

Office of Aviation Safety

SAL

Delta Connection Flight 6448 Operated by Shuttle America

Operational Issues

Operational Issues

- Notices to Airmen (NOTAM)
- Instrument approach minimums
- Decision-making during approach
- Touchdown point
- Use of reverse thrust
- Use of brakes



Notices to Airmen (NOTAMs)

 NOTAMs affecting runways - Minimums raised to localizer only - Glideslope remains in service but angle may be different than published Neither pilot read NOTAMs Information should have been evaluated during preflight activities



Instrument Approach Minimums CLEVELAND, OHIO ILS Rwy 28 JEPPESEN KCLE/CLE 24 MAR 06 (11-9) -HOPKINS INTL D-ATIS Arrival CLEVELAND Approach CLEVELAND Towe Ground Rwys 6R/24L, 28 124.0 Rwys 6R/24L, 10/28 120.9 Rwys 6R/24L, 6C/24C, 10/28 121.7 Rwys 6L/24R 124.5 Rwys 6L/24R 133.6 127.85 Rwys 6L/24R, 10 GS PARMA 100 Final ILS Apt Elev 791 IPXP Apch Crs DA(H) 2658' (1867') 1018' (227') TDZE 791 110.7 280° 3100 2700' MISSED APCH: Climb to 1400', then climbing LEFT turn to 3000 direct DJB VOR and hold. Alt Set: INCHES Trans level: FL 180 Trans alt: 18000 MSA DJB VOR A1274 1607 1355 Λ Cuvahoga Co 1375' NOT IN GATE ¢ Δ 1361' 1536 A 1416'A Burke Lakefront 280° 110.7 IPXP 2020 1459 ADAT 406 1640 PARMA RADAR FIX 280° 1501' STRAIGHT-IN LANDING RWY 28 LQC (GS out) ILS DA(H) 1018'(227') MDA(H) 1220'(429') OPTOO PARMA 280°-10 6000 GS 2658' 1 2700' 3000' when authorized **TCH 42** by ATC. TDZE 791 11.4 100 120 140 160 God speed-k 1400' 3000 377 484 538 646 753 861 DJB PAPI Ð LT) 113.6 6 4:48 3:44 3:22 2:48 2:24 2:06 PARMA to MAI STRAIGHT IN LANDING RWY 2 CIRCLE-TO-LAND LOC (GS out) DA(H) 1018'(227') MDA(H) 1220' (429') ELILI RAIL or ALS out RAIL out | ALS out RVR 24 or 1/2 RVR 40 or 3/4 RVR 50 or 1 1300'(509')-1 RVR 40 or 3/4 RVR 24 or 1/2 RVR 40 or 34 RVR 60 or 1/4 140 1300'(509') - 1/2 NTSB RVR 50 or 1 1/2 165 1360'(569')-2 RADAR required.

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CHANGES: PAPI added.

Instrument Approach Minimums

- Pilots received indications glideslope functioning
- LOC (GS out) minimum descent altitude (MDA) of 429 feet should have been used
- ILS decision height (DH) of 227 feet used
- Missed approach likely with MDA instead of DH
 - Pilots did not see runway environment at 429 feet



Decision-making During Approach

- Captain lost sight of runway at 80 feet
- Captain called for go-around
- First officer continued
- Missed approach required if
 - Flight visibility less than visibility prescribed in instrument approach procedure, or
 - Approach lighting and runway environment not visible at or below DH or MDA



Decision-making During Approach

- First officer lost sight of runway at altitude of about 10 feet but continued to land
- Rejected landing training is required

 No requirement for changing weather conditions
 - Can be accomplished in unrestricted weather conditions



Touchdown Point

Target: 1,000 feet
Company guidance: no farther than 2,006 feet
Touchdown: 2,900 feet <u>– About halfway down 6,017-foot runway</u>



Use of Reverse Thrust

 Company guidance – maximum at main gear touchdown – Until 80 knots, or - To full stop during emergency Not commanded until about 5 seconds after main gear touchdown Reached about 65 percent for about

2 seconds before tapering off



Use of Brakes

 Company guidance – full braking on slippery runways Initial brake application with about 1,850 feet runway remaining - Light braking Increased braking to 90 percent of maximum with about 450 feet remaining



