Transport Transports

1. The sard Soziale 1. Title and Soziale 1. This and Soziale 1. Aircraft Ground De/Anti-Icing Fluid Holdover Time and Endurance Time Testing Program for the 1999-2000 Winter 1. Authoric)	Canada Canada			PUBLIC	JA HON D	AIA FORM	
A free and Salatifis Aircraft Ground De/Anti-icing Fluid Holdover Time and Endurance Time Testing Program for the 1999-2000 Winter Authorics	I. Transport Canada Publication No.	2. Project No.		3. Recipient's 0	Catalogue No.		
A rite and Scalible Aircraft Ground De/Anti-icing Fluid Holdover Time and Endurance Time Testing Program for the 1999-2000 Winter Authorical Chaput, Medhat Hanna, and Marc Hunt	TP 13659F						
Aircraft Ground De/Anti-icing Fluid Holdover Time and Endurance Time Testing Program for the 1999-2000 Winter E. Petforming Disprization Document No. CM1589.001 Authority Michael Chaput, Medhat Hanna, and Marc Hunt 7. Authority Michael Chaput, Medhat Hanna, and Marc Hunt 8. Transportation line. 10. PVISSC File No. APS Aviation Inc. 110. PVISSC File No. APS Aviation Inc. 110. PVISSC File No. APS Aviation Inc. 110. PVISSC File No. 111. PVISSC or Transport Canada Contend No. 111. PVISSC or Transport Canada Contend No. 111. PVISSC or Transport Canada Contend No. 112. Sparengery Name and Address. Transportation Development Centre (TDC) 800 Renet Lévesque Blvd. West Suite 600 Montreal, Quebec H38 1X9 Supplementary Ness Fruiding programs, lites of Intelled 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 finaliting this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface. 18. Roberts 18. Roberts 19. Roberts 10. Roberts 19. Roberts 10. Rober	11 100002						
Endurance Time Testing Program for the 1999-2000 Winter Deferming Organization Decument No. CM1589.001	I. Title and Subtitle			5. Publication [Date		
Endurance Time Testing Program for the 1999-2000 Winter Endurance Time Testing Program for the 1999-2000 Winter	Aircraft Ground De/Anti-icing Fluid	Holdover Time and					
Author(s) Michael Chaput, Medhat Hanna, and Marc Hunt 10. Performing Organization Name and Address APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H38 HN4 2. Sproncing Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 800 Montreal, Quebec H38 HN4 8. Supermetery Notes (Privadra programs, lifes of inlated publications, etc.) Research reports produced on behalf of Transport Canada for lesting during previous winters are available from the Transportation Development Centre (TDC). Nine reports finalitying this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface. Anterior The primary objective of the 1999-2000 hold/lover time test program was to evaluate the performance of newly at previously qualified decling and anti-icing Midds over the entire range of conditions encompassed by the hold/over time testing. Additional tests were also performed to assess the influence of fluid application procedures in it proposed Aerospace Standard 5485. An evaluation of anti-ficing fluid discing fluid samples selected by the various manufacturers according to the sample selection procedures in the proposed Aerospace Standard 5485. An evaluation of anti-ficing fluid thickness was conducted with all fluids used hold/over time testing. Additional tests were also performed to assess the influence of fluid application temperature ar fluid dilution on the hold/over time performance of Type I fluid, and to determine the hold/over time performance vertical surfaces. Measurements of naturally-occuting fluid surfaces were performed. The IREO flip humidity chamber was also evaluated for the purpose of conducting future hold/over time tests in simulated froz flog, freezing frain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Kliffoxt, and SPCA, and were tested in neat and diluted forms. Type I fluid: Ning Type II and IV fluids were supplied by Clariant Kliffoxt, and			nter				
Michael Chaput, Medhat Hanna, and Marc Hunt 1. Preferring Organization Name and Address APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H38 4N4 12. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H38 1X9 13. Type of Publication and Period Covered Draft 15. Supermenting Nates (*Funding programs, sites of related publications, etc.) Research reports produced on behalf of Transport Canada for testing duting 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. Abdretic The primary objective of the 1999-2000 helidovet time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holidover tim tables using fluid samples selected by the various manufacturers according to the sample selection procedures in the proposed Aerospace Standard 5485. An valuation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature ar fluid dilution on the holdover during performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurenams of naturally-occoring fog and frost deposition rates were performed. The IREO high humidity chamber was also avaluated for the purpose of conducting future holdover time tests are performed. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated free conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onse	-			Performing 0	Organization Docum	ent No.	
Michael Chaput, Medhat Hanna, and Marc Hunt Proforming Organization Name and Addresss APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H38 4N4 Someony Agency Harne and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H38 1X9 Supplimentary Notes (Funding programs, titles of release 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 onls) were produced as part of this winter's research program. Their subject matter is outlined in the preface. Abstract The primary objective of the 1999-2000 holidover time test program was to evaluate the performance of newly are previously qualified deicing and anti-cing fluids over the entire range of conditions encompassed by the holidover time testing. Additional tests were also performed to assess the influence of fluid application temperature a fluid dilution on the holidover firm performance of a Type I fluid, and to determine the holidover time performance vertical surfaces. Measurements of a function of program fluid on the holidover time performance of rounduring future holidover time tests in simulated for one of the purpose of conducting future holidover time tests in simulated for conditions. The holidover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the nonset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II fluid were responsed as a function of time in natural snow and artificial conditions including simulated freezing, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariar Kilfrost, and SPCA, and were fested in near and diluted forms. Type II fluids were supp				CM158	9.001		
Michael Chaput, Medhat Hanna, and Marc Hunt 7. Performing Cognization Name and Address APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H38 AN4 12. Sponsoring Agency Harne and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H38 1X9 Supplementary Metre, Funding programs, effice 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 onle) were produced as part of this winter's research program. Their subject matter is outlined in the preface. 16. Adversal The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly are previously qualified delicing and anti-cling fluids over the entire range of conditions encompassed by the holdover time tables using fluid samples selected by this various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5485. An evaluation of anti-cling fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature at fluid dilution on the holdover time performance of Yppe I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occurring floids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II fluid were resupplied by Clariar Kliffoxt, and SPCA, and were tested in neat and diluted forms. Type II fluids were supplied by Clariar Kliffoxt, and SPCA, and were tested to neat and diluted forms. Type II fluids were supplied by Clariar Kliffoxt, and SPCA, and were tested that fluid application temperature are							
APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H3B 4N4 2. Spontoring Agency Name and Address Transportation Development Centre (TDC) 800 Rene Levesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 5. Suptementary Notes (Funding programs, titles of related publications, etc.) Research reports produced on behalf of Transport Canada for testing duting previous winters are available from the Transportation Development Centre (TDC). Nine reports fine litting this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly ar previously qualified delicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim tables using fluid samples selected by this various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5455. An evaluation of anti-cing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were use performed to assess the influence of fluid apician temperature ar fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occuping fog and frost deposition rates were performed. The IREC hig humidity chamber was also avaluated for the purpose of conducting future holdover time tests in simulated fro conditions. The holdover time test procedure vanished of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezin fog, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1500 holdover time tests were performed in the APS Dorval Airport	. Author(s)			Transport Ca	anada File No.		
APS Aviation Inc. 1100 Rene-Levesque Blvd. West, Suite 1340 Montreal, Quebec H3B 4N4 12. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 15. Suspinementary Notes (Funding programs, teles of released publications, etc.) Research reports produced on behalf of Transport Canada-for testing duting previous winters are available from the Transportation Development Centre (TDC). Nine reports fineliding this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface. The primary objective of the 1999-2000 holidover time test program was to evaluate the performance of newly are previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holidover time tables using fluid samples selected by the, various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5485. An evaluation of anti-cing fluid thickness was conducted with all fluids used holdover time testing. Additional-tests were also performed to assess the influence of fluid application temperature at fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurenders of naturally occording fog and frost deposition rates were performed true research the proposed for the purpose of conducting future holdover time tests in simulated freconditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezin fog, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performed in the APS Dorval Airport test facility or a	Michael Chaput, Medhat Hanna, a	nd Marc Hunt					
APS Aviation Inc. 110 Rene-Levesque Bivd. West, Suite 1340 Montreal, Quebec H3B 4N4 2. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 Rene Levesque Bivd. West Suite 600 Montreal, Quebec H3B 1X9 5. Sugnementary Notes (Funding programs, teles of released 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 fineliding this one) were produced as part of this winter's research program. Their subject matter is outlined in the preface. The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly are previously qualified delicing 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 it proposed Aerospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional-test-were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measureneds of naturally occording fog and frost deposition rates were performed to report time testing. Additional-test-were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measureneds of an aturally occording fog and frost deposition rates were performed. The IREC high turnidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated from one of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezin fog, freezing drizzle, light freezing rain, and rain on a cold-s				10 PM000 F"			
11. PWGSC or Transport Canada Contract No. 11. PWGSC or Transport Canada Contract No. 11. Type of Publication and Period Covered Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 5. Supplementary Nature (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. 6. Abstract The primary objective of the 1999-2000 beldover time test program was to evaluate the performance of newly are 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 it proposed Aparospace Standard 5485. An avalation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover dime performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally occurrying fog and frost deposition rates were performed. The IRBC high humidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated froe conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; to onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing fog, freezing drizzle, light freezing ratio, and ratio na 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 O Inland, J	. Performing Organization Name and Address			10. PWGSC File No.			
Montreal, Quebec H38 4N4 2. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 5. Suspitementary Notres (Funding programs, titles of related publications, etc.) Research reports produced on behalf of Transport Canada for testing duting 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. Abstract The primary objective of the 1999-2000 beliefover time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim tables using fluid samples selected by the various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5485. An avaluation of anti-fcing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature ar fluid dillution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occurring fog and frost deposition rates were performed. The IREO high humidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated fro conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; et original, report in the purpose of conducting future holdover time tests in simulated for conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; et original report in the purpose of conducting future holdover time tests in simulated for conditions. The holdover time test procedure tested in neat and diluted forms. Type I fluids were supplied by Clariant, Home O Inlan		•					
2. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 5. Supplementary Notes (Funding programs, tibles 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. 6. Abstract The primary objective of the 1999-2000 beldover time test program was to evaluate the performance of newly are 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 it trypopsed Aperospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional assets were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occoming flog 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 fro conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing fluids, and several particular partic	·			44 DWCCC ***	Francis Canada C	ontro et No	
2. Sponsoring Agency Name and Address Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 5. 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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim tables using fluid samples selected by the various manufactorers according to the sample selection procedures in it proposed Aerospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature ar fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally occurring fog and frost deposition rates were performed. The IREO hig humidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated fro conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezin fog, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clarian Kilfrost, and SPCA, and were tested in neat and diluted forms. Type I fluids were supplied by Clarian Kilfrost, type II tables. The holdover time same and the values in the SAE Table I table were reduced based on the results				11. PWGSC or	ransport Canada C	ontract No.	
Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H38 1X9 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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim tables using fluid samples selected by the various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were part on a 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 holdover time testing. Additional tests were performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occuring 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 free conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbie. Over 1 500 holdover time tests were performed in the propose of the propos	113B 4IN4						
Transportation Development Centre (TDC) 800 René Lévesque Blvd. West Suite 600 Montreal, Quebec H3B 1X9 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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim tables using fluid samples selected by the various manufacturers according to the sample selection procedures in it proposed Aerospace Standard 5485. An evaluation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were part on a sesses the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance 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 froe conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; th onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performe 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 t	2 Sponsoring Agency Name and Address			13 Type of Bulb	lication and Poriod C	:overed	
Soute 600 Montreal, Quebec H3B 1X9 Supelementary Notes (Funding programs, 198es 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. Abstract The primary objective of the 1999-2000 haldover time test program was to evaluate the performance of newly ar previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tin tables using fluid samples selected by the various manufacturers according to the sample selection procedures in the proposed Aerospace Standard 5485. An evaluation of amti-cing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occurring fog and frost deposition rates were performed. The IREC high humidity chamber was also avaluated for the purpose of conducting future holdover time tests in simulated freconditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezin 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 O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1500 holdover time tests were performed either at the APS Dorval Airport test facility or at the National Research Council Climatic Engineering Facility		re (TDC)			noauon anu renod C	Jovereu	
Suite 600 Montreal, Quebec H3B 1X9 5. 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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly are previously qualified deicing and anti-icing fluids over the entire range of conditions encompassed by the holdover tim 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 holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature an fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occuring fog and frost deposition rates were performed. The IREO hig humidity chamber was also avaluated for the purpose of conducting future holdover time tests in simulated froe conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezing fig. freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performe 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 th	·	ie (IDC)		Draft			
Montreal, Quebec H3B 1X9 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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly are 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-fcing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature at fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally occurring fog and frost deposition rates were performed. The IREQ highumidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated fro conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; the onset of failure was recorded as a function of time in natural snow and artificial conditions including simulated freezif fog, freezing drizzle, light freezing rain, and rain on a cold-soaked wing. Type II and IV fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performe 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, resu				14 Project Offic	er		
5. 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. 6. Abstract The primary objective of the 1999-2000 boldover time test program was to evaluate the performance of newly are 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 availation of anti-icing fluid thickness was conducted with all fluids used holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance 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 froe conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; 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 Clariar Kilfrost, and SPCA, and were tested in neat and diluted forms. Type I fluids were supplied by Clariant, Home O Inland, Jarchem, Kilfrost, Lyondell, Octagon, and Union Carbide. Over 1 500 holdover time tests were performe either at the APS Dorval Airport test facility or at the National Research Council Climatic Engineering Facility Ottawa. De/anti-icing f							
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. 6. Abstract The primary objective of the 1999-2000 boldover time test program was to evaluate the performance of newly are 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 holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance 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 frozenditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; 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 O 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, r				Barry IV	Barry Myers		
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. 6. Abstract The primary objective of the 1999-2000 holdover time test program was to evaluate the performance of newly are 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 holdover time testing. Additional tests were also performed to assess the influence of fluid application temperature are fluid dilution on the holdover time performance of Type I fluid, and to determine the holdover time performance vertical surfaces. Measurements of naturally-occuping fluids onto clean aluminium test were performed. The IREO high humidity chamber was also evaluated for the purpose of conducting future holdover time tests in simulated froe conditions. The holdover time test procedure consisted of pouring fluids onto clean aluminium test surfaces inclined at 10°; 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 Clarian Kilfrost, and SPCA, and were tested in neat and diluted forms. Type I fluids were supplied by Clariant, Home O 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,		d publications, etc.)					
capable of producing the stable conditions required to conduct fluid trials in frost conditions. 17. Key Words Anti-icing, deicing, deicing fluid, holdover times, precipitation 18. Distribution Statement Limited number of copies available from the Transportation Development Centre	The primary objective of the 1999 previously qualified deicing and ant tables using fluid samples selected proposed Aerospace Standard 548! holdover time testing. Additional te fluid dilution on the holdover time vertical surfaces. Measurements of humidity chamber was also evaluate conditions. The holdover time test procedure onset of failure was recorded as a fog, freezing drizzle, light freezing rakilfrost, and SPCA, and were test Inland, Jarchem, Kilfrost, Lyondell, either at the APS Dorval Airport test De/anti-icing fluid holdover times we of one generic SAE Type IV fluid tat fluid-specific Type II tables. The hot testing in 1999/2000. Results indice	i-icing fluids over the end by the various manufals. An evaluation of antists were also performed performance of Type I naturally-occurring foguted for the purpose of consisted of pouring fluid unction of time in naturally and rain on a cold-sed in neat and diluted Octagon, and Union of facility or at the Nation ere determined using a ble, seven fluid-specific oldover time values in the cate that fluid applications.	ntire range of concturers according Fluid thicking fluid thicking to assess the inful fluid, and to detand frost deposition from the conducting future all snow and artificoaked wing. Type forms. Type I fluid fluid table and Research Count fluid table and temperature affer the conduction of the condu	ditions encompass to the sample se ess was conduct luence of fluid ap ermine the holde on rates were p re holdover time uminium test sur- cial conditions in e II and IV fluids aids were supplie 500 holdover time cil Climatic Engir ession analysis, in ess, one generic S ble were reduce ects the holdover	ssed by the helection procested with all for policition temporer time performed. The tests in single description of the tests in single description of the tests we hereing Facilities and the tests we have a learn of the tests which all the tests we have a learn of the tests which all the tests we have a learn of the tests which all the tests we have a learn of the tests which a learn of the tests we have a learn of the tests which are tests which a learn of the learn of the tests which a learn of the tests which a learn of	noldover time edures in the edures in the edures in the eluids used in apperature and rformance of the IREQ high-mulated frost d at 10°; the ated freezing d by Clariant, at, Home Oil, are performed by Ottawa. The generation able, and two the results of the Ifluid. Fluid	
7. Key Words Anti-icing, deicing, deicing fluid, holdover times, precipitation 18. Distribution Statement Limited number of copies available from the Transportation Development Centre					cold chamb	er at IREQ is	
Anti-icing, deicing, deicing fluid, holdover times, precipitation Limited number of copies available from the Transportation Development Centre	capable of producing the stable con	aitions required to cond	uct fluid trials in f	rost conditions.			
precipitation Transportation Development Centre	7. Key Words		18. Distribution Stateme	ent			
	Security Classification (of this publication)	20. Security Classification (or	f this page)	21. Declassification	22. No. of	23. Price	
Unclassified Unclassified — Pages xxxii, 338 —		l lealansified		(date)			

арр.