DISPOSITION OF INTERDIRECTORATE COMMENTS

AC 25-XX, *COMPLIANCE OF TRANSPORT CATEGORY AIRPLANES WITH CERTIFICATION REQUIREMENTS FOR FLIGHT IN ICING CONDITIONS*

Comment	Requested Change	Disposition
Commenter: [Brys] ACE-117W		
On page 12, paragraph (2)(b) states: Leading edges of control surface balance areas, if not shielded.	Recommend changing the wording to: Leading edges of control surface balance areas, if not shielded. **This should take into account all possible trim conditions.**	Concur. Revised AC accordingly.
Commenter: ACE-111		
Page 12, paragraph 5.b.(2)(b) Ice accretion on elevator horn of a part 23 airplane is documented. Even though shielded, at some trim conditions elevator position results in horn accreting ice (only roughness). Effect on ICTS susceptibility was tested.	Delete ", if not shielded"	Comment is now moot because this section has been revised to reference AC 20-73A.
Commenter: ACE-111		
Page 18, paragraph 5.i. Propeller analyses currently do not address runback or SLD icing conditions.	If propeller runback or SLD analyses will not be available, limit paragraph to intercycle ice accretion and ice protection system sizing.	Concur. Revised AC accordingly.

Comment	Requested Change	Disposition
Commenter: ACE-111		
Page 19, paragraph 5.j.(1) TSO C16 was revised in October 2006 to add test conditions that cover Appendix C.	Add: "TSO C16a, Electrically heated pitot and pitot-static tubes, references SAE Aeronautical Standard AS8006 and supplements the icing requirements with specific part 25, Appendix C icing conditions and specific liquid water content tests from British Specification (BS) 2G.135 "Specification for Electrically-Heated Pitot and Pitot-Static Pressure Heads". However, it does not contain Appendix X icing conditions, mixed phase or ice crystal conditions.	Concur. Revised AC accordingly.
Commenter: [Brys] ACE-117W		
On Page 19, the title of paragraph k. is: Stall Warning System Ice Protection	Recommend changing the title of the section to: Stall Warning System and Angle of Attack Ice Protection.	Concur. Revised AC accordingly
Commenter: ACE-111		
Page 19, paragraph 5.k. We should probably add a test in which airplane is subject to rain on ground, takes off and flies into rain, then climbs to freezing altitudes to determine if freezing of any trapped moisture prevents operation. History of this on Hawker 4000. Would also test other systems. History of pneumatic line water freezing on PA-46-500TP; moisture in Eclipse air data static ports.	Add test in which airplane is operated on ground in moderate rain, takes off and flies through moderate rain, then climbs and maintains altitude above the freezing level. Objective is to verify proper system operation.	Concur, but placed the suggested test in another section of the AC.

Comment	Requested Change	Disposition
Commenter: ACE-111		
Page 21, paragraph 7.d.(1) Evaluating the flow patterns for fluid systems is accomplished in flight test, not dry air ground test. It is addressed in para. 7.d.(5)	Delete "flow patterns for deicing liquid devices:	Concur. Revised AC accordingly
Commenter: [Brys] ACE-117W		
Pages 26-27 Paragraphs (c) and (d), consider adding a requirement to fly from rain immediately to icing conditions to evaluate system performance. Boots and other systems can be affected by moisture being ingested into (boots) or present on surface mounted sensors (AoA) upon entering into freezing conditions.	Consider adding this requirement.	Concur. Revised AC to incorporate such a test to paragraph (c) only, since the issue has to do with flying to an altitude above the feezing level and is not tied to a particular icing condition.
Commenter: ACE-111		
Page 28, paragraph. 7.d.(4)(d)2(bb) The Phase IV method of compliance review is ongoing. Initial investigation shows there may be conditions, such as freezing rain MVD>40, in which there may not be two tools available, excluding natural icing.	Rewrite pending results of Phase IV review.	Concur. Revised AC to indicate one means is acceptable for the cases identified in appendix 5 of the AC.
Commenter: ACE-111		
Page 28, paragraph 7.d.(6) Hybrid models, in which the leading edge is full scale, have been used in icing tunnels for certification. Scale models have been to measure lift and drag, but not ice accretions or impingement. Would expect to see scale model results validated	Change to: "Hybrid models may be used in icing wind tunnels, with appropriate chord extent of full scale leading, to estimate impingement limits, examine visual icing cues, and evaluate ice detection devices. Scale models may be used in icing wind tunnels,	Concur. Revised AC accordingly.

Comment	Requested Change	Disposition
in order to be accepted for certification.	with appropriate scaling corrections, to estimate impingement limits, examine visual icing cues, and evaluate ice detection devices, provided the scale testing on the component has been validated with full scale testing or analysis."	
Commenter: ACE-111		
Page 34, paragraph 11.a.(1) It is not clear what is meant by the sentence "The primary automatic ice detection system should be designed to prevent continuous cycling of engine thrust in intermittent icing conditions." Need to understand this because one of the light jets is proposing a primary-auto for its engines.	Add explanation - what is it, why does it occur, and why should it be prevented? Is this a safety issue or nuisance issue?	The concern is that small thrust changes will occur with the opening and closing of the engine bleed valves, resulting in a possible nuisance to flightcrew. The AC has been revised to include this information.
Commenter: [Brys] ACE-117W		
On page 36, paragraph (2), last bullet states: Accretions on the protected surfaces.	Should this be unprotected surfaces or both?	The visual cues are intended to be either the protected surface or a reference surface that can be correlated to the ice accretion on the protected surface. The reference surface may be unprotected. No changes to the AC were made.
Commenter: ACE-111		
Page 43, paragraph 15.b.(7)(b) If stall warning schedule in icing is based on activation of airframe ice protection, this procedure would result in non-icing stall warning schedule with residual ice on the boots. Guidance should agree with paragraph 1.b.(3) of draft AC 25-25X.	Add paragraph (c): "If the airplane's stall protection system reverts from an icing schedule to a non-icing schedule when the airframe ice protection is de-activated, AFM procedures should state that the airframe system should not be de-activated until the flightcrew can assure that the critical wing surfaces are free of ice."	Concur. Revised AC accordingly.

Comment	Requested Change	Disposition
Commenter: ACE-111		
Page A3-4, Appendix 3, Definition of Critical Ice Accretion Incorrect reference	Change "AC 25.21-1" to "AC 25-25X"	Concur. Revised AC accordingly.
Commenter: ACE-111		
Page A4-4, Appendix 4, Antennae installations or other external modifications - is in index on page A4-1 but missing from body of Appendix 4.	Add guidance for "Antennae installations or other external modifications"	Concur. Added guidance similar to that in AC 23.1419.
Commenter: John Hed ANM-160S		
AC 25-XX Page 11, 5b - Section b lists there requirements and ways for substantiating tools, but the 4th bullet is one of those tools! – Rational: Incorrect item in list	Delete the 4th bullet from the list. Change the first sentence in 5b to read: "…for icing simulation tools, such as analytical codes, cross comparisons…"	Partially concur. Removed the 4th bullet and revised the first sentence to reflect that the paragraph is about analytical icing simulation tools such as icing codes.
Commenter: John Hed ANM-160S		
AC 25-XX Page 41, 15a(5) – This line is confusing. I think it could be written clearer and more generic. You don't know what "this" speed is talking about. Also there could be ax speed limits.	Reword to: "(5) Engine limitations (power or speed) required for proper operation of the IPS.	Concur. Revised AC accordingly.
Commenter: ANM-112		
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ANE – Ezra Sasson comments

Page & Para No.	Comment	Reason for Comment	Suggested Changes	Comment Resolution
Page ii, section 2.d., para 3	Add a comma	Facilitates reading	From: "Some icing-related regulations must be complied with even if the airplane is not certificated for flight in icing." To: Some icing-related regulations must be complied with, even if the airplane is not certificated for flight in icing.	The sentence without the suggested comma is grammatically correct.
Page 2, section 2.	Define ice crystal and mixed phase and glaciated icing conditions	Consistent with definition of other terms	Define ice crystal and mixed phase and glaciated icing conditions	Partially concur. Added definitions for mixed phase and glaciated icing conditions. Standard dictionary definitions apply to ice crystals, so a definition has not been added to the AC.
Page 2, section 2.	Typo error in definition of LWC	Typo error	Change "volume or mass of air" to "volume of mass of air"	Partially concur. The words, "or mass" has been deleted.
Page 4, section 3.a.(2)	Clarifying that § 25.1420(a)(3) does not require detection method of Appendix X icing conditions	Clarification	Add a sentence at the end of section 3.a.(2) stating that § 25.1420(a)(3) does not require detection method of Appendix X icing conditions	Concur. Revised AC accordingly.
Page 4, section 3.a.(10)	Extra minus sign	Typo error	From: (--13°C) to (-13°C)	Concur. Revised AC accordingly.
Page 10, section 4.	Indicate the use of AC 21-40A	Clarification	Add a sentence before "The certification plan should include the following basic information:" stating that STC applicants should follow the guidance in AC21-40A.	Partially concur. Added the AC to the list in appendix 1.

Page 12, para. 5.b.(2)(j)	Add wheel well	Clarification	From: **(j)** Landing gear. To: **(j)** Landing gear and wheel well.	Comment is now moot because this section has been revised to reference AC 20-73A.
Page 13, para. 5.b.(2)(0)	Add new fairing	Clarification	From: **(o)** Each structure that extends into the free stream, such as cameras, camera mounts, and video equipment. To: **(o)** Each structure that extends into the free stream, such as protrusion or intrusion to the fairing, cameras, camera mounts, and video equipment.	Comment is now moot because this section has been revised to reference AC 20-73A.
N/A	Analysis and testing to evaluate the Instructions for Continued Airworthiness (ICA) for deicers is not addressed in this AC.	We know that there are differences in ice shedding when the deicer boot is new compare to when it is in service for two or more years. This AC mainly addresses aircraft safety for new boots only.	Add new section to address the comment noted.	Concur. Added a new section on ICA.
Page 13, para. 5.e.(1), end of para	Move period out of the double quotes.	Typo error	From: ….conditions is considered “1.” To: ….conditions is considered “1”.	Periods and commas go inside the quotation mark.

N/A	Use acronym SLD for "supercooled large droplet" throughout the AC	Facilitates reading	Replace "supercooled large droplet" with SLD throughout the AC	The following sentence has been added to the first page of Appendix 5 – In the main body of this AC, for purposes of plain language, the term supercooled large drop was spelled out. In this appendix, however, because the term appears so frequently, its acronym, SLD, will be used
Page 16, para. 5.f.(2), end of para	Add a comma	Facilitates reading	From: …. and appropriate to resolve the open issues. To : …. and appropriate, to resolve the open issues.	Not grammatically necessary and breaks the flow. A comma inserted after "appropriate" would require that a comma also be inserted after "analysis."
Page 18, para's 5.j. and page 19, para 5.j.(1)	TSO C16 has been updated to TSO C16a	Update	Update TSO C16 to TSO C16a	Concur. Revised AC accordingly.
Page 19, para 5.j.(1) and para 5.k.(1)	AS393A has been updated to AS393B	Update	Update AS393A to AS393B	The AS standard has been updated but the TSO-C54 has not. It still requires compliance with AS393A, not AS393B, so the reference in the AC is correct.
Page 19, para 5.k	Also stall warning should comply with § 25.207(e)(h)	Clarification	Para 5.k. should address compliance with § 25.207(e)(h)	To ensure there are no discrepancies between this AC and AC 25-25X, Performance and Handling Characterists in Icing Conditions, a reference to AC 25-25X was added rather than identifying the suggested regulation.
Page 21, para 7.d.	Clarify that each of §§ 25.1419 and 25.1420 require two or more means of compliance	Clarification	From: **d.** Both §§ 25.1419 and 25.1420 require… To: **d.** Each of §§ 25.1419 and 25.1420 require…	"Both" makes the meaning of the sentence clear. "Each" would be awkward here, and cause the reader to stop and wonder what the sentence means.
Page 36, para 11a.(2) and page 40, para 13.	The AC should note that any indirect view, such as mirrors and through video cameras, are not considered	Clarification	Add new section to address the comment noted	Although a video camera was not envisioned when the rule was drafted it may be possible to certificate use of a video camera as an equivalent level of safety to a human directly observing ice accretions. Therefore it would not be appropriate to reject the use of video cameras in this AC.

	visual cues and they are not acceptable method for ice detection			
Appendix 1, page A1-1	25.253(b) should be 25.253(c)	Typo error	From 25.253(b) to 25.253(c)	Concur. Revised AC accordingly.
Appendix 1, page A1-1	Add few rules that are missing	Not a complete list	Add the following rules: 25.103(b)(3), 25. 875, 25.1091(b), 25.1305(c)(5), 25.1323(i), 25.1455, Appendix K25.1(a) to part 25	Concur. Revised AC accordingly.
Appendix 1, page A1-1	List of ACs not in order also AC 21-16E is repeated with two revisions.	Not in order	Put ACs in order and remove one of the repeated AC 21-16E. Add the AC 91-51A and AC 91-74A	Concur. Revised AC accordingly.
Appendix 1, page A1-1	Add to "Other FAA Document list" FAA policy document	There is more FAA document to the list	Add to Other FAA Document list: FAA Policy No. ANE-2003-35-1-R0, Policy for Propeller Ice Protection Equipment, dated March 2, 2005	Concur. Revised AC accordingly.
N/A	ETOPS, App. K, Section K25.1(a) is not addressed in the AC	K25.1(a)(1) addresses only 25.1419	Add a section to address the comment noted whether 25.1420 may affect ETOPS	This AC does not cover ETOPS. ETOPS is covered in AC 20-73A although it was issued prior to the new appendix K ETOPS requirements. When that AC is revised the new appendix K ETOPS requirements will be addressed.