Advisory Circular

Subject:		**Electronic Holdover Time (eHOT) Applications**		
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TABLE OF CONTENTS

1.0   INTRODUCTION

(1)   This Advisory Circular (AC) is provided for information and guidance purposes. It may describe an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements.

1.1   Purpose

(1)   This AC provides:

(a)   Guidelines and recommendations for air operators, private operators, and developers of electronic holdover time applications (eHOT apps) regarding the implementation and use of eHOT apps in electronic flight bags;

(b)   Guidance on how to obtain authorization to incorporate eHOT apps into an air operator's or private operator's deicing and anti-icing program;

(c)   Guidance material and recommendations for Principal Operations Inspectors (POIs) or Civil Aviation Safety Inspectors (CASIs) when reviewing submissions for incorporation of eHOT apps in operators deicing and anti-icing program.

1.2   Applicability

(1)   This document applies to air operators, private operators, CASIs, and eHOT apps developers. The applicant for the operational usage of holdover times provided by an eHOT app must be the holder of an air operator certificate, or private operator certificate.

1.3   Description of Changes

(1)   This document, formerly AC 700-030, Issue 01, has been reissued as AC 700-030, Issue 02. With the exception of minor editorial changes and updated references, the content is unaltered.

2.0   REFERENCES AND REQUIREMENTS

2.1   Reference Documents

(1)   It is intended that the following reference materials be used in conjunction with this document:

(a)   Transport Canada Publication —*Holdover Time Guidelines;*

(b)   Transport Canada Publication (TP) 14052, Edition 02, April 2005—*Guidelines for Aircraft Ground Icing Operations;*

(c)   Transport Canada Advisory Circular (AC) 700-020—*Electronic Flight Bags;*

(d)   Transport Canada exemption to Subsection 602.11 of the *Canadian Aviation Regulations* (CARs)—*Holdover Time Determination Systems (HOTDS);*

(e)   Transport Canada Publication—*Holdover Time (HOT) Guidelines Regression Information.*

2.2   Cancelled Documents

(1)   By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3   Definitions and Abbreviations

(1)   The following **definitions** are used in this document:

(a)   **eHOT:** electronic holdover time, i.e. holdover time provided by eHOT app;

(b)   **Electronic holdover time application (eHOT app):** software program for portable or tablet computers that provides holdover times for aircraft ground de/anti-icing fluids.

(2)   The following **abbreviations** are used in this document:

(a)   **AC:** advisory circular;

(b)   **EFB:** electronic flight bag;

(c)   **GUI:** graphical user interface;

(d)   **HOT:** holdover time;

(e)   **HOTDS:** holdover time determination system;

(f)   **LOUT:** lowest operational use temperature;

(g)   **LWE:** liquid water equivalent;

(h)   **MOPS:** Minimum Operational Performance Specification;

(i)   **SOP:** standard operation procedure.

3.0   BACKGROUND

(1)   Electronic flight bags (EFBs) are computing platforms intended to reduce or replace paper-based reference material in pilots' traditional paper-based flight bags. This Advisory Circular (AC) pertains to EFB software applications that provide de/anti-icing fluid holdover time (HOT) information. These applications are henceforth referred to as eHOT apps.

(2)   Transport Canada AC 700-020 defines several categories of EFB software. The same categorization is used in this AC. Therefore, eHOT apps are categorized as either Type A or Type B EFB software, depending on their functionality.

(3)   **Type A Applications**: include pre-composed, fixed presentations of data currently presented in paper format. eHOT apps that provide fixed presentation of the Transport Canada Holdover Time Guidelines fall into this category.

(4)   **Type B Applications**: include dynamic, interactive applications that can manipulate data and the presentation of that data. eHOT apps that manipulate the Transport Canada Holdover Time Guidelines information fall into this category.

4.0   DISCUSSION

(1)   The primary purpose of this AC is to provide guidance for implementing and using holdover time guidelines within eHOT apps. There are a number of possible implementation methods. This document addresses the following possible implementations:

(a)   eHOT apps that provide a fixed presentation of the Transport Canada Holdover Time (HOT) Guidelines;

(b)   Dynamic, interactive eHOT apps that use flight crew manually input weather and fluid information to provide the Transport Canada Holdover Time Guidelines without the use of regression information;

(c)   Dynamic, interactive eHOT apps that use weather information provided by a holdover time determination system (HOTDS) (i.e. temperature, precipitation rate and precipitation type) and flight crew manually input fluid information, along with the Transport Canada HOT Guidelines Regression Information to provide regression derived HOTs. This implementation requires a HOTDS that fully meets the requirements of the applicable Transport Canada HOTDS exemption document or equivalent foreign document.

Caution: eHOT apps, which incorporate HOTDS functionality must comply with the requirements and restrictions provided in the applicable Transport Canada exemption document(s) in addition to the requirements and restrictions provided in this document.

(2)   At this time, this AC does not provide guidance with respect to eHOT apps that:

(a)   Automatically obtain weather information (e.g. thru a Aviation Routine Weather Report (METAR));

(b)   Use liquid water equivalent (LWE) information provided through a system that does not fully meet the Transport Canada HOTDS exemption document.

(3)   Using an eHOT does not alleviate operator's responsibility in assuring the safe usage of de/anti-icing fluids; for example, ensuring that fluids are not used below their lowest operational use temperatures (LOUT).

(4)   CAR 705 operators require an aircraft inspection program (also referred to as an approved ground de/anti-icing program) in accordance with paragraph 602.11 (4)(b) of the *Canadian Aviation Regulations* (CARs). CAR 705 operators implementing the use of an eHOT app operationally must update their aircraft inspection program in accordance with the guidance of this AC.

(5)   In accordance with section 602.11 of the CARs, non CAR 705 operators must either inspect their aircraft immediately prior to take-off or operate in accordance with an aircraft inspection program, when conditions are such that frost, ice or snow, may reasonably be expected to adhere to critical surfaces. Non CAR 705 operators who elect to inspect their aircraft immediately prior to take-off can only use an eHOT app for advisory purposes and not for decision-making. Non CAR 705 operators who intend on using an eHOT for decision-making purposes must establish an aircraft inspection program in accordance with section 602.11 of the CARs and incorporate the guidance included in this AC.

(6)   An appropriate training program for users must accompany use of an eHOT app and the use of the application must be incorporated in Standard Operating Procedures (SOPs) in accordance with the requirements laid out in Appendix I of AC 700-020.

5.0   ACCEPTANCE PROCESS

(1)   Appendix A of this AC provides the minimum operational performance specification for eHOT apps. The manufacturer must provide the end user (air operator or private operator) with a declaration that verification and testing have demonstrated that the software complies with the minimum operational specification.

(2)   Appendix B of this AC provides minimum testing and evaluation requirements for the evaluation of eHOT apps. Documentation demonstrating that this testing and evaluation has been completed satisfactorily must be retained.

(3)   It should be noted that eHOT apps must also meet the requirements set out in AC 700-020.

6.0   AUTHORIZATION

(1)   Operators incorporating eHOT apps into EFBs within their operations should carefully review the contents of this AC to determine applicable requirements.

(2)   The operational implementation will require a structured sequence of events and actions to satisfy both the operator and the regulator that aircraft equipped with eHOT apps can be operated safely. The operator should be prepared to demonstrate that the information provided by the eHOT application is equivalent to or superior to the information provided by the paper version of the holdover time guidelines.

(3)   All data within the eHOT application intended for operational use must be current and up-to-date.

(4)   From an authorization process perspective it is envisaged that the operator will:

      (a)   Decide on the eHOT implementation to use;

      (b)   Discuss any implementation concerns with their respective Principal Operations Inspector (POI);

      (c)   Complete all necessary assessments, evaluations, document updates, training, etc.;

      (d)   Submit changes to Company Operations Manual (COM) to POI for approval/acceptance;

      (e)   Review and apply the guidelines in Transport Canada AC 700-020 as required.

7.0   INFORMATION MANAGEMENT

(1)   Not applicable.

8.0   DOCUMENT HISTORY

(1)   AC 700-030, Issue 01, RDIMS 8648544(E), 8716137(F), dated 2014-01-22 - *Electronic Holdover Time (eHOT) Applications*

9.0   CONTACT OFFICE

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Transport Canada documents or intranet pages mentioned in this document are available upon request through the Contact Office.

APPENDIX A: ELECTRONIC HOLDOVER TIME APPLICATION MINIMUM OPERATIONAL PERFORMANCE SPECIFICATION

A1.0   APPLICATION CONTENT

(1)   The mandatory and optional content of the electronic holdover time application (eHOT app) is described in this section.

(2)   Mandatory content is that content: needed to comply with the regulations in section 602.11 of the CARs and to conform to the data and information contained in the HOT Guidelines and regression documents published by Transport Canada on a periodic basis.

A1.1   Mandatory Content

(1)   An eHOT app must contain the following:

(a)   Data sourced / obtained from the most recent Transport Canada Holdover Time Guidelines publication. Data must be updated annually to reflect changes made to the Transport Canada Holdover Time Guidelines publication (typically published in July/August of each year);

(b)   Holdover time guidelines content as required by the operator based on the operator's operational locales and environment. For example:

(i)   operators flying exclusively within North America may not need to include Type II holdover times;

(ii)   operators who opt not to use fluid-specific holdover time tables may choose not to include them;

(iii)   operators whose fleets contain exclusively one wing surface material (composite or aluminum) may choose to provide only one set of Type I holdover times (composite surface or aluminum surface);

(iv)   operators with mixed composite wing surface and aluminum wing surface fleets may choose to include only one set of Type I holdover times so long as the most restrictive holdover times are used;

(c)   The information contained in the visibility vs. snowfall intensity table must be included in the eHOT app to assist in the determination of snowfall intensity (either a fixed representation, i.e. Portable Document Format (PDF), or part of a computational program). The eHOT app should have the flexibility to enable the pilot to select a snow intensity different from that which is computed using the visibility table;

(d)   All precipitation types referenced in the Transport Canada Holdover Time Guidelines must be included, including those for which holdover times do not exist: active frost, freezing fog, ice crystals, light snow, moderate snow, freezing drizzle, light freezing rain, rain on cold soaked wing, light snow mixed with light rain, light ice pellets, moderate ice pellets, light ice pellets mixed with light or moderate freezing drizzle, light ice pellets mixed with light freezing, rain, light ice pellets mixed with light rain, light ice pellets mixed with moderate rain, light ice pellets mixed with light snow, light ice pellets mixed with moderate snow, heavy snow, ice pellets, moderate freezing rain, heavy freezing rain, and hail.

(i)   **Note**: eHOTs must be provided for all snowfall intensities, excluding heavy snow;

(ii)   **Note**: eHOTs must be provided for light snow mixed with light rain (holdover times are equal to those of light freezing rain);

(e)   All notes and cautions that are applicable to a given holdover time must be provided with the eHOT. This includes notes and cautions applicable to all holdover times in the related holdover time table and any notes and cautions applicable to the specific holdover time being provided;

(f)   Instructions, help and support must be provided, including appropriate contact information;

(g)   Regression coefficients and equations as published in the Transport Canada document Transport Canada Holdover Time (HOT) Guidelines Regression Information. Data must be updated annually to reflect changes made to the publication annually (typically published in July/August of each year). This content is only mandatory if the eHOT app is being used with a holdover time determination system (HOTDS).

A1.2   Optional Content

(1)   An eHOT app may contain the following:

(a)   Lowest Operational Use Temperature (LOUT) information, which may be incorporated in one of two ways:

(i)   The Transport Canada LOUT table can be made available as a look up reference. The table can be presented as an image or non-manipulatable document, e.g. PDF or JPG. If LOUTs are included this way, appropriate cautions related to fluid LOUTs must be provided with eHOTs, as per A1.1 e);

(ii)   LOUTs can be incorporated into the calculation of eHOTs so that no holdover times are provided below the fluid LOUT. If LOUTs are included this way, it may not be necessary to provide cautions related to LOUT with eHOTs;

Caution: If incorporating LOUTs, consideration must be given to the fact that different LOUT values may exist for the same fluids for low speed and high speed aircraft (Type I, Type III) or may apply only to high speed aircraft (Type II, Type IV). For example, the eHOT app should caution the user that Type II and Type IV eHOTs are not applicable and should not be used with low speed rotation aircraft.

(b)   Reference information provided in the Transport Canada Holdover Time (HOT) Guidelines publication, including: summary of changes from the previous winter guidelines, fluid application tables, table of lowest on-wing viscosities, etc.;

(c)   Guidelines for Aircraft Ground-Icing Operations (Transport Canada Publication (TP) 14052) and changes to TP 14052 as published in the Holdover Time Guidelines.

A2.0   RESTRICTIONS AND WARNINGS

(1)   This section contains restrictions on the provision of eHOTs and use of holdover time data.

A2.1   Restrictions on Use of Holdover Time Data

(1)   The following are restrictions on the use of holdover time data:

(a)   Interpolation of data: It is not acceptable to interpolate HOTs from the data provided in the tabular form of the Transport Canada HOT guidelines. For example:

(i)   HOTs cannot be interpolated for a Type II/III/IV fluid mixed to a 80/20 dilution. The more conservative holdover time of either the 100/0 or 75/25 dilution is applicable;

(ii)   HOTs cannot be interpolated for a temperature between -3 and -14°C in snow (if below -3°C, the -14°C holdover time applies);

(b)   Temporal validity of data: Holdover time data is valid once published in the holdover time guidelines until superseded by the data in a newer version of the HOT guidelines publication or until October 1st of the year following its publication (whichever comes sooner). eHOT apps must not allow data to be used once it has expired.

A2.2   Identification and Warning of Conditions in which HOTs Do Not Exist

(1)   eHOT apps must not provide holdover times in conditions where they do not exist. The following is a list of conditions in which HOTs do not exist. This list is based on the 2013-2014 HOT Guidelines and is subject to change.

(a)   "Other" precipitation types including hail, heavy snow, moderate freezing rain, heavy freezing rain.

(b)   Light freezing rain, freezing drizzle, and light snow mixed with light rain below 10°C.

(c)   Rain on cold soak wing equal or below 0°C.

(d)   Type III 75/25 fluid in freezing fog and snow below -10 to -14°C.

(e)   Type II, III, and IV fluids in active frost below -25°C.

(f)   50/50 fluids at outside air temperatures below -3°C.

(g)   75/25 fluids at outside air temperatures below -14°C.

(h)   Type I, II, III fluids and Type IV 75/25 and 50/50 fluids in ice pellet conditions.

(i)   Dilutions (75/25 and 50/50) of select fluids, e.g. Dow EG106.

(j)   Light ice pellets mixed with light or moderate freezing drizzle, light ice pellets mixed with light freezing rain, or light ice pellets mixed with light snow below -10°C.

(k)   Light ice pellets mixed with light rain or light ice pellets mixed with moderate rain below 0°C.

(l)   Light ice pellets mixed with moderate snow below -5°C.

(2)   eHOT apps must not provide a holdover time under these conditions and should provide a warning when any of these conditions are encountered.

A2.3   Restrictions on the Use of Regression Coefficients and Equations

(1)   Use of regression coefficients and equations is governed by the Transport Canada exemption that applies to the specific HOTDS from which weather information is obtained. It is also limited by the guidance and restrictions provided in the most recent version of the Transport Canada HOT guidelines regression information publication.

A3.0   DATA SECURITY, DATA INTEGRITY AND QUALITY ASSURANCE
A3.1   Data Security

(1)   Source data within an eHOT app must be protected against unauthorized manipulation. To this end, any device using an eHOT app must not have its security features compromised. In the case of devices running on an iOS platform (i.e. iPad/iPhone):

(a)   The device must not be jailbroken;

(b)   The developer must add the appropriate level of protection attribute to any file distributed within the app that contains sensitive data.

A3.2 Data Integrity

(1) The integrity of source data within an eHOT App must be maintained.

(2) Data integrity can be compromised when the original data source (e.g. Transport Canada Holdover Time Guidelines PDF) is manipulated to provide the data in a different format (eHOT). Therefore, end-to-end traceability of data must be documented, i.e. checks must be completed to ensure migration of the data is accurate and complete at each stage of manipulation.

A3.3 Quality Assurance

(1) The eHOT app developer should have a quality assurance process in place.

(2) Procedures should be implemented to assure that eHOT app failure events, especially those where the EFB failure leads to the calculation of misleading information, are immediately brought to the attention of other pilots who may be affected and to management for correction.

A4.0 OTHER REQUIREMENTS
A4.1 Transport Canada AC 700-020

(1) The eHOT app must meet the requirements of AC 700-020, with special reference to Section D2.0 (Hardware with Installed Software) and Appendix G (Evaluation Checklist for Installed Software) which describe requirements for:

    (a) Responsiveness of application;

    (b) Readability;

    (c) Colours;

    (d) Messages;

    (e) Interface;

    (f) Data entry;

    (g) Possibility for error/confusion;

    (h) Workload.

A4.2 Development of Graphical User Interfaces

(1) Operators and authorities should be aware of the criticality of performance calculations and the relatively high number of incidents and accidents where pilot data entry errors have been a contributing factor. A good Graphical User Interface (GUI) is an important safety factor in an eHOT app. Below are examples of recommended design guidelines:

    (a) Fluid names used in GUI should match those used in HOT guidelines;

    (b) Precipitation type names used in GUI should match those used in HOT guidelines;

    (c) Notes and cautions provided in GUI should be worded the same as in the guidelines; any deviation must not change the intent of the note (for example, in places where table references are no longer appropriate, e.g. reference to Table 10 in Active Frost table note);

    (d) The GUI should minimize the risk of misinterpretation of input and output data. For example, a copy of the related holdover time table could be provided with the eHOT;

    (e) The GUI should only accept usable input parameters;

    (f) The user should be advised when all needed inputs have not been entered;

(g)   Error messages (i.e. no HOT provided) should be self-explanatory and contain a hint on how the error can be corrected, if possible;

(h)   Input and output data presented on the screen should always be consistent. E.g. if, following a calculation, an input parameter is changed, all output data should be cleared.

A4.3   General

(1)   In general, eHOT apps should not require an internet connection at the time of use, i.e. the information within should be cached.

(2)   eHOT apps implemented using regression coefficients may require connectivity to the internet or other network to receive requisite input data. Under these circumstances the user needs to ensure that the use of the device is in accordance with their TPED/Portable Electronic Device (PED) company policy.

APPENDIX B: ELECTRONIC HOLDOVER TIME APPLICATION TESTING AND EVALUATION REQUIREMENTS

B1.0   INTRODUCTION

(1)   Operators and authorities should be aware of the criticality of performance calculations and the importance of the correctness of the calculation results delivered by performance algorithms or calculation modules.

(2)   The development and testing of a performance algorithm or calculation modules is a considerable investment.

(3)   When developing a new performance calculation module which processes entry variables (e.g. temperature, fluid type, and precipitation type and rate) the calculation results must be checked systematically for plausibility throughout the **whole range of valid entry combinations**. This can be done either manually or using a test tool (note: it is preferable to utilize an automated range checking tool whenever possible). Systematic checks can be documented graphically or in tabular form.

B2.0   MINIMUM TECHNICAL EVALUATION

(1)   The following technical checks and verifications must be completed, at a minimum. The checks should be made against the information contained in the most current version of the Transport Canada Holdover Time (HOT) Guidelines publication or Transport Canada Regression Coefficients document as applicable.

   (a)   **Accuracy of eHOTs:** Check every possible combination of inputs to ensure eHOTs provided are correct (this may be software architecture dependent).

   (b)   **Accuracy and Completeness of Notes and Cautions:** Check notes and cautions provided with each and every HOT to ensure all applicable notes/cautions are included.

   (c)   **Inclusion of all Precipitation Types:** Check that all winter precipitation types are accounted for either by the provision of eHOTs, or by an indication that no holdover times are available for the precipitation type. Precipitation types to be included are as follows:

      (i)   Standard Precipitation Types: active frost, freezing fog, ice crystals, snow, freezing drizzle, light freezing rain, rain on cold soaked wing, light snow mixed with light rain.

      (ii)   Ice Pellet Conditions: light ice pellets, moderate ice pellets, light ice pellets mixed with light or moderate freezing drizzle, light ice pellets mixed with light freezing, rain, light ice pellets mixed with light rain, light ice pellets mixed with moderate rain, light ice pellets mixed with light snow, light ice pellets mixed with moderate snow.

      (iii) Other Precipitation Types: heavy snow, ice pellets, moderate freezing rain, heavy freezing rain, hail.

   (d)   **Accuracy of LOUTs:** If lowest operational use temperatures (LOUTs) are incorporated in the app, check the accuracy of the LOUTs against the Transport Canada published list.

   (e)   **No HOTs Exist Conditions:** Check that no eHOT is provided under conditions where no HOTs exist (see A2.1 in Appendix A).

   (f)   **Visibility vs. Snowfall Intensity Table:** Check that the visibility table is incorporated or referenced in the app.

(g) **Documentation of Compliance with Minimum Operational Performance Specification (MOPS):** Demonstration of compliance with the MOPS (see Appendix A) must be documented. Documentation must be retained and made available to the Minister upon request.

(h) **Documentation of Integration of Notes and Cautions:** The method by which each note / caution in each table in the holdover time guidelines has been integrated into the eHOT app must be documented (this includes HOT tables and all other tables, e.g. LOUT table). Documentation must be retained and made available to the Minister upon request.

(i) **Data Entry Rules:** Verify that data entry rules ensure inputs cannot be entered in the wrong fields (i.e. temperature into fluid dilution).

(j) **Stagnant data:** Verify that data used in previous calculations is not accidently used in subsequent calculations. For example, the application may be designed such that when the application is terminated all the data associated with any previous calculation is automatically cleared/removed.

(k) **Data verification:** Verify the data when transferring from paper based HOT to eHOT. Errors should be reported and the process reviewed to ensure there are not any systemic issues.

(l) **File Transfers:** Where files are transferred electronically, use checksums to ensure the end user receives the correct, uncorrupted file.

(m) **Databases:** For database driven applications, ensure the database is not corrupted during read/write events. Ensure backup of all versions and a log of all development activities are maintained for audit and traceability purposes.

(n) **Accuracy of Regression Coefficients:** For apps using regression coefficients, verify all regression coefficients have been programmed correctly.

(o) **Restrictions on Regression Coefficients – Regression Publication:** For apps using regression coefficients, verify that all restrictions set out in the Transport Canada Regression Information publication have been programmed.

(p) **Restrictions on Regression Coefficients – Holdover Time Determination System (HOTDS) Exemption:** For apps using regression coefficients, verify that all restrictions all restrictions set out in all applicable HOTDS exemption have been programmed.

B3.0   NON TECHNICAL EVALUATION

(1) In addition to the technical evaluation, the overall acceptability of the performance calculation should be assessed.

(a) Data modification and calculation times: should be within acceptable limits to allow quick recalculations in case of dynamic operational conditions like meteorological changes.

(b) GUI: Should follow guidelines for ease and accuracy of use by users.

B4.0   COMPLIANCE WITH AC 700-020 (TRANSPORT CANADA)

(1) The eHOT app should consider the applicable requirements for electronic flight bags (EFBs) set out in AC 700-020.

B5.0   CHECKLIST

(1)   A checklist is provided below for the testing and evaluation requirements set out in this Appendix.

Checklist for Electronic Holdover Time Application Testing and Evaluation

Note: The following technical checks and verifications must be completed, at a minimum. The checks should be made against the information contained in the most current version of the Transport Canada holdover time guidelines publication.

Technical Evaluation (App Developer)		
Has every possible combination of inputs been checked to ensure the provided eHOTs are correct (can be done manually or using a test tool)?	Yes No	□ □
Has the app been checked to ensure all notes and cautions applicable to each HOT are provided accurately?	Yes No	□ □
Have all precipitation types encompassed by the HOT guidelines been accounted for in the app, either by the provision of eHOTs or by an indication that no holdover times are available for the precipitation type?	Yes No	□ □
If lowest operational use temperatures (LOUTs) are incorporated in the app, have they been checked for accuracy against the LOUTs provided in the HOT guidelines?	Yes No N/A	□ □ □
Has the app been checked to ensure that no eHOT is provided under conditions where no HOTs exist (see A2.1 in Appendix A)?	Yes No	□ □
Has the visibility vs. snowfall intensity table been incorporated or referenced in the app?	Yes No	□ □
Has compliance with (Appendix A) minimum operational performance specification, excepting sections A3.1 (1)(a), A3.3(2), A4.1(1) and A4.3(2), been documented?	Yes No	□ □
Has the method of integration of the notes and cautions into the app been documented?	Yes No	□ □
Has it been verified that data entry rules ensure that inputs can not be entered in the wrong fields (i.e. temperature into fluid dilution, etc.)?	Yes No N/A	□ □ □
Has the app been checked to ensure data used in previous calculations can not be used in subsequent calculations?	Yes No N/A	□ □ □
Has the data been verified to ensure accuracy when transferring from paper based HOTs to eHOTs.	Yes No	□ □
Have checksums been used to ensure that when files are transferred electronically, the end user receives the correct, uncorrupted file?	Yes No N/A	□ □ □

If the app is database driven, has the app been checked to ensure the database is not corrupted during read/write events?	Yes No N/A	□ □ □
Has a procedure been put in place to log all development activities for audit and traceability purposes?	Yes No	□ □
Have all regression coefficients been verified for accuracy?	Yes No N/A	□ □ □
Has the app been programmed to address all restrictions set out in the Transport Canada Regression Information publication?	Yes No N/A	□ □ □
Has the app been programmed to address all restrictions set out in the applicable Transport Canada HOTDS exemption?	Yes No N/A	□ □ □

Technical Evaluation (Operator)		
Has compliance with (Appendix A) minimum operational performance specification, sections A3.1 (1)(a), A3.3(2), A4.1(1) and A4.3(2) been documented?	Yes No	□ □

Non-Technical Evaluation (Operator)		
Are data modification and calculation times within acceptable limits to allow quick recalculations in case of dynamic operational conditions, i.e. meteorological changes?	Yes No	□ □
Does the graphical user interface (GUI) allow for ease and accuracy of use?	Yes No	□ □

Comments

Limitations or procedures for operational use