

INFO TECH

COLD WEATHER OPERATIONS A320 FAMILY

Le cold weather operations sono procedure ampiamente descritte negli AOM part B A320F ed integrate con le policy di compagnia riportate nell'OM part A. Lo scopo della presente info tech è quello di fornire quelle informazioni considerate "nice to know" per migliorare le capacità di airmanship del personale PNT. In tutti i casi deve essere fatto riferimento alla documentazione ufficiale di Compagnia

1. Ground Operations

L'estratto della PRO-NOR -SUP-ADVWXR , exterior walkaround ,riporta quanto segue

Ident.: PRO-NOR-SUP-ADVWXR-B-00020700.0001001 / 07 JUL 17

EXTERIOR WALKAROUND

SURFACES CHECK FREE OF FROST, ICE AND SNOW

L2 Check critical surfaces: leading edges, upper wing surfaces, vertical and horizontal stabilizers, all control surfaces, slats and flaps.

Note: Thin hoarfrost is acceptable on the upper surface of the fuselage. Refer to LIM-ICE_RAIN Definition of Thin Hoarfrost

On the underside of the wing tank areas, a maximum layer of 3 mm (0.125 in) of frost is acceptable.

L1 **LANDING GEAR**.....CHECK FREE OF FROST, ICE AND SNOW

L2 Check gear assemblies, lever locks, tires and doors

L1 **ENGINES**.....CHECK FREE OF FROST, ICE AND SNOW

L2 Check inlets, inlet lips, fans, spinners, fan exhaust ducts, reversers assemblies.

L1 **ENGINE FANS**.....CHECK FREE ROTATION

In aggiunta a quanto previsto dalle procedure Airbus. la ditta CFM fornisce alcune informazioni supplementari;

Normal Operations

Icing conditions : Ground operations

Alitalia



“How much fan and spinner ice build up is acceptable before de-icing the engine?”



Normal Operations

Icing conditions : Ground operations

Alitalia



- Unfortunately, there is no one-size fits all recommendation
 - Environmental variations
 - Airport operations
 - Airline policies & procedures
- A conservative approach is recommended, but may not always be practical
 - De-icing equipment availability
 - Maintenance crew availability
 - Schedule constraints



Normal Operations

Icing conditions : Ground operations

Alitalia



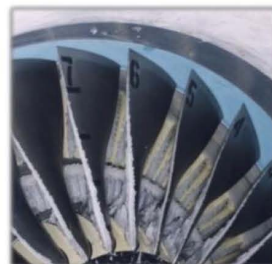
General guidelines:

1. Spinner ice/snow with no or thin layer of ice/snow visible on fan blades and booster area

Accomplish the ground ice shed procedure per the SOP/FCOM

2. Ice/snow covered spinner with heavy accumulation on fan blades and booster area

Discuss with maintenance prior to push back



Engine deicing not an option...accomplish the ice shed procedure early on taxi-out

Spraying aircraft deicing fluid into the engine...

NOT approved

- Reduces engine efficiency
- Hardware corrosion

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Normal Operation

Ground Operation in Icing Conditions

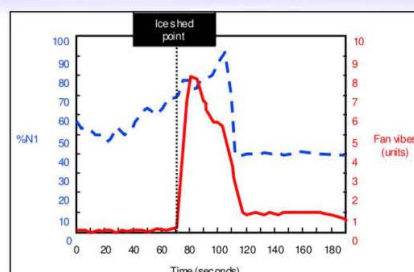
➤ ANTI-ICE ON

- Anti-ices inlet lip
- During extended operation (more than 30 minutes):
 - **Accelerates engines to 70% N1 and hold for 30 seconds** (or to an N1 and dwell time as high as practical, considering airport surface conditions and congestion)



- Allows immediate shedding of fan blade and spinner ice
- De-ices stationary vanes with combination of shed ice impact, pressure increase and temperature rise

* Note: In addition to the above when in freezing rain, drizzle or fog, heavy snow ice shedding may be enhanced by additional runups at intervals not to exceed ten minutes.



- **Perform this procedure every 30 minutes and just prior to or in conjunction with the takeoff procedure**, with particular attention to engine parameters prior to final advance to takeoff thrust

2. Take off charts

L'estratto della PRO-NOR -SOP Cockpit preparation riporta quanto segue:

 A320-216 Enhanced FLIGHT CREW OPERATING MANUAL	PROCEDURES NORMAL PROCEDURES STANDARD OPERATING PROCEDURES - COCKPIT PREPARATION
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Ident.: PRO-NOR-SOP-06-D-00011240.0001001 / 07 JUL 17

TAKEOFF DATA INSERTION (PERF TAKEOFF PAGE):

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Note: The PF calculates and checks takeoff performance data by means of Runway Weight Limitation tables or ACARS TODC (Refer to PER-TOF-ACR Takeoff Weight Computation Via ACARS).

When the Loadsheets is not available, or Loadsheets data are not confirmed by the Ramp Agent, the PF may use OFP ZFW data provided the Take-off performance validation is carried out BEFORE PUSHBACK OR START as per PRO-NOR-SOP-07. Refer to GB 8.4.2.1.1.

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- * V1, VR, V2 INSERT
- * FLX TO TEMP INSERT
- * THR RED/ACC altitude SET or CHECK
- * ENG OUT ACC altitude SET or CHECK
- * FLAPS/THS reminder INSERT
- * TO SHIFT AS RQRD

Enter the takeoff SHIFT distance, if takeoff is to be from an intersection. This is essential for position updating at takeoff and, consequently, for navigation accuracy.

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- * QRH-OPS.3A / MCDU GREEN DOT COMPARE

In aggiunta a quanto riportato nell'FCOM l'Airbus ha pubblicato le "getting to grips with cold weather operations" che riportano le seguenti informazioni:

E. LOW TEMPERATURE EFFECT ON ALTIMETRY

- Temperature below ISA:
 - ➡ Aircraft **true altitude below indicated altitude**
- Very low temperature may:
 - ➡ Create a potential terrain hazard
 - ➡ Be the origin of an altitude/position error.
- Corrections have to be applied on the height above the elevation of the altimeter setting source by:
 - ➡ Increasing the height of the obstacles, or
 - ➡ Decreasing the aircraft indicated altitude/height.
- Minimum OAT should be established and specified for using approach and takeoff procedures if FINAL APPR mode (V-NAV in approach) use is intended.
- When OAT is below the minimum temperature indicated on a takeoff chart, the minimum acceleration height/altitude must be increased.

E3 TAKEOFF CHARTS

E3.1 Acceleration altitude

The Acceleration altitude specified on the Airbus takeoff chart is the (minimum) Indicated Altitude at which the pilot must perform the acceleration altitude, in case of an engine-out during takeoff. It ensures obstacle clearance.

The specified acceleration altitude is the highest of all the acceleration altitudes, after having applied temperature correction. It takes into account the lowest temperature of the table. In other words, it considers the maximum ISA deviation of the table.

Consequently, provided OAT is greater than the lowest temperature indicated on the chart, it is not necessary to adjust the published minimum acceleration height for the effect of low temperature.

On the contrary, **when OAT is lower than the lowest temperature of the takeoff chart**, the **published acceleration altitude has to be increased** by the value found in the FCOM's Low Altitude Temperature Correction Table.

Remark: Low Altitude Temperature Correction Table has to be entered with Δ ISA. Replace Δ ISA by the difference between the OAT and the lowest temperature of the table.

Le procedure "customizzate" di one engine out ed acceleration altitude, presenti nelle runway tables di compagnia, sono calcolate sino ad OAT di -5 gradi. La stessa quota di accelerazione OEU compare anche nei dati di performances se forniti da ACARS. Particolare attenzione quindi dovrebbe essere riposta alle indicazioni fornite dal costruttore. Informazioni che riguardano anche le procedure di Go-Around se rientrano nelle disposizioni riportati nell OM part A di Compagnia.

3. Takeoff Flex

L'estratto FCTM PR-NP SP Adverse weather proibisce l'utilizzo della Flex Thrust in decolli su piste contaminate Tuttavia il costruttore fornisce delle indicazioni sull'uso della potenza ridotta in caso di "low OAT" su piste non SSW

E3.2 Takeoff margins

When the temperature is very low, the difference between OAT and flex temperature may be very large. In this case, the following question may be asked:

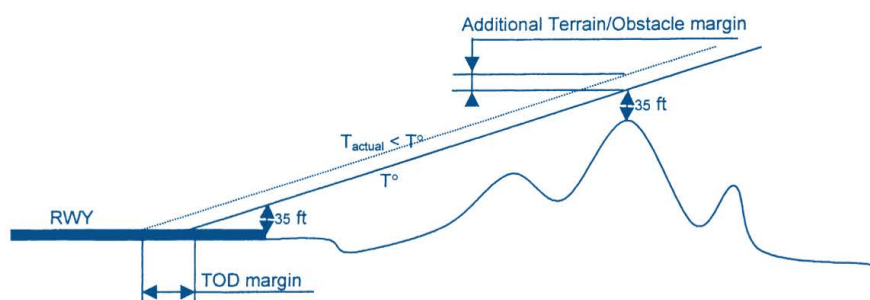
«Is the takeoff chart data still useable, and is there still a sufficient margin between the terrain/obstacles and the takeoff flight path?»

The answer is «YES».

The reason is that:

- For a given selected flex temperature, the actual OAT does not affect the engine thrust. Therefore, the climb gradient is not modified.
- For the same IAS, the ground speed is lower when OAT is lower and, consequently
 - The margins with tire speed and brake energy limitations are increased,
 - The TOD and the ASD are decreased.

This signifies that a reduction in ground speed allows a higher margin above terrain/obstacle or a longer decision time than that defined by the regulations.



———— T/O Net Flight Path at T° (Thrust = TOGA)

..... T/O Net Flight Path with actual OAT ($T_{\text{actual}} < T_{\text{flex}} = T^\circ$)

4. Takeoff Fuel

D3.3 A319/A320/A321

A fuel temperature sensor is installed in each outer and inner cell on the A319 and A320, and in each wing tank on the A321.

Different means are provided to avoid flying below minimum allowed fuel temperature:

- The Flight Manual mentions:
«When using JET A:
If TAT reaches -34°C , call ECAM fuel page and monitor that fuel temperature remains higher than -36°C .»
- An ECAM advisory is activated as soon as fuel temperature in any tank reaches -40°C
- An ECAM warning «FUEL OUTER / INNER (FUEL WING on A321) TK LO TEMP» is activated when fuel temperature in any tank reaches -45°C .
On ground before takeoff, this warning is associated with «DELAY T.O» message.

4. Cruise

Il costruttore indica una procedura in caso di Fan/spinner ice manifested as vibration as ice partially sheds

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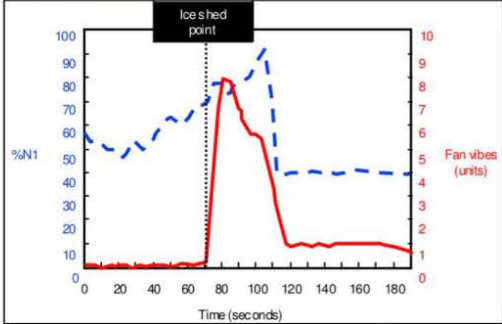
Normal Operation

Cruise

- **Avoid unnecessary use of ignition**
 - Conserves ignitor plug life

Cruise Operation in icing conditions

- **Only inlet cowl is anti-iced:**
use **ENG ANTI-ICE** per FCOM
- Fan/spinner ice manifested as vibration as ice partially sheds
 - **If vibration encountered in icing conditions or as a preventive measure when operating at 70% N1 or below in moderate to severe icing conditions, perform the following procedure (1 engine at a time):**
 - Reduce N1 to 45%
 - Increase N1 to 80% minimum then reduce as required for flight conditions
 - Repeat the procedure every 15 minutes
 - Centrifugal force, temperature rise, and pressure increase will remove ice



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