Suffern Paul

From: [redacted]
Sent: Wednesday, January 29, 2020 7:00 PM
To: [redacted]
Subject: Fw: NTSB Request 19-226

FYI

From: [redacted]
Sent: Wednesday, January 29, 2020 12:38 PM
To: [redacted]
Cc: [redacted]
Subject: NTSB Request 19-226

Hi Chich,

This is in response to NTSB Request 19-226. Please see response below.

Description of Support Requested

The NTSB has requested information regarding snow-related icing with "wet snow" and/or "dry snow" and whether the FAA has defined "wet snow" and "dry snow." Additionally, the NTSB requests information on any guidance the FAA provides to pilots and operators to identify the presence of "wet snow" during flight planning.

Advisory Circular (AC) 150/5200-39D, *Airport Field Condition Assessments and Winter Operations Safety*, dated March 8, 2017, paragraph 1.12.6, defines "dry snow" as "snow that has insufficient free water to cause it to stick together. This generally occurs at temperatures well below 32° F (0° C). If, when making a snowball, it falls apart, the snow is considered dry."

Paragraph 1.12.24 defines "wet snow" as "snow that has grains coated with liquid water, which bonds the mass together, but that has no excess water in the pore spaces. A well-compacted, solid snowball can be made, but water will not squeeze out."

The NTSB cites a statement in AC 91-74B, *Pilot Guide: Flight in Icing Conditions*, dated October 8, 2015, that it is possible to have snow-related icing with "wet snow" and that "dry snow" is unlikely to pose a hazard with respect to icing. The paragraph in question, 4.1.j., states that "[i]n flight, dry snow is unlikely to pose a hazard with respect to icing; however, wet snow may begin to adhere to aircraft surfaces. If wet snow does begin to stick, it should then be treated as an icing encounter because ice may begin to form under this accumulation of snow. No aircraft is evaluated in the icing-certification process for this rare situation. If it occurs, the aircraft should exit the conditions as quickly as possible and declare an emergency or contact air traffic control (ATC) as necessary. Be aware that freezing drizzle can coexist with snow. If you are flying into or over areas reporting snow, it is important to understand that the presence of snow does not necessarily mean that icing conditions are not present."

The FAA does certify aircraft to fly in snow. The only certification requirements to fly in snow are related to the engine and engine inlet, and we assume a clean aircraft for takeoff.

Regulations restrict flight into known or forecast icing conditions. Because of the limitations of icing forecasts, or the difficulty in forecasting whether any snow encountered will be wet or dry, it is admittedly difficult for pilots to be certain whether the conditions in which they are flying actually will result in an icing encounter, and it is even more difficult to determine the severity of the possible encounter. Pilots can be caught inadvertently in icing conditions that exceed these legal limits. The FAA does, however, provide ample guidance to pilots who are planning flights into potential icing conditions or who encounter icing conditions (such as wet snow) while in flight.

The FAA provides guidance for pilots planning operations in potential icing conditions within the same AC, 91-74B. Chapter 4, *Flight Planning*, states: "All pilots, whether they are General Aviation (GA) or air carrier pilots, are responsible for obtaining as much information as possible about all meteorological conditions, including icing conditions, before departure. Aviation meteorologists at the National Weather Service (NWS) Aviation Weather Center (AWC), local NWS Field Offices, major airlines, and private companies prepare icing forecasts and continue to improve upon their accuracy. A review of the current edition of AC 00-45, Aviation Weather Services, is strongly recommended as pilots will need to understand and apply Current Icing Products (CIP), Forecast Icing Products (FIP) and other services to the flight planning and operations discussed in this AC." In Appendix 2, *Icing Checklists***,** paragraph 1.a.1 suggests that during preflight planning, pilots "[a]lways obtain a thorough preflight weather briefing. Evaluate cloud types, bases, and tops; types of precipitation; freezing levels; and pilot reports." Paragraph 1.a.3 recommends that during preflight planning, pilots "identify alternate airports along the route of flight to be used if unscheduled weather is encountered [and to] [c]hoose airports with longer runways." Paragraph 1-4.b states that flight into icing conditions for an aircraft not certificated for flight in icing conditions should be avoided. Furthermore, it states that pilots should monitor conditions in-flight so as to avoid icing conditions. In an inadvertent icing encounter, the pilot should take appropriate action to exit the conditions immediately, while coordinating with ATC, declaring an emergency if necessary. Pilots are encouraged to conduct preflight planning to determine whether icing conditions may be encountered through the use of PIREPs, AIRMETs, and SIGMETs, along with forecasts to determine the approximate freezing level. Graphical CIP and FIP combined with text based forecasts provide adequate information for flight planning when icing conditions may exist.

In summary, pilots are advised to maintain awareness and conduct a thorough preflight briefing combined with vigilance to avoid flight into icing conditions, or anticipated icing conditions. AC 91-74B provides guidance to help educate pilots about the potential hazards of in-flight icing, ways to avoid and cope with these potential hazards.

Have a great day.