

DCA24LA097

OPERATIONAL FACTORS

Attachment 5

United Airlines Flight Operations Manual [Excerpts]

June 18, 2024

TURBULENCE ACTION GUIDE

Reported/Impending Turbulence of Moderate or Greater Intensity (see <u>Adverse Weather>General</u> and <u>Flight Attendant Briefing>Turbulence / Cabin Communication</u>)			
Condition	Pilot Action	Reason	Flight Attendant Action
Turbulence of Moderate or Greater is Reported/ Impending.	Make PA: "Flight attendants, take your jumpseats."	Flight attendants need to be in their jumpseats within 5 minutes.	Flight attendants will have up to 5 minutes to take their jumpseats.
	Make PA: "Flight attendants, take your jumpseats in X minutes."	Flight attendants need to be in their jumpseats sooner than 5 minutes (indicate the minutes in the PA announcement).	Flight attendants will take their jumpseats in the minutes indicated.
Turbulence Improves/ Subsides	Make PA: "Flight attendants, check in."	It is safe for flight attendants to leave their jumpseat and resume duties.	Flight attendants leave their jumpseats and resume duties. A call from the Purser/ designee to the flight deck is made once they have verified flight attendant, passenger, and cabin status.

attendants, and minimize potential delays to our passengers. Items to be briefed include, but are not limited to the following:

- Introductions
 - FAM / FFDO / LEO / Jumpseat
 - Flight Time
 - Short Taxi / Delays
 - Weather
 - Turbulence / Cabin Communication
 - Cabin Mx Items
 - Security / Unusual Circumstances
 - Flight Deck / Lav Door Procedures
 - Greater than 50 NM Offshore / Life Vests
 - FA Coordination (T.E.S.T.)
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- **Introductions** Allow for an introduction of each crewmember present at the briefing. Provide the names of any pilots not present and known jumpseaters.
 - **FAM / FFDO / LEO / Jumpseat** Notify the flight attendants of all known security resources to include FAMs, FFDOs, armed LEOs, jumpseaters, etc. If FAMs are present and desire to brief the crew, have them do so.
 - **Flight Time** Review the planned flight time.
 - **Short Taxi / Delays** Review the possibility of a short taxi time and/or anticipated ground/flight delays, as it may relate to timing of the passenger safety briefing.
 - **Weather** Review all weather of concern for the flight.
 - **Turbulence / Cabin Communication** Review turbulence issues for the flight, to include approximately when the turbulence is expected (if known). If the weather requires the flight attendants to remain seated after takeoff or to be seated early on arrival, provide an estimate of the duration and the communication method to alert the flight attendants about when these concerns are valid or not valid. Review of Turbulence PA Commands may be prudent.
 - **Cabin Maintenance Items** Review any inoperative equipment that might impact the flight attendants or passengers and/or any MEL Aircrew Action that the flight attendants need to perform. If the Cabin App is unavailable, provide a reminder that notification of cabin discrepancies is preferred prior to the start of the descent phase.
 - **Security / Unusual Circumstances** Review any known security information and any unique security measures for the flight. Discuss any unusual circumstances that may affect the flight attendants. Address any questions or

Chapter 4**DISPATCH****Section 10****FLIGHT PLANNING POLICY****DISPATCH COORDINATION**

On international flights, Captains are **required** to contact Dispatch for a briefing if the flight is 6 hours or longer, unless determined by the Captain that overriding operational considerations exist preventing the briefing. Briefings may be conducted by any available means of communication.

If the flight is under 6 hours, Captains are not required but still encouraged to contact Dispatch. If prior to any flight the dispatcher determines there are significant operational concerns, a "Contact Dispatch" comment will be included in the Release COMMENTS section and contact with the dispatcher is **required** (FAR 121.601 & 121.603).

OPERATING PRIORITY AND EFFICIENCY**OPERATING PRIORITIES**

Make operating plans and route selections in accordance with United's operating priorities. Planning or conducting the flight for scenic or other interests not pertinent to best operating procedures is not authorized.

ROUTE AND ALTITUDE SELECTION

All flights will be dispatched and operated along the least-cost routing, with consideration to ATC constraints and hazardous weather. The least-cost route and altitude profile provides the lowest total sum of fuel, time, delay, and over-flight costs, while maximizing payload. If the route and/or altitude planned are not along the least-cost routing, the dispatcher must state the reason for the alternative altitude or route selection in the REMARKS section of the Release.

Dispatch may add EXTRA fuel for altitude/lateral deviations, or adjust the planned altitude/routing to **avoid and/or mitigate hazardous weather threats**. Hazardous weather is defined as follows:

- Area of known/forecast continuous moderate or severe turbulence intensity as indicated by WSI SIGMET or Flight Plan Guidance (FPG).
- Area of broken convection (BKN) or greater coverage (SOLID) as indicated by WSI SIGMET or FPG.
- Elevated ozone concentrations (non-filtered aircraft only) as defined by WSI products or FPG .
- Areas of volcanic ash as defined by WSI SIGMET or FPG.

WSI is the FAA-approved controlling weather provider. A combination of WSI SIGMETs, Flight Plan Guidance and PIREPs (considering aircraft type, time, location and altitude) must be considered in verifying areas of continuous moderate or greater turbulence.

the ACARS situation so that Dispatch knows to use positive contact procedures should a later amendment be required.

Note: *The dispatcher will make positive contact via ACARS or voice for any changes to the Release that occur after the Release Verification Check is completed by the pilots.*

CHANGES TO THE RELEASE AFTER TAKEOFF

If the Release can no longer be complied with due to changing conditions, coordinate with the dispatcher for a re-release or amendment. The dispatcher should be advised of any change in the aircraft capability, aircraft airworthiness, or meteorological conditions that would affect the flight.

To change either the destination or an alternate after the time of takeoff, whether redispach is or is not planned, all requirements of an original dispatch except MEL/CDL applicability must be met. The Captain and dispatcher must concur on the changes and both must amend their Releases (FAR 121.631). The controlling dispatcher advises all interested stations, giving details of the change.

REQUIRED DISPATCH REPORTS

For all flights the following events must be reported to Dispatch (ACARS or radio) as soon as practical (OpSpecs B043, B044, B343, and Exemption 8653):

- If actual ETA will exceed planned by more than **15 minutes**, or there is an accumulated deviation of plus or minus **5 minutes** from a previously reported estimate
- If cruise altitude varies by **4000 feet** or more from the flight plan.
- If a lateral deviation from the planned route exceeds **100 miles**.
- Any enroute failure of a flight deck **fuel quantity indicator**
- If it becomes apparent that all contingency fuel will be burned (i.e., ACF, EXTRA, and HOLD) and therefore **part of the reserve fuel will be burned**, coordinate a plan of action with Dispatch and provide the details of what occurred (e.g., holding at destination).
- A flight encounters **weather significantly different** than forecast, or any time moderate or greater turbulence is encountered.
- The flight is assigned enroute or arrival holding.
- Unplanned or sustained use of deicing or anti-icing systems.
- Assigned a CDR. See [Operating Information>Flight Planning>ATC Clearance>Coded Departure Route](#).
- When an ATC-initiated callsign change occurs.

- Changes in pitch or yaw, as well as any buffeting or stick shaker.
- The engagement of applicable flight control systems, autopilots, auto throttle, and yaw dampers, the phase of flight, and meteorological conditions.
- Relative position of other aircraft.
- How traffic was identified: ATC traffic advisory, TCAS, ADS-B In, or visual identification.

Note: *It is a benefit to report wake turbulence encounters to both ATC and through FSAP as the data is captured by two complimentary sources. This gives wake turbulence researchers more granular data that leads to refined procedures and separation distances.*

Severe Turbulence or Mountain Wave Activity

When experiencing severe turbulence or mountain wave induced altitude deviations of approximately 200 feet or greater, request an altitude change, off-airway vector, or reroute to avoid or vacate areas of severe turbulence or mountain wave activity. If encountered, contact ATC and report the situation. If necessary, include, "**unable RVSM due to turbulence (or mountain wave)**" in the report. Domestically, expect ATC to provide separation vectors for traffic at adjacent RVSM flight levels, until reporting clear of turbulence.

Non-RVSM Aircraft In RVSM Airspace

Non-RVSM compliant flights may be cleared to operate in RVSM airspace **only after prior coordination** with the ATC as follows:

Convective Weather Avoidance Non-RVSM aircraft may enter RVSM airspace up to FL 330 in order to top convective weather, and must exit the airspace as soon as the convective weather is no longer a factor.

Emergencies The use of RVSM airspace during an emergency by non-RVSM aircraft is acceptable.

ATC Workload-Permitting Basis On a workload-permitting basis, the following categories of non-RVSM aircraft may be authorized to operate with a 2000-foot vertical separation standard in RVSM airspace:

- Department of Defense aircraft.
- Flight conducted for aircraft delivery or certification.
- The aircraft was RVSM approved, experienced an equipment failure and is being flown to a repair facility.
- Humanitarian or air ambulance flights using a Medevac call sign.
- Other non-RVSM aircraft requesting climb/descent through RVSM airspace, provided preflight coordination occurs and normal continuous rate climb/descent is possible with no need to level off.

Severe Turbulence Large, abrupt changes in altitude and/or attitude and the aircraft may be momentarily out of control; typically causes large variations in indicated airspeed:

- Unsecured items are tipped over or tossed about.
- Standing or walking is impossible without holding on to part of the aircraft.
- Occupants are forced violently against seat belts.

Extreme Turbulence Aircraft is violently tossed about and is practically impossible to control; it may cause structural damage.

TURBULENCE ONSET TYPES

Reported/Impending

Moderate or greater turbulence reported/impending from other aircraft, WSI forecasts, SkyPath, Turbulence Auto Pirep System (TAPS) reports, or possible turbulence while deviating for weather.

Action Ensure the seat belt sign is on and make a PA announcement stating, "Flight attendants, take your jumpseats." Flight attendants will have up to 5 minutes to take their jumpseats. If required that the flight attendants be in their jumpseats sooner than 5 minutes, then make a "Flight attendants take your jumpseats in X minutes" PA (e.g., "Flight attendants take your jumpseats in 3 minutes."). See [Operating Information>PA Announcements>Fasten Seat Belt Sign On](#).

When it is safe for the flight attendants to resume their duties, make a "Flight attendants, check in" PA. This allows the Flight attendants to leave their jumpseats and return to normal duties expeditiously and simultaneously. The Purser/designee will assess conditions and report to the flight deck the status of the cabin, flight attendants, and passengers.

Unexpected

Moderate or greater turbulence is suddenly encountered.

Action Ensure the seat belt sign is on and make a PA announcement stating, "Flight attendants, be seated **immediately**, be seated **immediately**." The flight attendants will take their jumpseats, occupy the nearest available passenger seat, or drop to the floor of the aircraft, whichever is closer.

After making the "Flight attendants, be seated **immediately**, be seated **immediately**" PA, and if it is safe for the flight attendants to move to their jumpseats, but not continue their duties, make a "Flight attendants, take your jumpseats" PA. This PA positions the flight attendants back to their jumpseats so they can assess themselves, the cabin, and the passengers while in reach of their interphones.

7.10.4

Adverse Weather Adverse Weather

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Unexpected Turbulence of Moderate or Greater Intensity			
Condition	Pilot Action	Reason	Flight Attendant Action
Unexpected Turbulence of Moderate or Greater	Make PA: "Flight attendants, be seated immediately , be seated immediately ."	Encountering unexpected turbulence of moderate or greater intensity.	Flight attendants will take their jumpseats, occupy the nearest available passenger seat or drop to the floor of the aircraft, whichever is closer.
Unexpected Turbulence of Moderate or Greater Subsides or Improves	Make PA: "Flight attendants, take your jumpseats."	Flight attendants are safe to return to their jumpseats, but not safe to resume duties.	Flight attendants will return to their jumpseats if not already there.
Turbulence Improves/ Subsides	Make PA: "Flight attendants, check in."	It is safe for flight attendants to leave their jumpseats and resume duties.	Flight attendants leave their jumpseats and resume service. A call from the Purser/designee to the flight deck is made once they have verified flight attendant, passenger, and cabin status.

PRE-SERVICE TURBULENCE BRIEF

If more than one service is scheduled, the Purser/designee should call the flight deck for a turbulence brief prior to the start of the subsequent service. The pilots should provide any forecasted and/or impending turbulence using all tools available.

SEVERE TURBULENCE

Do not intentionally conduct flight through areas of known severe turbulence. If a chance of severe turbulence is forecasted for the route, be alert for PIREPs and other indications of actual severity of turbulence present. If informed of the presence of severe turbulence, consider the following action:

- In the vicinity of the departure airport, seek departure routing that avoids the turbulent area, if possible, or delay departure until conditions improve.
- Enroute, change altitude and/or route in order to avoid the reported area.
- In the vicinity of the destination airport, seek a descent and approach path to avoid the reported turbulence area. If avoidance is doubtful, consider holding until the situation improves (PIREPs, LLWAS, TDWR, etc.) or consider diversion.
- Contact Dispatch for help in obtaining current weather and PIREPs.

TURBULENCE PIREPS

Turbulence of moderate or greater intensity must be reported to ATC and Dispatch as soon as possible. The preferred method of sending the Turbulence PIREP to Dispatch is to use the SUBMIT PIREP prompt in ACARS, if available. To help the situational awareness of other aircraft on frequency and to minimize follow-up questions, provide a full PIREP to ATC that includes the aircraft location, turbulence intensity and duration, whether in or near clouds, altitude, and aircraft type. Reporting the absence of a condition, such as "smooth ride," is also important when operating in areas of potential turbulence conditions.

Example: "Chicago Center United 960 with a turbulence PIREP"
When Center answers:
"United 960 is 100 miles south west of ORD experiencing moderate in cloud turbulence at FL 370, Boeing 757"

Note: *A defect report to Maintenance is required anytime severe or extreme turbulence is encountered.*

AUTOMATIC TURBULENCE ADVISORIES

Aircraft receive auto generated turbulence advisories via ACARS, which are simultaneously sent to the flight deck and dispatch. This process automates the delivery of PIREPs, WSI Turbulence SIGMETs, WSI Convective SIGMETs, and WSI Turbulence Advisory Areas. Dispatchers are still responsible for ensuring flights are informed of all potentially hazardous turbulence information. Dispatchers will ensure the automated system is working, and that pilots are made aware of other possible turbulence hazards that don't meet the thresholds of the automated system. Messages from the automated system include the time and location of where the flight path comes closest to the reported PIREP location or the time the flight path intersects the SIGMET or Turbulence Advisory Area.

Turbulence Auto PIREP System (TAPS)

TAPS is a component of the turbulence reporting program and uses aircraft accelerometers to automatically report aircraft ride quality. When an aircraft reports turbulence using the TAPS system, a Turbulence Advisory message is automatically generated by WSI for nearby aircraft and requires no pilot input. A Turbulence Advisory includes:

- Time, location, and altitude of the reporting aircraft
- Time and location of where the flight path is closest to the TAPS report
- Turbulence Level code:
 - 0.1 to <0.2 = Light
 - 0.2 to <0.3 = Moderate
 - >=0.3 = Severe

Automated Turbulence Advisories Automatic turbulence reporting messages are to increase situational awareness, and are not a substitute for vigilance. Consider turning on the seat belt sign, curtailing cabin service, and having the flight attendants seated when approaching an area that generated an automated uplink. Reference the Turbulence Action Guide in the FOM QRG to determine the appropriate response to an automated turbulence advisory.

TAPS and PIREPS Parameters TAPS and PIREPs advisories are sent automatically via ACARS if the route of flight is within 30 minutes of entering the affected area, which is defined as 75 miles and 2000' of a:

- TAPS report with a Turbulence Level of 0.15 or greater
- Turbulence PIREP of moderate or greater

SkyPath The SkyPath EFB application displays real-time turbulence. When the EFB is docked and calibrated, the app uses the accelerometers in the iPad to measure turbulence and converts the movements to color-coded tiles representing different turbulence severities. An algorithm filters out any movement of the EFB not associated with turbulence. See the Pilot EFB>Content App>07-iPad/EFB Help Guides>iLOG>Chapter 10.

SkyPath should be used as an additional approved turbulence data source, in conjunction with other approved sources (e.g., WSI, TAPS, PIREPS) for route, speed, and altitude selection. Though SkyPath data is seen by the dispatcher, it is not a substitution for PIREP submissions.

SIGMETs WSI Turbulence SIGMET and WSI Convective SIGMET messages are sent when the aircraft is within 30 minutes of entering the affected area. When flights are closer than 30 minutes to the reported location or area when it is generated, an advisory is sent immediately. The message will state the time the aircraft will enter the SIGMET or Turbulence Advisory Area. If the aircraft is already in the area when the SIGMET is created, the message will state "Your aircraft is within a. . . (i.e., Turb SIGMET area)."

It is important to note that automated advisories are not issued for government-issued SIGMETs. WSI SIGMETs should be comprehensive for determining threats; however, there will be differences between the government SIGMETs announced by ATC and WSI SIGMETs.

Own Ship TAPS Reporting When aircraft are equipped with the TAPS reporting algorithms, an ACARS message will report own ship turbulence TAPS reports for two turbulence specific metrics; Turbulence Level and Eddy Dissipation Rate (EDR). Turbulence Level is a measure of how much the aircraft is "shaking," while EDR is the "sea state" of the atmosphere. ACARS advisories are based on reported Turbulence Levels and reported with a turbulence level code.

CUMULUS CLOUDS

Seemingly small cumulus clouds can have a significant, sudden onset of turbulence. One of the most difficult threats to detect is rapidly growing cumulus

clouds developing beneath the flight path. These cumulus clouds have the highest potential for generating moderate or severe turbulence, usually with little warning. Use the airborne weather radar to scan for any precipitation displayed below the flight path prior to descent.

THUNDERSTORMS

WARNING: *Do not attempt to penetrate a thunderstorm.*

The onboard radar is the primary means of circumnavigating convective weather. WSI, in conjunction with Dispatch and ATC, may be helpful for long range routing decisions and turbulence avoidance. However, the receipt of WSI weather information may be delayed up to 15 minutes and should not be used for convective weather avoidance that is within weather radar detection range. Wi-Fi connectivity may be deferred per the MEL. The turbulence associated with thunderstorms can be minimized by adhering to the following guidance:

- **Circumnavigating Storms** Avoid the downwind (anvil) side of the storm by at least 1 mile for every knot of wind at that flight level.
- **Flight Above a Thunderstorm** Should be avoided, however, if this is not practical, attempt to vertically clear the cell by at least 5000 feet. The vertically propagating convective waves associated with both building and dissipating storms present a hazard that requires careful consideration and action.
- **Flight Beneath a Thunderstorm** Should not be attempted for storms of moderate or severe intensity.

The seat belt sign ***should be on*** and the flight attendants ***should be seated*** when operating:

- Within 20 miles of strong radar echoes (sharply defined edges and/or contour indications of heavy precipitation).
- Within 10 miles of moderate radar echoes (less sharply defined, but still indicative of moderate thunderstorm activity).
- In airspace above thunderstorms.

DOPPLER RETURN TURBULENCE

If a Doppler return showing turbulence is associated with moderate or severe thunderstorm returns, avoid the area using the thunderstorm avoidance criteria. If a Doppler return showing turbulence is present in light precipitation, or no precipitation, avoid the area by 5 NM, if possible.

MULTISCAN WEATHER RADAR (IF EQUIPPED)

Multiscan Weather Radar (see FM) uses sophisticated algorithms to automatically scan the atmosphere for convective hazards.

ENROUTE STORM AREA AVOIDANCE

Early detours of storms, considering distance and storm position, are good operating procedure. Plan an avoidance path as soon as possible for all weather echoes which appear beyond 100 miles. While ATC may be able to provide some assistance, controllers can only advise of precipitation areas and cannot ensure clearance from severe weather.

When serious thunderstorm conditions exist in terminal areas, prompt rerouting clearance from ATC may not be attainable. If in a terminal area and unable to obtain a clearance to deviate around a thunderstorm which in the Captain's judgment threatens the safety of the flight, declare an emergency and advise ATC of the heading to clear the storm. The possibility of less than adequate separation from other aircraft exists and mandates early planning and immediate communication of the deviation decision to ATC.

FLIGHT THROUGH WIDESPREAD STRATUS

Caution should be used when flying through extended areas of moderate rain (yellow echoes not associated with the gradients of a cell), due to attenuation which may prevent identification of embedded cells.

TERMINAL AREA STORM AVOIDANCE

If storm activity in the terminal area is such that recommended cell clearance cannot be maintained, the Captain must consider the following:

- Circumnavigating around the area or landing at an alternate airport.
- Holding at the gate, or delaying takeoff until the Captain determines that a safe departure can be conducted.
- Takeoffs, approaches, and landings should not be attempted when thunderstorms are near the airport, unless the runway and flight path, **including any Engine Failure Procedures**, are clear of the thunderstorm effects and its associated gust front.

HAIL

Hail is more clearly identified with intensity of echoes than turbulence is, and the greater the cell height, the greater probability of hail. Due to the strength of updrafts, hail can be carried to great heights, and can fall some distance from the storm core, particularly beneath the anvil of a large cumulonimbus cloud. Protrusions, fingers, hooks, or a wavy scalloped edge on the echo suggest the presence of extreme hail and severe turbulence. However, hail is not limited to these echo shapes. Although hail shafts present a high reflectivity return, it is generally not possible to distinguish from a rain shaft. The presence of rain at the surface does not mean the absence of hail aloft. In tropical and subtropical regions, hail seldom reaches the ground, and these storms contain less hail aloft than do comparable mid-latitude storms.

TRUE AIRSPEED DEVIATION

ATC must be advised when the actual true airspeed of the aircraft varies in excess of 5% from the true airspeed in the flight plan filed with ATC.

AIREP SPECIAL

An AIREP Special is a report required when any one or more of the following meteorological conditions is encountered in flight:

- Severe turbulence
- Severe icing
- Volcanic ash
- Any other condition that would affect the safety of other aircraft operations
- An unforecast condition that could significantly affect the efficiency of other aircraft operations

The AIREP Special is sent as soon as possible after a hazardous meteorological condition has been encountered. A condition that could significantly affect the efficiency of other aircraft operations may be sent as an AIREP Special at the next ATC reporting point.

When working a GP radio service for ATC purposes, send the AIREP Special as a combined ATC/Company position report and precede the message with the phrase, "AIREP Special."

When communicating directly with the ATC controller, send the AIREP Special (sections 1 and 3) to ATC and, as a separate communication via GP radio or an LDOC service, send a Company position report preceded with the phrase, "AIREP Special."

COMPANY REPORTS

A communications capability must exist at all times between the aircraft and the Company (FAR 121.99). Tune and monitor appropriate frequencies. SELCAL monitoring is sufficient.

In areas where the pilot is in direct communication with the ATC controller, separate communication methods must be used. This requirement may be satisfied using datalink. Where datalink does not exist, ARINC VHF, GP HF, LDOC HF, or SATCOM Voice must be used.

In areas of the world where ATC communications are available on VHF but flight watch is limited to GP or LDOC HF, call and advise Dispatch of the flight watch radio being monitored. For GP and LDOC frequencies, see FD Pro>Pubs>Region>General Airway Manual>Enroute Data-General>ARINC Services.

In areas where the pilot is not in direct communication with the ATC controller and is using GP radio facilities (including the GP facilities of ARINC) for ATC communications, guarding the assigned GP frequencies for ATC purposes also satisfies the operational control communications requirement.

QNH An altimeter setting equivalent to the barometric pressure measured at an airport altimeter datum and corrected to sea level pressure. At the airport altimeter datum, an altimeter set to QNH indicates airport elevation. Altimeters are set to QNH while operating at and below the transition altitude and below the transition level.

QNE An altimeter setting equivalent to International Standard Atmosphere (ISA) sea level pressure, 1013.2 hPa or 29.92 IN. Altimeters are set to QNE while operating at and above the transition level and above the transition altitude.

QFE An altimeter setting equivalent to the barometric pressure measured at an airport altimeter datum, usually at the approach end of the runway in use. At the airport altimeter datum, an altimeter set to QFE indicates zero altitude.

It is United policy not to use QFE altimeter settings unless QNH is not available. If required to use QFE altimetry, altimeters are set to QFE while operating at or below the transition height and below the transition level.

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RACETRACK PROCEDURE (ICAO) A procedure designed to enable the aircraft to lose altitude during the initial approach segment and/or establish the aircraft inbound when the entry into a reversal procedure is not practical.

RADAR WEATHER ECHO INTENSITY LEVELS (AIM) Existing radar systems cannot detect turbulence. However, there is a direct correlation between the degree of turbulence and other weather features associated with thunderstorms and the radar weather echo intensity. The National Weather Service has categorized radar weather echo intensity for precipitation into six levels. These levels are sometimes expressed during communications as "VIP LEVEL" one through six (derived from the component of the radar that produces the information - Video Integrator and Processor). The following list gives the "VIP LEVELS" in relation to the precipitation intensity within a thunderstorm and the weather features likely to be associated with these levels:

- **Level 1** (weak) Light to moderate turbulence is possible with lightning.
- **Level 2** (moderate) Light to moderate turbulence is possible with lightning.
- **Level 3** (strong) Severe turbulence possible with lightning.
- **Level 4** (very strong) Severe turbulence likely with lightning.
- **Level 5** (intense) Severe turbulence, lightning, and organized wind gusts; hail likely.
- **Level 6** (extreme) Severe turbulence, large hail, lightning and extensive wind gusts.

RADIAL (AIM) A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

Chapter 3**OPERATING INFORMATION****Section 100****PA ANNOUNCEMENTS****GENERAL GUIDANCE**

Proper use of the PA system creates a professional image. Coordination of announcements should be made so as to cause the least disruption to the passengers/crew, while being relevant, informative, and engaging.

The following general rules should be followed when using the PA system:

- Think before you speak.
- Tell the truth.
- Do not make promises you cannot keep.
- Avoid technical terms and aviation jargon (e.g., IFR, ATC, altimeter setting).
- Do not make any statement or comment that is religious in nature.
- Do not express personal opinions or political views.
- Speak in a clear tone and at a calm pace.
- Be cautious with humor.
- Consider limiting non-safety related PA announcements during sleeping hours.
- Emphasize safety.

WELCOME ANNOUNCEMENT

Time permitting, a welcome announcement should be made prior to pushback. The Captain and First Officer should be introduced by last name and the Purser by first name. This communication sets appropriate passenger expectations and can reduce anxiety. Suggested information to include: any anticipated pushback or taxi delays, planned flight time, expected flight conditions, unusual circumstances, and expected arrival weather and time. If aircraft door is closed and pushback does not occur by 5 minutes after departure, time permitting, make an announcement with reason for delay and updated pushback time if available.

PRIOR TO TAKEOFF

"Flight attendants, please be seated for departure." This must be a standalone announcement, given approximately 2 minutes prior to taking the runway and not combined with any other PA announcement. Flight attendants are trained to listen for precisely these words.

Flight attendants must notify the flight deck if they are unable to comply. If the flight attendants cannot complete their preparations in the time remaining, the Purser notifies the flight deck and the Captain delays the takeoff until assured that all is in readiness for takeoff.

AFTER TAKEOFF/ENROUTE

An announcement should be made welcoming passengers once again and providing updated arrival time. If conditions prevent the seat belt sign from being extinguished, provide estimated length of time for the seat belt sign to remain on, and the condition preventing movement about the cabin.

FASTEN SEAT BELT SIGN OFF (FAR 121.571)

A pilot must make an announcement, the first time the seat belt sign is turned off, that encourages passengers to keep their seat belts fastened even when the seat belt sign is off. To encourage seat belt sign adherence, make an effort to turn off the seat belt sign as soon as practical. Proactively managing the seat belt sign during smooth flight conditions will strengthen passenger compliance and improve safety.

FASTEN SEAT BELT SIGN ON

Every time the fasten seat belt sign is turned on during flight, pilots are responsible for making an announcement instructing passengers to fasten their seat belts; this responsibility shall not be delegated to the flight attendants. The automated announcement system (if installed) suffices for this requirement. At a minimum, the pilot must communicate that the seat belt sign has been turned on and that seat belts are to be securely fastened (e.g., "Ladies and gentlemen, the Captain has turned on the fasten seat belt sign, so please fasten your seat belts."). If the seat belt sign must remain illuminated for an extended period of time (i.e., 30 minutes), an announcement should be made explaining the reason and expected duration. If at all possible, give at least a 10-minute warning (preferably after first briefing the Purser) to the passengers that the sign will soon be illuminated. If appropriate, give an estimate of the time the sign will be illuminated.

PRIOR TO THE TOP OF DESCENT

Prior to top of descent, make an announcement advising when the seat belt sign will be illuminated. This allows for last minute movement about the cabin. Also, provide updated arrival time and gate information. After the seat belt sign has been illuminated, thank the passengers for choosing United.

PA ANNOUNCEMENTS DURING DELAYS

Note: *In the event of a lengthy tarmac delay, see [Lengthy Tarmac Delay](#) section in this chapter.*

Anytime a passenger identifiable delay of more than 5 minutes occurs (e.g., held on the gate, number eight for the runway), keep the passengers informed via an appropriate PA announcement. Then follow-up with PA announcements concerning the status of the flight no less than every 30 minutes, even if there is no change since the last announcement. Provide reason for the delay, expected length of delay, updated takeoff and arrival times (when available), and next

update time interval. Provide an apology when appropriate. A consistent message from all employees working the flight improves the credibility of our airline. On arrival, if gate is not available, provide expected wait time.