

- Removal of the term trace icing is consistent with the FAA position that all icing is hazardous.

(b) Commenter recommends defining trace icing as: "Icing becomes perceptible and the rate of accumulation is slightly greater than the rate of sublimation. Icing resulting from flight in a supercooled cloud with liquid water content less than 0.1 grams per cubic meter. A representative accretion rate for forecasting or reference purposes is 1/4-inch or less in an hour or more on an outer wing or tailplane, prior to activation of any ice protection equipment."

The commenter is from the helicopter community where icing severity based on a LWC scale has been in use out of necessity. This is because, in hover, there is no forward flight and an artificially aspirated icing sensor must be used in order to assess the icing environment. In that case, the icing rate indicated by the sensor has no relation to what may be happening on the airframe. Rather, the icing rate, under the known aspirated air velocity, can be converted to LWC to gauge the icing propensity of the cloud or fog in which the helicopter may be embedded at the moment. In this case, the helicopter manufacturer may have to supply some relationship between LWC amounts and the expected effects on the helicopter.

In any case, the FAA has no recommendations for an icing intensity scale for helicopters. The FAA proposals were intended for fixed wing airplanes. \* \* \*

#### 10. Retain Trace Icing If Its Elimination Will Result in Greater Aerial Coverage of Forecast Icing

Another commenter requested that the term "trace icing" be retained if its elimination would result in greater aerial coverage of forecast icing.

The FAA does not believe that the aerial coverage of forecast icing will be affected by the elimination of the term "trace icing," since trace icing is not forecast by the NWS. Light icing is forecast by the NWS, and it will continue to be forecast under the same conditions whether or not trace icing is eliminated.

#### 11. Change the Definition of "Light Icing" to "The Rate of Ice Accumulation May Require Occasional Use of Ice Protection Systems To Remove or Prevent Accumulation"

The FAA partially concurs. The recommended wording is reflected in the new wording proposed by the FAA.

#### 12. Change the Definition of "Light Icing" So That It Is Icing "Represented by the Capability of the Aircraft To Safely Fly and Land Without the Ice Protection Turned On"

The FAA does not concur. Light ice can accrete to the point where ice protection may be required. The pilot may not be able to judge ice accretion that results in reduced safety margins.

#### 13. Change the Definition of "Moderate Icing" to "The Rate of Ice Accumulation May Require Occasional to Frequent Use of Ice Protection Systems To Remove or Prevent Accumulation"

The FAA partially concurs. The commenter retains the conditional "may" from the definition of light icing in the original notice. The FAA now believes that both light and moderate icing connote a definite need to activate ice protection equipment.

The commenter also suggests retaining the word "occasional" in the description of moderate icing. According to the proposed revised definitions, moderate icing corresponds to 1/4-inch of ice accumulation every 5 to 15 minutes. This has been interpreted (in AIAA-98-0094) as frequent usage if the deicing system is activated at least each time 1/4-inch accumulates.

#### 14. Change the Definition of "Moderate Icing" to Anything Between Light and Severe

The FAA does not concur. For clarity, the FAA prefers to provide an independent definition of moderate icing.

#### 15. The Term "Severe Icing" Should Be Reserved for Ice Protection System Failure-To-Remove-Ice, and the Term "Heavy Icing" Used To Describe Ice Accretion Rates

The FAA concurs. Although the term heavy has long been used by pilots to describe ice accretions greater than moderate, it has not been used for official forecasts or reporting. The FAA will propose that the National Weather Service cease forecasting severe icing and instead forecast heavy icing. Heavy icing should be based on reasonable scientific principles. The FAA agrees that severe icing is aircraft-specific while heavy icing need not be and that severe icing should be limited to a failure-to-remove-ice condition until meteorological technology makes it possible to forecast severe ice conditions with reasonable accuracy which can be applied to specific aircraft.

#### 16. Define "Severe Icing" To Be Anything Beyond What the Aircraft Has Demonstrated in Certification

The FAA does not concur. Some airplane designs may be able to operate safely in icing conditions exceeding the certification standards, depending on airplane size and ice protection system capability.

#### 17. New Definition of Severe Icing Conditions Is Not Consistent With Definitions in FAA Advisory Material

The FAA concurs. When the new definition of severe icing, as well as the other proposed definitions, are approved, the FAA will revise all advisory material to include the new terminology.

#### 18. The Term "Heavy" Should Be Included in the List of Definitions To Characterize an Accretion Rate Previously Associated With "Severe Icing"

The FAA concurs. The FAA will propose that the term "heavy" be included in the list of new definitions as the ice accretion rate associated with the current definition of severe.

#### 19. The Term "Heavy" Should Be Used To Provide Another Icing Level Between Moderate and Severe

The FAA concurs. The term "severe icing" will be reserved to refer to that condition where the pilot determines that his/her aircraft cannot safely continue flight. Revise note for accuracy or delete note.

The FAA concurs that as written the note was unclear, and it has been revised.

#### 20. Request To Use Shape as the Primary Descriptor, and Clarity and Color (if at all) as Secondary Descriptors in the Definitions of Ice Types

Several commenters requested that shape be included as a descriptor in the ice type definitions. It was further requested that shape be identified as the primary descriptor, and clarity and color as secondary descriptors, on the grounds that shape is more likely to be accurately identified from the cockpit than clarity or color.

The FAA partially concurs and has added shape to the definitions of rime and glaze ice. Furthermore, the definitions now include acknowledgment that shape, rather than clarity or color, is more likely to be accurately assessed from the cockpit.

#### 21. Request To Relate Aerodynamic Effects to Ice Type in Definitions

One commenter requested that statements relating ice type to