

Factual Report – Attachment 29

Atlas Air Turbulence Guidance

OPERATIONAL FACTORS

DCA19MA086

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- Whenever possible, avoid situations that would require the airplane to be brought to a complete stop.
- Avoid excessive braking. The presence of sand or dust will increase brake wear.

Secure Procedure

Do the normal Secure Procedure with the following modifications:

Cabin altitude MODE SELECTOR MAN [F]

Cabin altitude MANUAL control DESCEND [F]

Position the outflow valve fully closed to inhibit the intake of sand or dust.

Additional procedures for securing the airplane during sandy or dusty conditions may be needed. These procedures are normally done by maintenance personnel, and include, but are not limited to:

- Verify that engine covers, if applicable, are in place while the airplane is parked.
- Verify that airplane doors are closed.
- Verify that all openings are plugged or covered while the airplane is parked. Streamers should be used to remind personnel to remove before flight.
- Ensure all compartments closed.

Turbulence

In light to moderate turbulence, the autopilot and/or autothrottle may remain engaged unless performance is not desirable. Increased thrust lever activity and brief airspeed excursions of 10 to 15 knots can be expected if large wind, temperature, and pressure changes occur.

When the aircraft is operated at its optimum altitude based on weight, buffet boundary margins will normally be greater than 0.5g. Because of this, buffet and control margins are adequate for most conditions.

Recommendations for moderate or greater turbulence include:

Note: Keep the yaw dampers engaged. Excursions in sideslip and roll are minimized and, even though the rudder control may be more active, the structural loads imposed on the vertical tail are considerably reduced.

May 22, 2018

SP.16.31

During flight in light to moderate turbulence, the autopilot and autothrottle can stay engaged unless performance is objectionable. The turbulent air penetration speed is 290 knots/.78 Mach. Below 10,000 feet a speed between 240 and 250 knots provides adequate buffet margin.

[PAX]

Passenger Signs ON

Advise passengers to fasten seat belts prior to entering areas of reported or anticipated turbulence. Instruct flight attendants to check that all passenger seat belts are fastened.

N656GT through N659GT

Main Deck Alert switch PUSH

N656GT through N659GT

RTS Selector ON

Advise supernumerary passengers to fasten seat belts prior to entering areas of reported or anticipated turbulence.

[-300SF/BCF]

Main Deck Alert Selector RTS

RTS/FSB Selector ON

Advise supernumerary passengers to fasten seat belts prior to entering areas of reported or anticipated turbulence.

N643GT, N644GT, N650GT through N653GT, N655GT

If occupants in main cargo compartment:

Advise supernumeraries to fasten seat belts prior to entering areas of reported or anticipated turbulence.

MAIN CARGO ALERT switch Push

N650GT through N655GT

In moderate to severe turbulence:

Engine start selectors FLT

- Maintain wings level or bank less than 15° if a turn is necessary.
- Allow airspeed to vary, maintain attitude, and avoid large thrust changes. Do not allow airspeed to decrease and remain below turbulent air penetration speed because buffet margins are reduced and considerable time is required to regain speed. Sacrifice altitude if necessary and advise ATC.
- At high altitude, momentary Mach buffet may occur. It will not persist and should not be confused with low speed buffet.

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- Do not attempt to control the aircraft by reference to air data instruments. Do not make sudden large control inputs. Corrective actions to regain the desired attitude should be smooth and deliberate.
- Altitude variations are likely in severe turbulence and should be allowed to occur if terrain clearance is adequate. Control aircraft attitude first, then make corrections for airspeed, altitude, and heading.

Severe Turbulence

Severe turbulence should be avoided if at all possible. If severe turbulence cannot be avoided, an increased buffet margin is recommended. This can be obtained by descending approximately 4000 feet below optimum altitude.

The autothrottle should be OFF in severe turbulence. Set thrust for penetration speed and avoid large thrust changes. If operating at cruise thrust limits, it may be difficult to maintain cruise speed. If this occurs, select a higher thrust limit (if available) or descend to a lower altitude.

With autothrottle disengaged, the FMC generates a target thrust setting for cruise which is displayed on EICAS. Set thrust at or slightly above the target thrust indicator. Change thrust setting only as required to reverse an unacceptable speed trend.

Engine start selectorsCONT

Climb and Cruise

After takeoff and when established in a clean climb configuration, the autoflight system is recommended for flight through turbulence. To reduce pitch changes as the AFDS attempts to fly speed with elevators, climb and descend using vertical speed (speed on thrust) and cruise using altitude hold. During cruise, VNAV and ALT HOLD modes each fly speed on autothrottle and can be used in turbulence.

Descent

If severe turbulence is encountered below 15,000 feet and gross weight is less than the maximum landing weight, the airplane may be slowed to 250 KIAS in the clean configuration. Adequate stall margin exists under these conditions. Delay flap extension in an area of known turbulence as long as possible because the airplane can withstand higher gust loads in the clean configuration. Diversion to another airfield is the best policy if severe turbulence persists in the area.

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Manual Flight in Severe Turbulence

If manual flight in severe turbulence becomes necessary, trim the airplane for penetration speed, then do not change stabilizer position. Control the airplane pitch attitude with the elevators using the attitude indicator as the primary instrument.