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NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Operations Group Chairman
Q400 CFM Operations Bulletin 09-001

(6 Pages)

COLGAN AIR

OPERATIONS BULLETIN Q400 CFM #09-001

TO:	Q400 CFM Manual Holders
FROM:	Q400 Fleet Manager
SUBJECT:	Speed Bugs for Landing, Icing Definitions and Ice Equipment Operation
ISSUE DATE:	2/20/2009
EFFECTIVE:	UPON RECEIPT
BULLETINS IN EFFECT:	08-009; 08-010; 08-011; 08-012; 08-013; 08-014; 08-015; 09-001
ASSOCIATED BULLETINS:	NONE

INSTRUCTIONS:

Staple the Q400 CFM Bulletin #09-001 to the front pages reserved for bulletins in the Q400 CFM.

PURPOSE:

This Bulletin is to clarify and reinforce existing policies and procedures, and provide additional guidance of ice protection equipment.

1) Bugging of speeds for landing and how to locate those speeds on the performance pages of UNILINK (ACARS).
2) Clarify and expand the definitions related to icing equipment.
3) Provide additional guidance of ice protection equipment operation.
4) Introduce the use of "Ice Protection Levels" and the associated charts which identify the appropriate equipment to be used for safe flight in icing conditions.

PROCEDURE:

1) Speed Bugs for Landing

V_{REF}, V_{REF} (ICE), V_{GA}, and V_{GA} (ICE) shall be obtained for every landing when icing conditions may be expected. The appropriate speeds must be briefed during the Approach Briefing. When exiting icing conditions, before landing:

Use V_{REF} Whenever the REF SPEEDS Switch is OFF for landing.
Use $V_{REF(ICE)}$ Whenever the REF SPEEDS Switch is in INCR for landing.

Solid Blue Bug - V_{REF} or V_{REF} (ICE)
Open Blue Bug - V_{GA} or V_{GA} (ICE)

Ice Increments for V_{GA} & V_{REF}		
Flaps	V_{GA}(ICE)	V_{REF}(ICE)
15	V_{REF} + 20	V_{REF} + 20
35	-	V_{REF} + 15

UNILINK (ACARS)

To ensure proper ice corrected speeds are received for V_{REF} and V_{GA} it is imperative the following key words be entered into the performance pages of UNILINK (ACARS).

Takeoff

Reference Section 12, Page 31 of 60 in the Q400 CFM for the completion of the appropriate field on ACARS page T/O COND 2/2.

Use of Key Word ICING

Refer to "Definition of Icing Conditions on the Ground and on Takeoff" and "Definition of Icing Conditions during Flight" above. The key word "ICING" is associated with the term "Icing Conditions" that can be

included on the Takeoff Analysis Remarks and the Landing Analysis Remarks on the Dispatch Release and in the Takeoff and Landing Report (TLR) ACARS data.

Use of Key Word FLUIDS
Anytime there are De-icing fluids present on the aircraft the key word "FLUIDS" shall be entered into the appropriate field on ACARS Page T/O COND 2/2.

Landing

Reference Section 12, Page 57 of 60 in the Q400 CFM for the completion of the appropriate field on ACARS page LAND COND 2/2.

Use of Key Word ICING
Refer to "Definition of Icing Conditions on the Ground and on Takeoff" and "Definition of Icing Conditions during Flight" above. The key word "ICING" is associated with the term "Icing Conditions" that can be included on the Takeoff Analysis Remarks and the Landing Analysis Remarks on the Dispatch Release and in the Takeoff and Landing Report (TLR) ACARS data.

Use of Key Word EICE
EICE refers to "Enroute Ice Accumulation" which is defined as ice accumulation on any part of the aircraft during any phase of flight. The key word "EICE" is associated with the term "Ice Accumulation" that can be included on the Landing Analysis Remarks on the Dispatch Release and in the TLR data for the ACARS Landing Data only.

2) Ice Protection Definitions

Engine and Propeller

On Ground & Takeoff

Icing conditions exist on the ground and for takeoff when SAT is 10°C or colder, and:
- The visibility is 1 mile or less with visible moisture in any form is present, e.g. clouds; fog, or
- Rain, snow, sleet, or ice crystals are present, or
- When operating on ramps, taxiways, or runways where surface snow, ice, standing water, or slush may be ingested by the engines or freeze on engines, nacelles, or engine sensor probes.

In Flight

Icing conditions exist during flight when SAT is 5°C or colder and:
- The visibility is 1 mile or less with visible moisture in any form is present, e.g. clouds; fog, or
- Rain, snow, sleet, or ice crystals are present.

REF SPEEDS Switch

For REF SPEEDS Switch INCR operation icing conditions exist during flight when SAT is 5°C or colder and:
- The visibility is 1 mile or less with visible moisture in any form is present, e.g. clouds; fog, or
- Rain, snow, sleet, or ice crystals are present

OR
- Ice accretion is visible, or
- "Ice Detected" Advisory appears on the ED.

Airframe De-icing Boots

Icing conditions exist when:
- Ice accretion is visible, or
- "Ice Detected" Advisory appears on the ED.

3) Ice Protection Operation

Engine

The OPN position shall be selected for the ENGINE INTAKE Anti-icing for all flight conditions and during all ground operations regardless of SAT.

Propeller

Propeller de-ice system must be activated in icing conditions by selecting the PROPS selector to ON. The effectiveness of the propeller de-icing system can be improved and propeller vibration reduced by operating the propellers at 1020 rpm.

REF SPEEDS Switch

The REF SPEEDS switch shall be placed in the INCR setting when in icing conditions, ice accretion visible or when the "Ice Detected" Advisory appears on the ED.

WARNING

REF SPEEDS Switch in INCR is prohibited below 1000' AGL during takeoff.

WARNING

REF SPEEDS Switch shall not be changed below 1000' AGL during landing.

CAUTION:
If airspeed is within 20 Knots of the Low Speed Cue, the airspeed must be increased before REF SPEEDS Switch is selected to INCR or a stall warning may occur.

The REF SPEEDS Switch may be selected OFF when the aircraft is no longer in icing conditions and the aircraft is aerodynamically clean, which is indicated when all ice is removed from the visible leading edges and wing tips.

CAUTION:
If V_{REF} [not V_{REF} (ICE)] is used for landing, the REF SPEEDS Switch must be selected to OFF or a stall warning may occur at a speed higher than V_{REF}.

Airframe De-icing Boots Operation

Ice accumulation shall be monitored to confirm that the appropriate airframe mode rate is selected. The AIRFRAME MODE SELECT selector must be operated in the FAST mode during takeoff above 1000' AGL, holds, approaches, or landings. SLOW mode can be selected during cruise. If the ice accumulation rate is at a point where the SLOW mode is unable to efficiently remove the ice, the FAST mode must be selected. When the Airframe De-ice boots on, monitor the advisory lights to ensure they illuminate sequentially in pairs for normal operation.

The AIRFRAME MODE SELECT selector can be turned OFF when the aircraft is aerodynamically clean, which is indicated when all ice is removed from the visible leading edges and wing tips.

4) Ice Protection Levels Discussion

The proper response for any "Ice Protection" checklist item shall be the appropriate Ice Protection Level as listed below However, the Ice Protection Level may be changed at anytime above 1000' AGL. Any changes to the Ice Protection Level will be stated by both crewmembers.

Level One –
For all flight conditions and on the ground

- ENGINE INTAKE - OPN
- PITOT/STATIC PORTS - STBY, 1, 2 (ON)

Level Two –
Flight
SAT 5° C or colder and visible moisture, or 1 mile visibility or less in clouds.

Ground Ops and Takeoff
SAT 10° C or colder and visible moisture or 1 mile visibility or less with fog, or when operating on ramps, taxiways, or runways where surface snow, ice, standing water, or slush may be ingested by the engines or freeze on engines, nacelles, or engine sensor probes.

- Level One items
- PROPS - ON
- WINDSHIELD HEAT - NORM (OFF or WARMUP during ground ops)
- REF SPEEDS Switch - INCR(OFF for takeoff below 1000' AGL)

WARNING

REF SPEEDS Switch in INCR is prohibited below 1000' AGL during takeoff.

WARNING

REF SPEEDS Switch shall not be changed below 1000' AGL during landing.

CAUTION:
If airspeed is within 20 Knots of the Low Speed Cue, the airspeed must be increased before REF SPEEDS Switch is selected to INCR or a stall warning may occur.

The Ice Protection Level can return to Level 1 from Level 2 when the aircraft is no longer in icing conditions and the aircraft is aerodynamically clean, which is indicated when all ice is removed from the visible leading edges and wing tips.

CAUTION:
If VREF [not VREF (ICE)] is used for landing, the REF SPEEDS Switch must be selected to OFF or a stall warning may occur at a speed higher than VREF.

Level Three –
Ice accretion visible or when "Ice Detected" Advisory appears on ED.

- Level One and Two items
- AIRFRAME MODE SELECT
  - FAST during:
    - Takeoff above 1000' AGL
    - Holds
    - Approaches
    - Landings
    - Cruise when SLOW Mode is insufficient to remove accumulated ice based upon rate of ice accretion.
  - SLOW During:
    - Enroute Phases (cruise flight and climbs and descents during cruise) when SLOW Mode is sufficient to remove accumulated ice based upon rate of ice accretion.

The Ice Protection Level can return to Level 2 from Level 3 when the aircraft is aerodynamically clean, which is indicated when all ice is removed from the visible leading edges and wing tips.

Ice Protection Level & V Speed Ice Increment Charts

The following charts will be inserted into the Colgan Air Deicing Guide.

ICE PROTECTION LEVELS			
LEVEL	**1**	**2**	**3**
DEFINITION	All Flight Conditions and on the Ground	On Ground and Takeoff: 10° C or colder with visible moisture, or 1 mile visibility or less with fog and when surfaces are contaminated. During flight: SAT 5° C or colder and visible moisture, or 1 mile visibility or less in clouds.	Ice accretion visible or when "Ice Detected" Advisory appears on ED
EQUIPMENT	ENGINE INTAKE – OPN PITOT/STATIC PORTS -STBY (ON) -1 (ON) -2 (ON)	LEVEL ONE ITEMS -ON PROPS – ON WINDSHIELD HEAT -NORM (OFF or WARMUP during ground ops) REF SPEEDS -INCR (OFF for takeoff below 1000' AGL)	LEVEL TWO ITEMS -ON AIRFRAME MODE SELECT -FAST • Takeoff above 1000' AGL • Holds • Approaches • Landings • Cruise -SLOW • Enroute Phases if sufficient to remove ice

Ice Increments for V_{GA} & V_{REF}		
Flaps	V_{GA}(ICE)	V_{REF}(ICE)
15	V_{REF} + 20	V_{REF} + 20
35	-	V_{REF} + 15

CLOSING:

If you have any questions regarding this Bulletin please contact me at 703-656-2451 or pdweston@colganair.com.