

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



DCA23LA185

FDR AND ADS-B STUDY

Aircraft Performance Study

By

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A. INCIDENT

Location: Burbank, California
Date: January 13, 2023
Time: 18:55 Pacific standard time (PST)
Airplane 1: Bombardier CRJ900, N954LR
Airplane 2: Embraer ERJ 170-200, N619UX

B. SUMMARY

On February 22, 2023, about 1855 Pacific standard time (PST), Mesa Airlines (doing business as American Eagle) flight 5826, N954LR, a Bombardier CRJ900 and SkyWest Airlines (doing business as United Express) flight 5326, N619UX, an Embraer ERJ 170-200, were involved in a loss of minimum separation event at the Bob Hope Airport (BUR), Burbank, California. The closest proximity was 0.29 miles at the same altitude. There were no injuries reported to the 73 passengers and crew onboard the SkyWest airplane or to the 41 passengers and crew members onboard the Mesa airplane. Mesa Airlines flight 5826 was operating under the provisions of Title 14 *Code of Federal Regulations* Part 121 as a scheduled domestic passenger flight from Phoenix Sky Harbor International Airport (PHX), Phoenix, Arizona to BUR. SkyWest Airlines flight 5326 was operating under the provisions of Title 14 *Code of Federal Regulations* Part 121 as a scheduled domestic passenger flight from BUR to San Francisco International Airport (SFO), San Francisco, California.

C. PERFORMANCE STUDY

1.0 Airplanes

1.1 Bombardier CRJ900

The Bombardier CRJ900 is a jet airliner with two aft-mounted engines and a T-tail. The airplane had an American Eagle livery.



Figure 1. Mesa Airlines (doing business as American Eagle) flight 5826, N954LR, a Bombardier CRJ-900LR.

1.2 Embraer ERJ 170-200

The Embraer ERJ 170-200 is a jet airliner with two under-wing mounted engines. The airplane had a United Express livery.



Figure 2. SkyWest Airlines (doing business as United Express) flight 5326, N619UX, an Embraer ERJ 170-200.

2.0 Weather

Weather was recorded at 18:53. The temperature was 32°F (0°C) and the barometric setting was 29.85 inHg. Conditions were clear on the ground with night lighting conditions. Winds were 18 kts from 320°.

3.0 Available Data

Both airplanes were equipped with Flight Data Recorders (FDRs) [1] and Cockpit Voice Recorders (CVRs). The FDR data was obtained for both airplanes, but the incident was overwritten on both airplanes' two-hour CVRs.

The latitude and longitude parameters on the FDRs of both airplanes were not recorded with enough precision to accurately determine the airplanes' locations. Therefore, Automatic Dependent Surveillance-Broadcast (ADS-B) data provided by the Federal Aviation Administration (FAA) was used for the airplanes' locations. ADS-B broadcasts an airplane's Global Positioning System (GPS) position and other data to the ground where it is recorded. The GPS position has an accuracy of approximately 20 meters (65 ft) in both the horizontal and vertical dimensions.

However, ADS-B data for SKW5326 was not recorded until the airplane had begun its take-off roll. Its location during taxi was from the less accurate FDR data.

Some communications between the two airplanes and the Burbank Local Control (LC) are included in this report [2].

4.0 Airport Information

The event occurred as ASH5826, the Bombardier CRJ900, was on approach to runway 33 (Figure 3) as SKW5326, the Embraer ERJ 170-200, was taking off from the same runway. Runway 33 is 6,886 ft long and 150 ft wide.

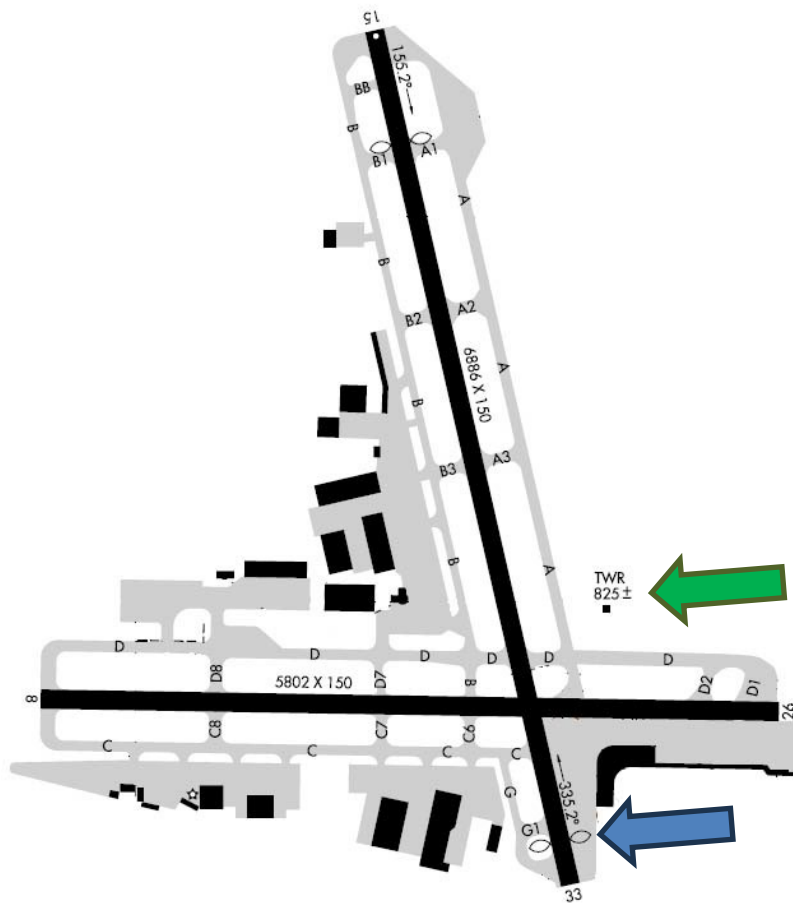


Figure 3. Airport diagram showing runway 33. The blue arrow points to the runway threshold. The green arrow points to the Burbank tower.

5.0 Airplane Separation Calculations

The airplanes' location data was reflective of the location of their GPS antenna. The separation calculations made in this report reflect the distance between the two GPS antennas and do not account for the fuselage or wingspans of the airplanes. Additionally, as discussed in 3.0 Available Data, there is uncertainty in the GPS data.

6.0 Flight

At 18:53:06, Local Control (LC) instructed SKW5326, which was on the ground departing Burbank, to turn onto runway 33, back taxi if necessary, and to line up and wait. At this time, ASH5826, was 7.9 NM (9 statute miles) from the threshold, at 2,800 ft above ground level (agl), and approaching runway 33 at Burbank (Figure 4).

At 18:53:25, ASH5826 reported they were visual for runway 33. The LC informed them that traffic (SKW5326) was holding in position on the runway but to continue. SKW5326 entered runway 33 about 18:53:45 and by 18:54:30 the airplane had made a 180° turn, aligned with the runway heading, and stopped behind the runway threshold.

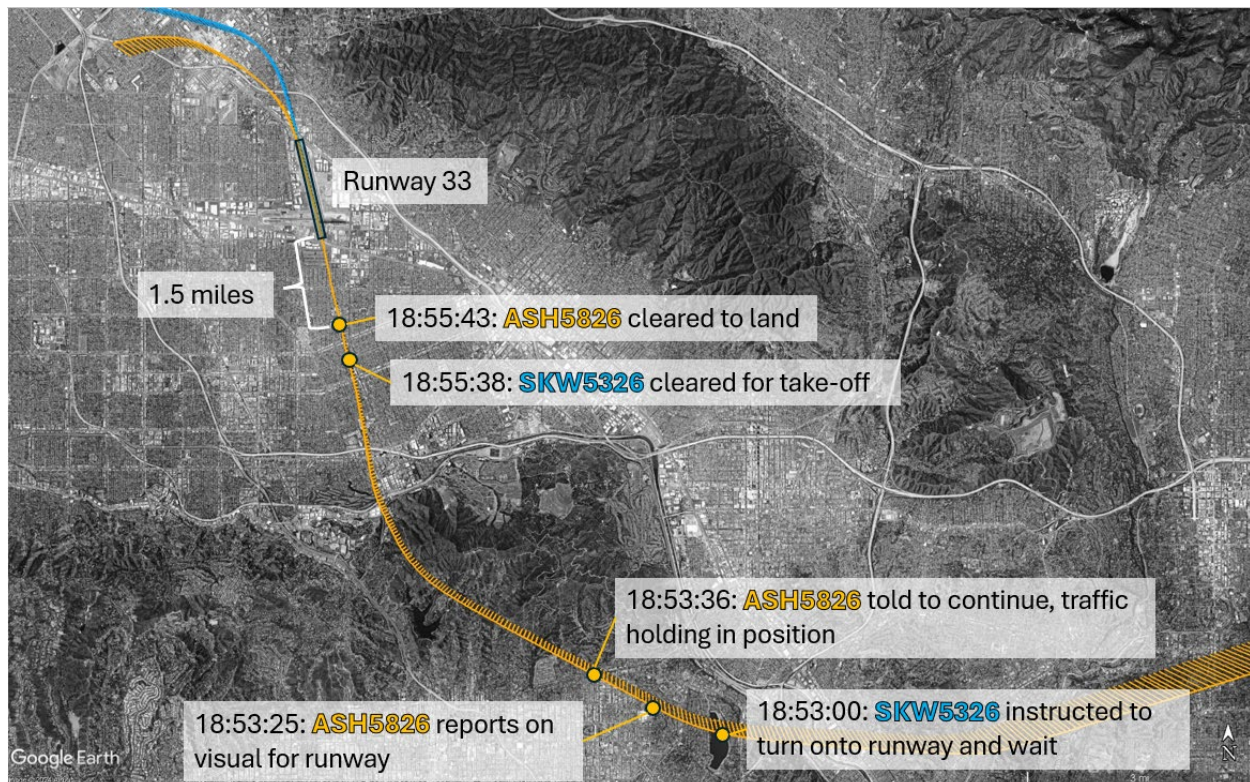


Figure 4. ADS-B flight paths for ASH5826 (orange) and SKW5326 (blue). Selected times and ATC communications are shown.

At 18:55:38, the LC cleared SKW5326 for take-off. ASH5826 was 1.6 miles from the threshold and at 500 ft agl (Figure 5). The LC then, at 18:55:43, cleared ASH5826 to land. The pilot of ASH5826 requested confirmation of the landing clearance, which LC confirmed. SKW5326 began its take-off roll (Figure 6) at 18:55:50, between the ASH5826's request for confirmation and the LC's confirmation of their landing clearance.

One pilot of ASH5826 then asked if SKW5326 was off the runway yet and the other pilot of ASH5826 interjected on the radio "no he... we're going around" at 18:55:55. At this point, SKW5326 was at a groundspeed of 27 kts and accelerating across the runway threshold. ASH5826 was 4,200 ft from the threshold and at 300 ft agl.

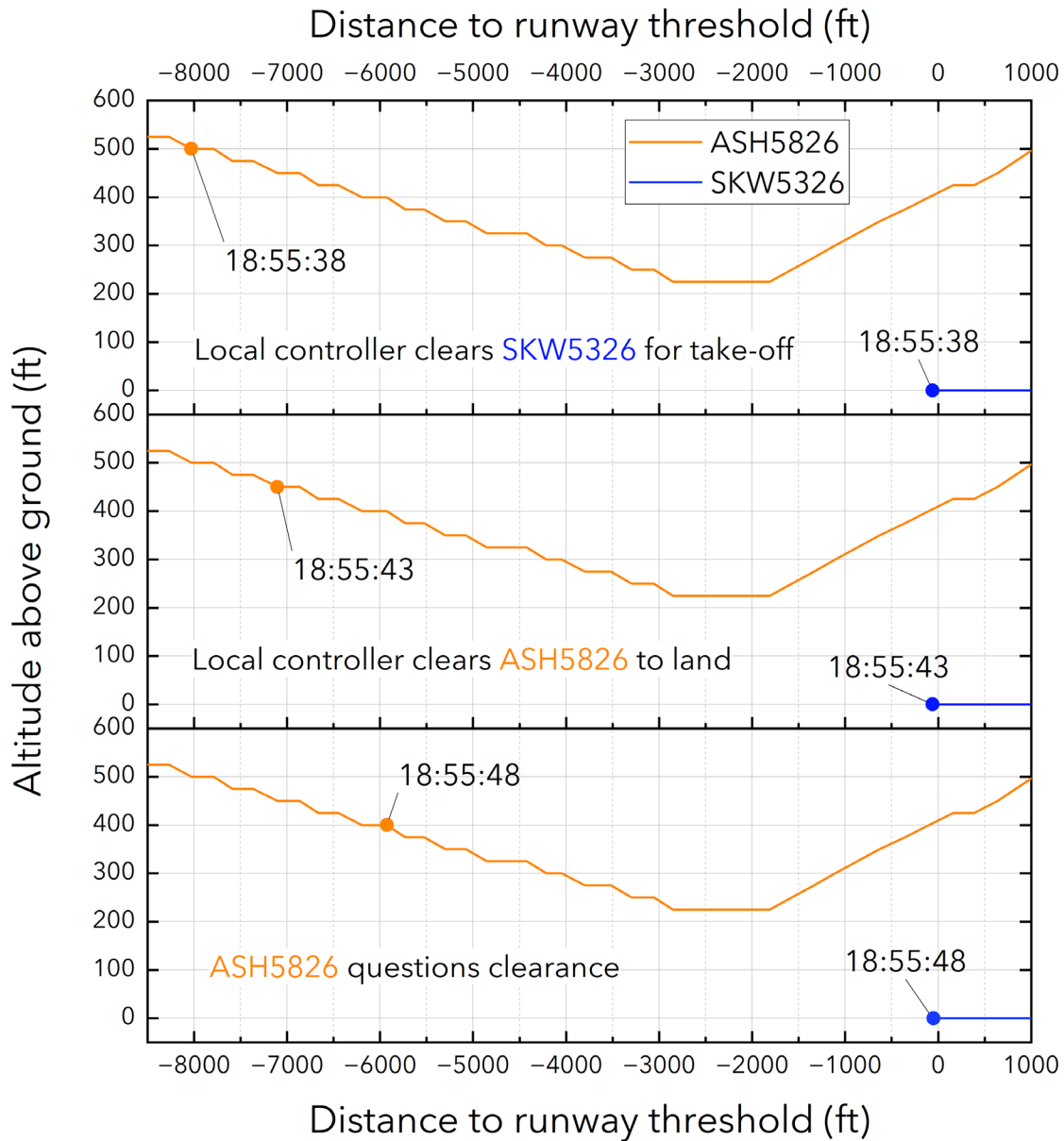


Figure 5. Altitude versus distance to runway threshold for ASH5826 (orange) and SKW5326 (blue). Selected times and ATC communications are shown.

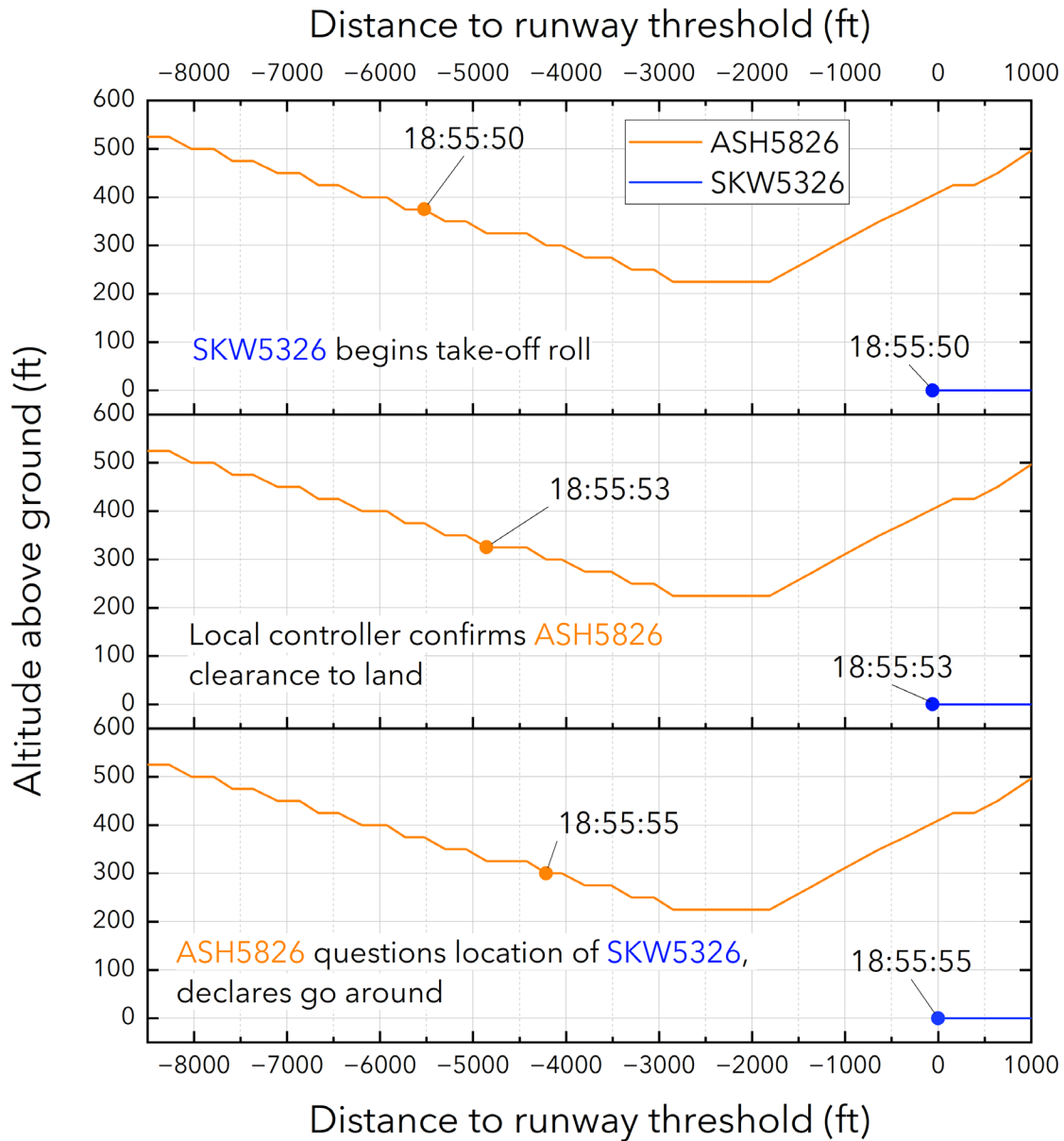


Figure 6. Altitude versus distance to runway threshold for ASH5826 (orange) and SKW5326 (blue). Selected times and ATC communications are shown.

At 18:56:00 the LC replied "roger" and instructed ASH5826 to climb and maintain 4,000 ft, and to fly the runway heading. The airplanes were 4,000 ft apart at this time. At 18:56:27 the LC instructed ASH5826 to turn to heading 270. The pilot read back left 270. Both airplanes began left turns once past the runway surface.

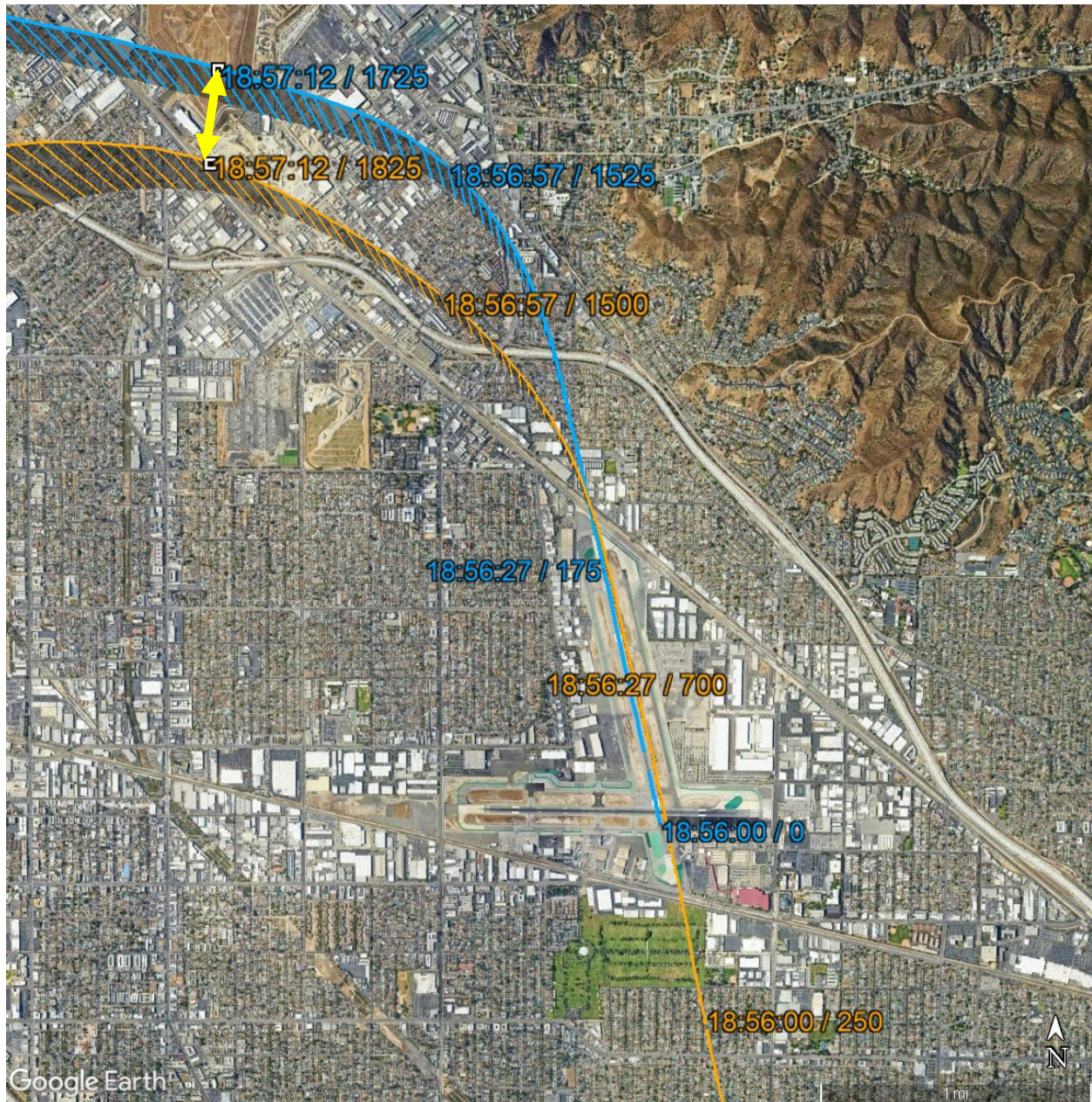


Figure 7. ADS-B flight paths for ASH5826 (orange) and SKW5326 (blue). Selected times and altitude above ground are shown. A yellow arrow highlights the point of minimum separation between the airplanes at 18:57:12.

Figure 8 shows the calculated separation of the two airplanes and their respective altitudes. From 18:56:15 to 18:56:35, ASH5826 was over the runway surface. From 18:56:20 to 18:57:00, the airplanes were about 2,300 ft apart. The airplanes' closest point of separation was at 18:57:12 when the airplanes were within 1,680 ft.

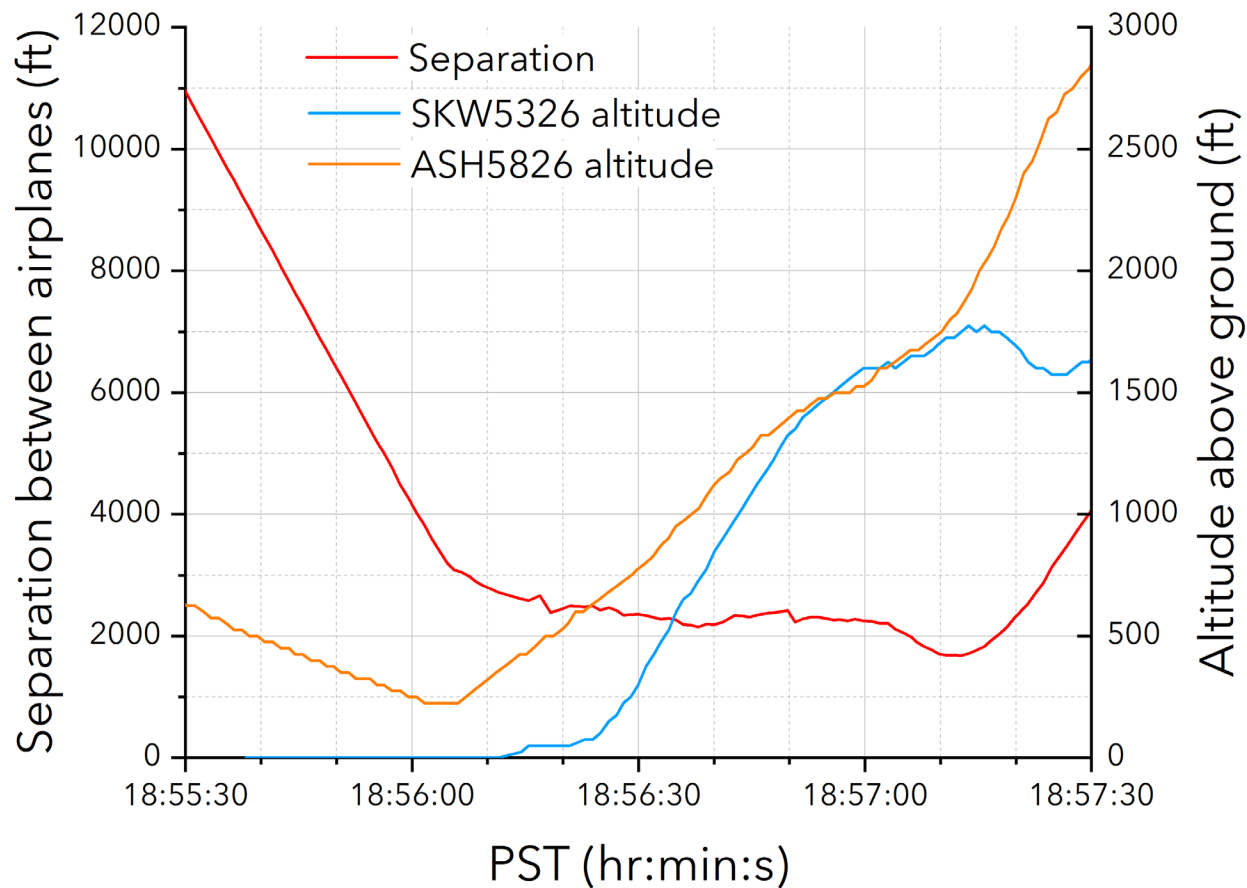


Figure 8. Calculated separation between airplanes and recorded altitude for each airplane.

D. SUMMARY

The local controller cleared SKW5326 for take-off at 18:55:38 when ASH5826 was 1.6 miles from the threshold of the same runway. ASH5826 was cleared to land at 18:55:43. The crew of ASH5826 asked for confirmation of their landing clearance which was confirmed by the controller. At 18:55:55, the crew of ASH5826 declared they were going around due to SKW5326 still being on the runway.

The airplanes were about 2,300 ft apart while on the runway heading. Shortly after beginning left turns, the airplanes came within 1,680 ft of each other at 18:57:12.

E. REFERENCES

1. Flight Data Recorder – Specialist’s Factual Report, DCA23LA185, National Transportation Safety Board, 2024.
2. Air Traffic Control, Group Chair’s Factual Report, DCA23LA185, National Transportation Safety Board, 2024.