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Subject – Aircraft Deicing – Central Deicing Facility (CDF) Specific Procedures

From: Aviation Services

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Background and Impact: Deicing/anti-icing services are performed at the CDF by Greater Toronto Airports Authority (GTAA) Deicing Operations solely in accordance with the Transport Canada (TC) accepted GTAA Ground Deicing Operations Manual (GDOM). As per TC, a Transport Canada accepted deicing operation has all of the necessary elements to provide an acceptable deicing and anti-icing service. In the case of TC acceptance of a deicing operation, it is understood that the service being provided by GTAA Deicing Operations does meet the intent of the Canadian Aviation Regulations, and therefore should fulfill the requirements of an Air Operators approved ground icing program. As such, the GTAA GDOM may be used and inserted into an air carriers approved ground icing program.

(Ref. Canadian Aviation Regulation (CAR) 602.11; Commercial Air Service Standards (CASS) 622.11; Transport Canada Commercial and Business Aviation Advisory Circular No. 200; and Transport Canada TP14052 Guidelines for Aircraft Ground Icing Operations (2nd Ed.), Sec. 14.2.3).
Deicing/Anti-icing Fluids and Holdover Time Guidelines

Deicing Operations currently utilizes the following fluid types:

Type I – Dow UCAR™ ADF Concentrate
Ethylene Glycol
Diluted to meet lowest operational use temperature application requirements.

Type IV – Dow UCAR™ Endurance EG106
Ethylene Glycol
Applied at 100% concentration.

Should there be a change to the fluids listed above, this will be communicated to air carriers and fixed base operators.

Transport Canada Holdover Time (HOT) Guidelines are available through the Transport Canada website, www.tc.gc.ca. An Advisory Circular (AC 700-040) regarding Supplemental Holdover Timetables and Regression Information for Type II and Type IV Fluids in temperatures below -14°C have also been published. The responsibility for the application of holdover time guidelines data and operation in ground icing conditions utilizing this data remains with the flight crew.

Engines Running Deicing and Aircraft Configuration

All aircraft shall be deiced at the Central Deicing Facility (CDF) with engines running, unless advised otherwise by PAD CONTROL and/or ICEMAN.

To expedite the overall deicing process, if able, aircraft should be configured for de/anti-icing prior to entering the deicing bay.

When configured for, and for the duration of the de/anti-icing process, aircraft engines shall be set at ground idle. For propeller aircraft, propellers shall also be set in feather. At no time are adjustments to be made to engine thrust settings (including the use of
anti-icing systems) and/or propeller configuration during the de/anti-icing process.

When configured for and during de/anti-icing, aircraft surfaces shall not be moved or reconfigured. Should the air carrier or flight crew have special requirements where aircraft reconfiguration may need to occur during the de/anti-icing process (i.e. deicing with flaps extended, and anti-icing with flaps retracted, etc.); or should deicing personnel require the aircraft to be reconfigured during the de/anti-icing process (i.e. retraction or extension of flaps during under wing deicing, etc.), this shall be coordinated between flight crew and PAD CONTROL and/or ICEMAN. In these circumstances, do not reconfigure the aircraft until PAD CONTROL and/or ICEMAN has granted approval to do so. PAD CONTROL and/or ICEMAN will verify all equipment is safely away from the surfaces or device to be reconfigured and provide approval. Once the aircraft is reconfigured, notify PAD CONTROL and/or ICEMAN, in order to continue with the de/anti-icing process.

Any operational requirements to perform an engine run-up shall be coordinated through GTAA Deicing Operations. This requirement will only be granted once CDF operational safety has been satisfied. In the event this cannot be accommodated at the CDF, on departure from the CDF, notify Toronto GROUND of this requirement, so this can be accommodated elsewhere on the airfield.

**Packed Snow/Ice in Aircraft Flap Tracks and Under Spoilers and Leading Edge Slats**

Under certain conditions, contamination of snow or ice within hidden areas of the wing may exist. This contamination cannot be seen or removed effectively while the flaps, spoilers, and slats are retracted. This is often only discovered after the deicing process is complete and the flight crew configures the aircraft for take-off. To effectively address this challenge, air carriers and flight crews are reminded to check hidden areas at the gate/stand and advise the CDF upon Pad entry when this contamination requires removal. (Ref. GTAA GDOM Section 1.4.8 (2)).
Engine Inlet and Propeller Contamination

Air carriers are responsible to inspect and remove any contamination from the engine inlets, fan blades, propellers, and engine sensors prior to engine start-up and aircraft departure from the gate for deicing. For aircraft with the #2 engine mounted on the aft rear fuselage, air carriers are also responsible to perform these inspections prior to departure, as the CDF is not equipped to perform these inspections. (Ref. GTAA GDOM section 1.4.8 (3)).

In certain circumstances and meteorological conditions, ice can accumulate in engine inlets during the taxi out process. All measures should be taken to mitigate this phenomenon however, should “barrel icing” occur en route to the CDF, engine inlet deicing can be performed at the CDF provided the air carrier and flight crew accept the GTAA Deicing Operations engine inlet deicing procedure. (Ref. GTAA GDOM, Section 3.13.2. g.). Otherwise the flight will be instructed to return to the gate, apron or holding area.

Propeller Deicing Protocol

The protocol described below is applicable to propeller aircraft that require an engine shutdown at GTAA Deicing Facilities (i.e. CDF or the Hangar Deicing Facility (HDF)) to enable deicing services and conformance to Canadian Aviation Regulation (CAR) 602.11.

1. PREVENTIVE MEASURES PRE-GTAA DEICING FACILITIES

During periods where the temperature is 5°C or less, air carriers will be responsible to mitigate and where possible, remove frozen contamination on propellers through the use of “propeller socks”, hangar parking or other methods that fall within the air carrier’s approved procedures.

2. PROPELLER DEICING AT GTAA DEICING FACILITIES

To receive propeller deicing service that requires an engine shutdown at GTAA Deicing
Facilities, the following procedures apply if the measures described in Section 1 – Preventive Measures Pre-GTAA Deicing Facilities have been unsuccessful in the mitigation of the requirement for engine shutdown to receive deicing services:

**NON-DEPARTURE TRAFFIC MANAGEMENT INITIATIVE (D-TMI)**

With as much notification as possible prior to pushback, the air carrier shall advise the Shift Manager, Deicing Operations at (416) 776-3423 of propeller deicing requirement, the associated flight number and the anticipated time of pushback.

**ACTIVE D-TMI**

Aircraft requiring propeller deicing during an active D-TMI shall utilize two (2) D-TMI slots assigned to the air carrier. One (1) slot for the flight receiving the propeller deicing service and one (1) additional slot within the same departure hour. If an air carrier does not have a second departure within the same hour, acceptance of the request will be at the sole discretion of the Shift Manager, Deicing Operations;

With as much notification as possible prior to pushback, the air carrier shall notify Shift Manager, Deicing Operations at (416) 776-3423 of propeller deicing requirement, the associated flight number, and the anticipated time of pushback.

3. **PENALTY FOR NON-CONFORMANCE**

In the event procedures described in Section 2 – Propeller Deicing at GTAA Deicing Facilities are not adhered to and an engine shutdown request is received within GTAA Deicing Facilities without prior notification, the flight will be required to return to gate, or a holding area on the airfield until such time that it can be processed as per procedures described in Section 2.
**Tactile Inspection**

Air carriers and/or flight crew are responsible to perform tactile inspections on the gate prior to departure where and when conditions warrant. (Ref. GTAA GDOM, Section 1.4.8 (4)).

Should the air carrier and/or flight crew require a tactile inspection at the CDF as part of the post deicing/anti-icing inspection, the flight crew shall advise PAD CONTROL and/or ICEMAN upon pad entry, prior to deicing/anti-icing, regardless of the aircraft type. As CDF exclusively uses 1-man enclosed cab equipment, advance notification is required to ensure that additional personnel and specialized equipment required to perform the tactile inspection are in place.

When requested, the entire length of both wings, from the leading edge and aft shall be inspected (as far back as the inspector can reach). Should any other surfaces or areas require inspection, or if there are additional or specialized inspection requirements, flight crew shall notify PAD CONTROL and/or ICEMAN when the initial tactile inspection request is made.

Note, when this inspection is requested, it will be performed after deicing (Type I application) and prior to anti-icing (Type IV application) (if required), as an effective tactile inspection cannot be performed once Type IV is applied to the surface to be inspected. The CDF is not authorized to perform tactile inspections once Type IV is applied in order to operate in conditions where the holdover time may be exceeded and/or in conditions where no holdover time exists (i.e. Ice Pellets, Hail, Moderate/Heavy Freezing Rain, Heavy Snow, etc.).

At the discretion of the Shift Manager, Deicing Operations, PAD CONTROL and/or ICEMAN will advise if engines shutdown may be required in order to safely conduct this inspection (i.e. inspection to be performed on aircraft with wing mounted engines/propellers, poor weather or surface conditions, high winds, etc.).
Under Wing/Undercarriage Inspection and/or Deicing

Air carriers and/or flight crews requiring an under wing/undercarriage inspection and/or deicing **SHALL** advise the PAD CONTROL and/or ICEMAN upon entry to the pad. (Ref. GTAA GDOM Section 1.4.8 (5)).

Aircraft Anti-icing Fluid Application

When anti-icing fluid treatment is required, fluid will be applied to the horizontal wing and horizontal tail surfaces only.

Air carriers and/or flight crews requiring additional anti-icing treatment, including on the vertical stabilizer/rudder; fuselage; and/or winglets **SHALL** advise PAD CONTROL and/or ICEMAN upon entry to the pad. (Ref. GTAA GDOM, Section 1.4.8 (6)).

Fluid Blending

Aircraft Deicing Fluid (ADF) Type I will be blended from its concentrated form to meet the requirements of the Lowest Operational Use Temperature (LOUT). The freeze point of Type I fluid shall be at least 10°C below the ambient temperature. ICEMAN will advise the flight crew, “Deiced with Type I”.

If requested, the concentration of Type I will be communicated to the flight crew.

Type IV Anti-icing Protocol

The “Snowfall Intensities as a Function of Prevailing Visibility” located in Table 7 of the Transport Canada Holdover Time (HOT) Guidelines – Current Edition will be the primary decision factor in determining the use of Type IV. In conjunction with the most recent METAR/SPECI issued by Nav Canada this chart will be referenced to determine the current weather condition.

Subject to Ground Icing Conditions, upon entry to the deicing bay, the flight crew will be
advised of the fluids in use ("mode").

In conditions of very light and light snow (see table) the CDF will be in “Type I Mode”. When in “Type I Mode”, blended DOW UCAR ADF Concentrate will be applied. In all other precipitation conditions and/or if extended holdover times are anticipated due to runway configuration, launch delays and/or increased snowfall is expected the CDF will be in “Type IV Mode”. When in “Type IV Mode”, Type I followed by Type IV anti-icing fluid will be applied.

The flight crew \textbf{SHALL} request any deviation to the “Type I Mode” or “Type IV Mode”.

Note: Should the flight crew decline Type IV fluid, no priority would be granted to any aircraft proceeding to a departure runway regardless of the final fluid application the aircraft has received.

If the flight crew exercises their right, and declines Type IV fluid in conditions where no holdover time guidelines exist (heavy snow, ice pellets, moderate and heavy freezing rain and hail) PAD CONTROL and/or ICEMAN may decide to have the flight crew confirm their decision. (Ref. GTAA GDOM, Section 1.4.7).

The responsibility for the application of holdover time guidelines data and operation in ground icing conditions utilizing this data remains with the air carrier and their flight crew.

Air carriers and fixed base operators are requested to post and distribute this Directive to all appropriate flight crew and ground personnel.

Craig Bradbrook
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