



1. Transport Canada Publication No. <b>TP 15203E</b>		2. Project No.		3. Recipient's Catalogue No.		
4. Title and Subtitle <b>Aircraft Ground De/Anti-Icing Fluid Holdover Time Development Program for the 2011-12 Winter</b>				5. Publication Date		
				6. Performing Organization Document No. <b>CM2265.001</b>		
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				11. PWGSC or Transport Canada Contract No.		
12. Sponsoring Agency Name and Address <b>Transportation Development Centre (TDC) 800 René Lévesque Blvd. West, Suite 600 Montreal, Quebec H3B 1X9 Canada</b>				13. Type of Publication and Period Covered <b>Draft</b>		
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15. Supplementary Notes (Funding programs, titles of related publications, etc.) Several research reports for testing of de/anti-icing technologies were produced for previous winters on behalf of Transport Canada. These are available from the Transportation Development Centre (TDC). Several reports were produced as part of this winter's research program. Their subject matter is outlined in the preface. This project was co-sponsored by the Federal Aviation Administration.						
16. Abstract The primary objective of the 2011-12 holdover time test program was to evaluate the performance of new deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover time guidelines. The objective was met by conducting endurance time tests. The procedure for these tests consisted of pouring fluids onto clean aluminum test surfaces inclined at 10°. The onset of failure was recorded as a function of time in natural snow, artificial snow, simulated freezing fog, simulated freezing drizzle, simulated light freezing rain, and simulated rain on a cold-soaked wing. A total of 516 tests were conducted with five fluids.  Changes to the holdover time guidelines for the winter of 2012-13 include: <ul style="list-style-type: none"><li>• Fluid-specific holdover time tables were added for two new Type II fluids, Clariant Safewing MP II Flight Plus and LNT P250.</li><li>• Two obsolete Type II fluids (Clariant Safewing MP II 2025 ECO and Octagon E Max II) were removed from the guidelines. This did not impact the generic Type II holdover times.</li><li>• Two obsolete Type IV fluids (Clariant Safewing MP IV 2001 and Dow Chemical UCAR ADF/AAF ULTRA+) were removed from the guidelines. This resulted in twelve increases to the generic Type IV holdover times.</li><li>• The lowest temperature band in the Type I portion of the active frost table was changed from "below -21 to -25°C" to "below -21 to LOU".</li><li>• Clarification was added to the ice pellets operational guidelines to identify additional precipitation conditions where outside air temperature must not decrease, to indicate that the table applies only to Type IV neat fluids, and to identify the different glycol based fluids.</li><li>• Text was added to the fluid application procedure tables to indicate that the time available between the first and second steps of a two-step application procedure may be greater or less than three minutes.</li><li>• Text was added to the Type I fluid application procedure table to clarify that the minimum fluid application quantities and temperature apply to all conditions including active frost.</li></ul> It is recommended that any new Type I, Type II, Type III or Type IV fluids be evaluated over the entire range of conditions in the holdover time guidelines. It is also recommended that fluid-specific and fluid application temperature specific holdover time guidelines for Type III fluids be developed in the winter of 2012-13 and that further testing be carried out to evaluate holdover times of Type III fluids applied heated to composite surfaces.						
17. Key Words <b>Anti-icing, deicing, deicing fluid, holdover times, precipitation, endurance times, Type I, Type II, Type III, Type IV, aircraft, ground, test, winter</b>				18. Distribution Statement <b>Limited number of copies available from the Transportation Development Centre</b>		
19. Security Classification (of this publication) <b>Unclassified</b>		20. Security Classification (of this page) <b>Unclassified</b>		21. Declassification (date) <b>—</b>	22. No. of Pages <b>xvi, 80 app.</b>	23. Price <b>—</b>