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15. Supplementary Notes (Funding programs, titles of related publications, etc.)

Research reports produced on behalf of Transport Canada for testing during previous winters are available from the Transportation Development Centre (TDC). Nine reports (including this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface.

16. Abstract

The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly and previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover time tables using fluid samples selected by the various manufacturers according to the sample selection procedures in the proposed Aerospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used in holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature and fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance of vertical surfaces. Measurements of naturally-occurring fog and frost deposition rates were performed. The IREQ high-humidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated frost conditions.

The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10º; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing fog, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Kilfrost, and SPCA, and were tested in neat and diluted forms. Type I fluids were supplied by Clariant, Home Oil, Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performed either at the APS Dorval Airport test facility or at the National Research Council Climatic Engineering Facility Ottawa.

De/anti-icing fluid holdover times were determined using a multi-variable regression analysis, resulting in the generation of one generic SAE Type IV fluid table, seven *fluid-specific* Type IV fluid tables, one generic SAE Type II table, and two *fluid-specific* Type II tables. The holdover time values in the SAE Table I table were reduced based on the results of testing in 1999/2000. Results indicate that fluid application temperature affects the holdover time of Type I fluid. Fluid on standard 10º plates outperformed fluid on vertical plates in all holdover time trials. The cold chamber at IREQ is capable of producing the stable conditions required to conduct fluid trials in frost conditions.

17. Key Words	18. Distribution Statement
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