board. The frequency was 54% higher with passengers! Additionally, they found that, "approximately 76% of VFR-IMC accidents appeared to involve intentional flight into adverse weather." A link to the report is below.

In public safety aviation, we do not routinely have passengers aboard unless assigned to some type of transport duty. This does not isolate us from the findings in this report. The



Photo by George Blanchette

infrequency of having passengers makes this type of mission 'special'. Often, our passengers are commanding officers, agency heads, VIPs, injured patients and sometimes SWAT, K9 or rescue divers. The rest of the time, when we think it is just the TFO and pilot in the aircraft, the radio brings passengers into the cockpit with us. Sometimes, the radio can make it seem like we have the entire upper echelon of the agency in the back seat. All of these factors can add to the desire to complete the mission even in the face of obvious safety issues.



Photo by George Blanchette

How to counter this? Set up the safe parameters for your mission profile long before the pressure of the 'passengers' comes into play. Have limits written in stone so the passengers cannot pressure the crew into diverting from established safety protocol. Have limits written in stone so the *aircrew's* desire to accomplish the mission cannot pressure *themselves* into diverting from established safety protocol. This does not minimize the crew's responsibility to use sound airmanship and decision-making. It does, however, recognize the fact that there are limitations in every human's ability to maintain risk

perspective when non-aviation savvy rock stars jump in the backseat and excitedly shout, "Let's go!"

Link to the report quoted above:

<https://www.dropbox.com/s/flpo7srulej1qwg/IIIMC%20study.pdf>

The cause of most accidents? Usually it is because someone does too much too soon, followed very quickly by too little too late.

~Steve Wilson, NTSB

SAFETY MANAGEMENT SYSTEM IMPLEMENTATION

Complete the loop

Throughout our industry, there is an accelerating effort to move from the traditional 'safety program' to modern Safety Management Systems. During presentations, when I ask, "Who is working on implementing an SMS," most people in the room raise their hands. This was not the case two or three years ago. That is great news for those of us who are interested in making the industry safer and more effective. The



fight now is figuring out exactly how to develop the best SMS for your agency.

One of the areas we seem to be doing well on is what I consider to be the 'front end' of the system. This is in setting up policy, analyzing procedures, setting up the means of collecting information and assessing risk. The creation of effective risk controls and day-to-day management of an SMS is also coming along well, right behind the 'front end' items. Often, a component that is completely missing is the 'Assurance' pillar of the SMS. This is not just the 'end' of the process, it is the section that completes the loop. This is the part that brings everything back to the beginning of the process so that it is ongoing and part of the daily life of the unit, allowing the SMS to adapt and change according to the real world it serves. It is this part that makes the SMS a system.



Does your SMS have this critical part? Start with these questions:

- In X amount of time (6 months, 1 year, etc.), can I show that specific risk controls are having an effect on the targeted risk?
- At the end of the year, can I give the agency a Return on Investment (ROI) summary for safety program efforts?
- Do I have a means of proving if a policy or procedure is ineffective and needs to be changed?

Not sure? We will cover this important topic in upcoming safety newsletters. Also, you can join me at an ALEA regional safety seminar during the Safety Officer Roundtable. We will also discuss this during the next safety officer online meeting on **April 8th at 1300hrs EDT (1700 zulu)**. Contact me for meeting information if you are not on the safety officer contact list.

Safety is measured more by its absence than its presence.

~James Reason

AEROMEDICAL SAFETY

Dudley Crosson, PhD, ALEA Aeromedical Liaison

Unfortunately, more often than not, I hear crews complain about the quality of their medical examiner (ME). Comments like “if you’re breathing, you pass” are the most frequent. It is important to remember that these folks, unless they are ex-military, had training that focused primarily on GA, not public safety, and certainly not helicopters.



So, I highly encourage all ASOs to reach out to their ME’s. In a way, mentor them. Teach them your cockpit layout, about your missions and your flight profiles. The better your ME knows your people, your aircraft, and the way your unit does business, perhaps the more willing that ME will take an interest and take ‘better care’ of the crew.

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SAFETY RESOURCES

Last month at HELI_EXPO, a number of resources were published. Here is only a partial list of some of the resources you may find useful:

US Helicopter Safety Team (USHST – IHST)

<http://www.usbst.org/nbspnbspHome.aspx>

USHST Free App: <http://www.usbst.org/MobilApp.aspx>

International Helicopter Safety Symposium Presentations

<http://ihst.org/Default.aspx?tabid=1985>

National Wildlife Research Center

Bird Strike Hazards and Mitigation Strategies

https://www.dodlegacy.org/Legacy/project/productdocs/FINAL%20OSD%20Legacy%20Report%20Joint%20RW%20Bird%20Strike%20Hazardswithcomments%20FINAL_ff16305b-b450-4d1c-9050-4404d614c07c.pdf

Safety Management International Collaboration Group:

[http://www.skybrary.aero/index.php/Safety_Management_International_Collaboration_Group_\(SM_ICG\)](http://www.skybrary.aero/index.php/Safety_Management_International_Collaboration_Group_(SM_ICG))

Helicopter Association International

Land and Live program:

<http://www3.verticalgateway.com/Default.aspx?alias=www3.verticalgateway.com/landandlive>

Embry-Riddle Aeronautical University

Free MOOC (Massive Open Online Course) - Human Factors in Aviation
April 7 – May 11, 2014 (enrollment cap at 2000 participants)

https://www.coursesites.com/s/ Human_Factors_Aviation_0314



Prism/ARGUS 2013 SMS Report

http://www.mylanderpages.com/argus1/2013_sms_audit_results

FAA Safety Briefing

http://www.faa.gov/news/safety_briefing/

Whenever we talk about a pilot who has been killed in a flying accident, we should all keep one thing in mind. He called upon the sum of all his knowledge and made a judgment. He believed in it so strongly that he knowingly bet his life on it. That his judgment was faulty is a tragedy, not stupidity. Every instructor, supervisor, and contemporary who ever spoke to him had an opportunity to influence his judgment, so a little bit of all of us goes with every pilot we lose.

~Anonymous

REALITY CHECK...

Aircraft: BELL 206B

Injuries: 5 Fatal

August 27, 1990

NTSB Identification: CHI90MA244

http://www.ntsb.gov/aviationquery/brief.aspx?ev_id=20001212X23968&key=1

Four helicopters were being used at night to transport a concert group from a golf course area near Elkhorn, WI, to Chicago, IL. As the third helicopter was departing, it remained at a lower altitude than the others, and the pilot turned southeasterly toward rising terrain. Subsequently, the helicopter crashed on hilly terrain about 3/5 mi from the takeoff point. Elevation of the crash site was about 100 ft. above the golf course and 50 ft. below the summit of the hill. No pre-impact part failure or malfunction was found during the investigation. A ground witness near the crash site reported haze and ground fog of varying intensity with patches of low clouds, but said stars could be seen through the fog.

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Improper planning/decision by the pilot, and his failure to attain adequate altitude before flying over rising terrain at night. Factors related to the accident were: darkness, fog, haze, rising terrain, and the lack of visual cues that were available to the pilot.

Aircraft: Cessna 172M
Injuries: 1 Fatal
Transportation Safety Board of Canada
Report# A12W0121

<http://www.tsb.gc.ca/eng/rapports-reports/aviation/2012/A12W0121/A12W0121.asp>

The Cessna 172M departed on a visual flight rules flight to conduct a pipeline patrol through foothill terrain. While the aircraft was circling a pipeline stream crossing, it entered a spin, descended steeply, and collided with terrain. The pilot, who was the sole occupant of the aircraft, sustained fatal injuries. The aircraft was destroyed by impact forces, and there was no post-impact fire. The aircraft collided with the ground vertically. There were no indications of rotation about the yaw axis. Wing flaps were in the retracted position. No discrepancies were found in the flight control systems. The pilot's seat was separated from its tracks, and the adjustment locking pin was bent, indicating that it was engaged on impact. There were no indications of a bird strike. Photographic analysis of the last photograph taken showed the aircraft orbiting the crossing at approximately 45° of bank, approximately 350 feet AGL, and on a southerly heading. Analysis of SkyTrac data indicated that 2 left turns had been made about 30 nm north of the accident site. During portions of these turns, the aircraft was banked at an average of 46° and 51°. Average ground speed during these turns was 93 and 103 knots.

Records indicated that the pilot was certified and qualified for the flight in accordance with existing regulations. The pilot had a total flying time of approximately 6900 hours, and had flown exclusively on pipeline patrols, accumulating approximately 5000 hours in that environment on the Cessna 172.

Transport Canada has provided the following information on stall/spin awareness:

The primary cause of an inadvertent spin is one wing exceeding the critical angle of attack while executing a turn with excessive or insufficient rudder, and, to a lesser extent, aileron. In an uncoordinated, maneuver, the pitot-static instruments, especially the altimeter and airspeed indicator, are unreliable due to the uneven distribution of air pressure over the fuselage. The pilot may not be aware that the critical angle of attack is about to be exceeded until the stall warning device activates. If a stall recovery is not promptly initiated, the aeroplane is more likely to enter an inadvertent spin. The spin that occurs from cross controlling an aircraft in a skidding turn usually results in rotation in the direction of the rudder being applied, regardless of which wing tip is raised.

Findings as to causes and contributing factors

- For undetermined reasons, while maneuvering during a low-level pipeline reconnaissance, control was lost and the aircraft entered an aerodynamic stall and spin.
- Although the pilot was able to arrest the spin, the low altitude of the aircraft prevented recovery from the stall before the aircraft struck the ground.

Findings as to risk

- The conduct of single-pilot, low-level aerial inspection flights that include additional tasks beyond flying the aircraft, such as photography, increases the risk of loss of control.

Aircraft: Bell 206
Injuries: 2 Fatal, 1 Serious
Transportation Safety Board of Canada
Report# A13W0070

<http://www.tsb.gc.ca/eng/rapports-reports/aviation/2013/a13w0070/a13w0070.asp>

A Bell 206B helicopter was conducting wildlife survey work. In the course of identifying a landing site, the helicopter entered an un-commanded rotation to the right, and descended into a stand of trees. The pilot and right rear seat passenger sustained fatal injuries. The remaining passenger, who occupied the left front seat, was seriously injured.

At 1048, the helicopter arrived in the vicinity of area 2. The next 8 minutes were spent orbiting the area to fix the radio collar's location and assessing a suitable landing zone.

At 1055, the helicopter orbited the area and executed a wide left-hand turn at 140 feet AGL. At 1056:14, the helicopter turned eastbound at 120 feet AGL at a ground speed of 36 knots. At 1056:24, the helicopter was at 105 feet AGL at a ground speed of 27 knots. The wind component at this time would have been predominantly a left crosswind from the north at approximately 5 knots.

At 1056:34, the helicopter was at 115 feet AGL with a ground speed of 16 knots. At this point, a right turn to the south was initiated. The ground speed had reduced to 5 knots. A final global positioning system (GPS) waypoint was recorded at 1056:54 with the aircraft at 18 feet agl with a ground speed of 3 knots. Upon completion of the turn to the south, the helicopter would have been exposed to a tailwind condition. The helicopter entered an un-commanded rotation to the right. There were no indications of mechanical malfunction prior to or during the rotation. The helicopter descended into a stand of poplar trees 60 to 70 feet tall, coming to rest on its right side.

The pilot had begun employment on 01 April 2013 [accident occurred on 29 May, 2013]. At the time of the occurrence, the pilot had accumulated approximately 504 hours of flight time on helicopters, 400 hours of which on the Bell 206 helicopter. The pilot was on his 11th consecutive duty day, after having had 8 days off.



Findings as to causes and contributing factors:

The helicopter entered a flight regime that resulted in a loss of tail rotor effectiveness, causing a loss of directional control at a height that precluded recovery, resulting in a

collision with terrain.

Transport Canada's Helicopter Flight Training Manual makes the following reference to LTE:

In strong gusty wind conditions, a turn away from the into-wind position should be opposite to the torque reaction [...]. In this way, you will ensure that there is sufficient tail rotor control available. Should control limits be reached at this stage, a safe turn back into wind can be accomplished.

There are no new ways to crash an aircraft...

...but there are new ways to keep them from crashing.

Until the next flight,

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