Incorrect Landing Altimeter

American Airlines Flight Safety

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Background

- May 2022 - A320 RNP with LNAV/VNAV minima
- ATIS – Airport QNH of 1001 hPa
- ATC – Descend to 6000ft QNH 1011 hPa
- ATC – Clearance down to 5000ft QNH 1011 hPa

Aircraft Leveled off at 5000ft QNH 1011 hPa

- Aircraft was configured and stable at 1000ft above the airfield altitude
- ATC received a Minimum Safety Altitude Warning (MSAW) at 1.53NM from the runway
- ATC alerted crew as passing through Decision Altitude
- Aircraft started go around – Radio altitude indicated 6ft

Second Approach

- Erroneous 1011 QNH
- ATC got MASW alert
- A/P disconnected – PAPI indication to correct the trajectory
Background

Event Analysis

- The vertical deviation symbol was centered
- Altitude vs. distance checks were correct
- RA auto-callouts – cockpit voice recorder (CVR) data not available
- Poor weather condition and runway approach lights were not turned ON during first approach

There was no Terrain Avoidance Warning System (TAWS) alert

Path Remained outside of the Terrain Clearance Floor (TCF) envelope
FOQA Monitoring

Accuracy of the set altimeter

- Monitor during Approach phase – below FL180
- Compare – Set Altimeter from the recorded flight data vs METAR Altimeter information captured from the weather data
  - 1 hPa difference in the QNH/QFE = 28ft shift (above or below)
- Except B777, selected altimeter captured in the flight data
- Altimeter captured from multiple sources in the flight data – worst case scenario

Event severity level

- Caution +/- 75 feet
- Warning +/- 100 feet
- Alert +/- 150 feet

Not limited to transition from standard to QNH FL180
SMS Risk Assessment

• Risk that we see in our data is aircraft getting below the desired path -> risk of CFIT
• missing the altitude constraints during RNAV approaches -> altitude deviation / loss of separation
• Some cases even above the desired path and not being stable during approach phase -> unstable approach
• Unnecessary missed approaches on ILS appr due to misrepresented barometric minimums

Causes

• Altimeter for wrong airport (majority of it)
  – Using departure field data (not updating)
  – Requesting /Receiving wrong field
• ATC transmitting wrong setting
• Flight Crew understanding wrong setting
Safety Enhancements

COMMUNICATION - TRAINING

- Safety Publication - Q2 2022
- Presented at the Standardization meetings
- Human Factor course training
Safety Enhancements

Airbus - AltSM
• Altimeter Setting Monitor
• Compares Captain’s altimeter output to GPS derived altitude

LPV Approaches
• Build the vertical path from the Threshold Crossing Height
• Using a Glide Path Angle back from the runway
• GP is defined in space