The Global Voice of Pilots

IFALPA

POSITION PAPER

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Take-off Performance Considering Inversions

CURRENT SITUATION

ICAO Annex 6 para. 5.2.6 states that "*in applying the Standards of this chapter, account shall be taken of all factors that significantly affect the performance of the aeroplane, including, but not limited to: the mass of the aeroplane, the operating procedures, the pressure-altitude appropriate to the elevation of the aerodrome, the runway slope, the ambient temperature, the wind, and surface conditions of the runway at the expected time of use, i.e. presence of snow, slush, water and/or ice, for landplanes, water surface condition for seaplanes. Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.*"

BACKGROUND

A rise of the OAT during climb-out at an inversion layer does happen often.
Whenever there is a condition that the engines are operating at or close to the maximum flat rated temperature, a temperature rise leads to a loss of thrust. This can be in a range of 8-12% for a rise of 10°K (Source: Francis Payeur, Airbus 11th Performance and Operations Conference).

IFALPA POSITION

IFALPA believes that para. 5.2.6 should read as follows:

ICAO Annex 6 para. 5.2.6 states that "*in applying the Standards of this chapter, account shall be taken of all factors that significantly affect the performance of the aeroplane, including, but not limited to: the mass of the aeroplane, the operating procedures, the pressure-altitude appropriate to the elevation of the aerodrome, the runway slope, the ambient temperature* ***(on ground and aloft)****, the wind and surface conditions of the runway at the expected time of use, i.e. presence of snow, slush, water and/or ice, for landplanes, water surface condition for seaplanes. Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.*"

If a temperature inversion in the atmospheric layer above airfield elevation is forecast or reported, the highest temperature should be taken into account for take-off performance calculation.