National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

DCA23LA185

AIR TRAFFIC CONTROL

Group Chair's Factual Report

January 19, 2025

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A. INCIDENT

Location: Burbank, CA
Date: February 22, 2023
Time: 1855 Pacific standard time (PST)[1]
February 23, 2023, 0255 coordinated universal time (UTC)[2]
Airplane 1: N954LR, Air Shuttle flight 5826 (ASH5826), Bombardier CRJ900
Airplane 2: N619UX, SkyWest Airlines flight 5326 (SKW5326), Embraer ERJ 170-200

B. AIR TRAFFIC CONTROL GROUP

Group Chair — Betty Koschig
National Transportation Safety Board
Washington, DC

Group Member — Dan Carrico
National Air Traffic Controllers Association (NATCA)
Chicago, IL

Group Member — Joseph Wolters
Federal Aviation Administration (FAA)
Denver, CO

C. 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[3] at the same altitude[4].

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. There was no damage to either 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

[1] All times are Pacific standard time (PST) unless otherwise noted.
[2] Coordinated universal times (UTC) is a single time standard for global aviation, using the 24-hour clock, and is based upon the time at 0 degrees East/West (the Greenwich Meridian) located in Greenwich England.
[3] All miles are nautical miles (nm) unless otherwise noted.
[4] All altitudes are in feet above mean sea level (msl) unless otherwise noted.

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. Nightime visual meteorological conditions prevailed at the time of the incident.

D. DETAILS OF THE INVESTIGATION

On Tuesday, March 14, 2023, the air traffic control (ATC) group convened at BUR airport traffic control tower (ATCT). The group conducted a tour of the facility then attended an in brief conducted by the air traffic manager (ATM). Attending the in brief were representatives from Western Service Area quality control group (WSA QCG) , BUR National Air Traffic Controllers Association (NATCA); BUR support manager, and event investigations managers (EIMs). The group reviewed associated data related to the incident and conducted interviews with the controller in charge (CIC), clearance delivery (CD) controller, and the ground controller (GC). The interviews were audio recorded for transcription.

On Wednesday, March 15, 2023, the ATC group reconvened at the BUR ATCT. The group reviewed associated data related to the incident and conducted interviews with the operations supervisor (OS), ATM, and the local control (LC) controller. The interviews were audio recorded for transcription.

On Thursday, March 16, 2023, the ATC group reconvened at the BUR ATCT. The group reviewed associated data related to the incident then completed and approved the ATC Group Field Notes. The group was subsequently released by the investigator in charge. The onsite phase of the ATC investigation was completed.

E. FACTUAL INFORMATION

1.0 History of Flight

The data for this history of flight were compiled using the FAA source data provided in Attachments 1 through 9. The history of flight is a summary of flight crews and controllers communications, and other pertinent information during the time that the flight crew of ASH5826 and SKW5326 were in communications with the BUR ATCT and Southern California terminal radar approach control (TRACON) (SCT).

Excerpts and figures from the flight data recorder (FDR)[5] and automatic dependent surveillance-broadcast (ADS-B)[6] Aircraft Performance Study, Section 6,

[5] An FDR is a device on an aircraft that records various performance parameters like altitude, airspeed, heading, and other crucial flight data, primarily used to investigate accidents and incidents by capturing details of the flight during critical moments; it is often referred to as a "black box."
[6] Automatic Dependent Surveillance-Broadcast (ADS-B) is a surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The

were incorporated in this history of flight in order to provide visual references of the aircraft positions while in communication with ATC.

About 1853, the BUR local control (LC) controller transmitted SKW5326's callsign to determine if they had switched from ground control frequency to the LC frequency. The crew responded they were on the frequency. The LC controller instructed SKW5326 to turn right on runway 33, back taxi if necessary and line up and wait (LUAW)[7] runway 33. The crew read back the instructions as issued.

According to the Aircraft Performance Study, at the time SKW5326 was provided LUAW instructions, ASH5826 was 7.9 nautical miles (nm) from the threshold, at 2,800 ft above ground level (agl), and approaching runway 33 at BUR.

Figure 1 is the BUR airport diagram that depicts the locations of runway 33, purple rectangle) and the air traffic control tower (light blue circle)

aircraft or vehicle periodically broadcasts its GPS-derived position and other information such as velocity over the data link, which is received by a ground-based transmitter/receiver (transceiver) for processing and display at an air traffic control facility.

[7] "Line up and wait" (LUAW) is an air traffic clearance that allows a pilot to enter a runway but does not authorize takeoff. It is used when takeoff clearance cannot immediately be issued because of traffic or other reasons.

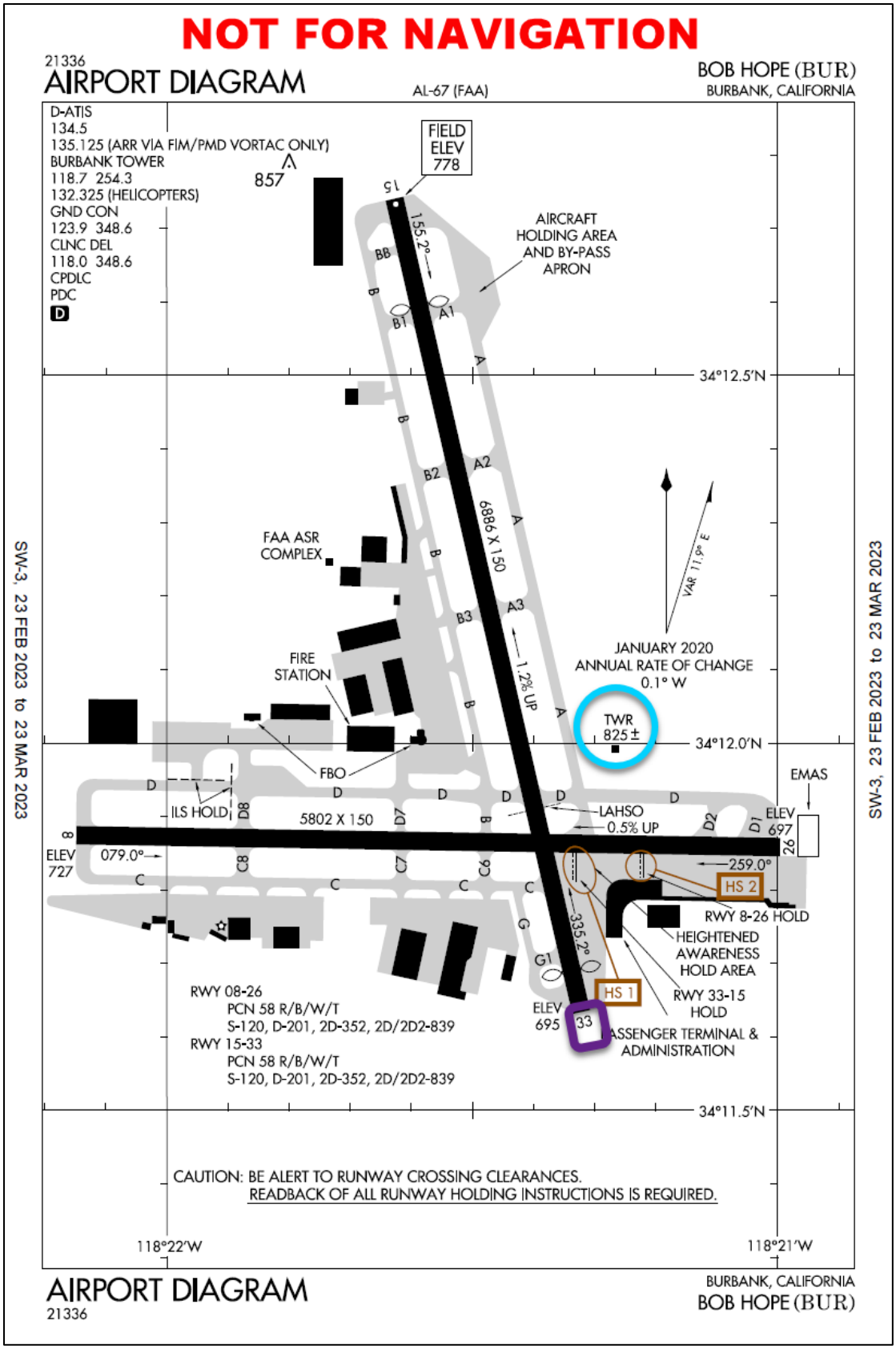

Figure 1. BUR Airport diagram depicts location of runway 33 and the ATC tower.

Figure 2 was retrieved from the Aircraft Performance Study. The graphic[8] provides information on the aircraft locations and associated ATC communications for specific times indicated. The ADS-B flight paths for ASH5826 are indicated in orange and SKW5326 are indicated in blue.

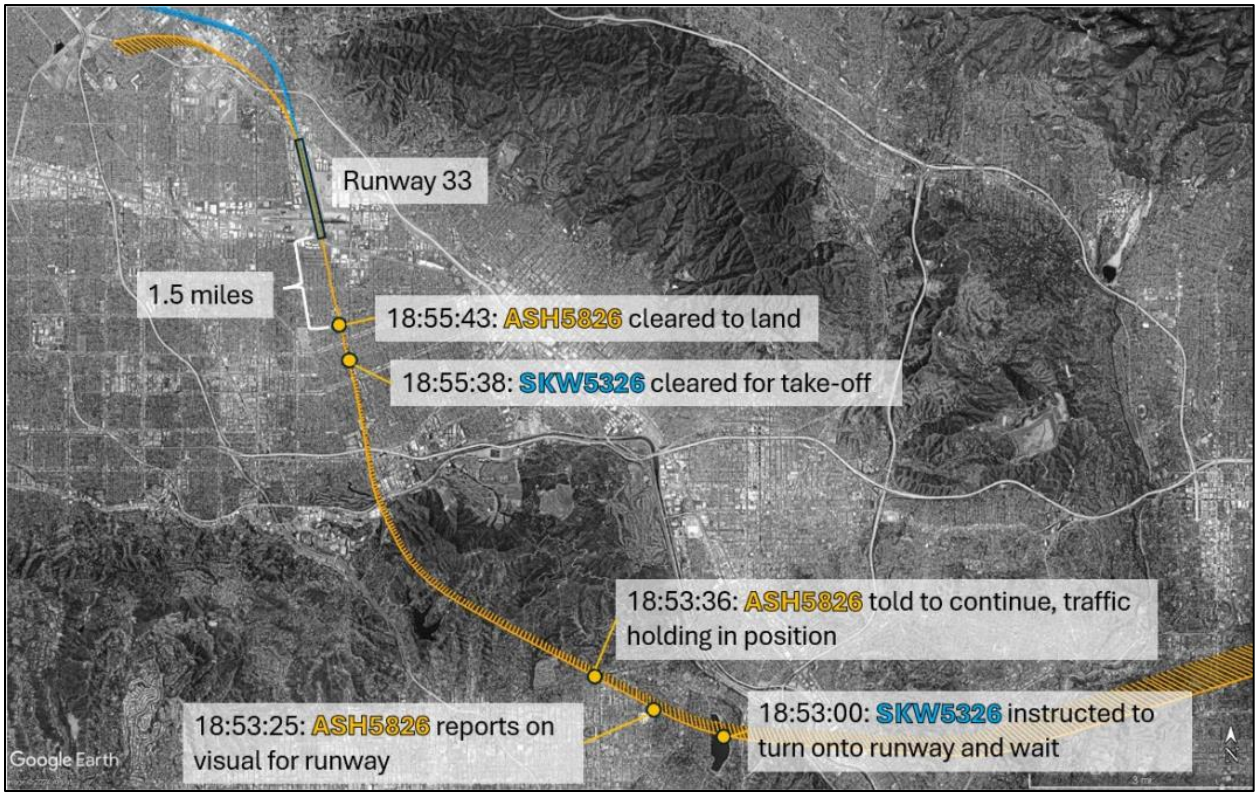

Figure 2. Flight paths for ASH5826 (orange) and SKW5326 (blue) with pertientnt transmissions.

At 1853:25, the crew of ASH5826 contacted the BUR ATCT and reported they were on the visual runway 33.

At 1853:36, the LC controller advised the crew of ASH5826 that traffic [SKW5326] was holding in position on runway 33 and instructed them to continue [the approach]. The crew read back the instructions as issued.

At 1855:38, the LC controller cleared SKW5326 for takeoff from runway 33. The crew readback the takeoff clearance for runway 33, as issued.

According to the Aircraft Performance Study, at this time, ASH5826 was 1.6 miles from the threshold and at 500 ft agl.

[8] All graphics in this report were produced by overlaying ADS-B flight track data from SKW5326 and ASH5826 onto satellite imagery in Google Earth.

At 1855:43, the LC controller cleared ASH5826 to land runway 33. The crew asked the LC controller to confirm they were cleared to land.

At 1855:50, according to Aircraft Performance Study, SKW5326 began its take-off roll.

At 1855:53, the LC controller responded to the crew of ASH5826, "… affirmative, runway 33 cleared to land."

At 1855:55, one of the pilots on ASH5826 asked if he [SKW5326] was off the runway yet, and subsequently the other pilot of ASH5826 stated, "no he...we're going around."

According to the Aircraft Performance Study, at this time, SKW5326, which had been in LUAW about 300 feet in front of the runway 33 displaced threshold, was now at a groundspeed of 27 kts and accelerating across the runway threshold, and ASH5826 was 4,200 ft from the threshold and at 300 ft agl.

Figure 3 was retrieved from the Aircraft Performance Study, . The graphic provides information on the aircraft locations and altitudes for the specific times indicated. The ADS-B flight paths for ASH5826 are indicated in orange and SKW5326 are indicated in blue. The yellow arrow indicates the position and time that the airplanes were at their closest proximity to each other.

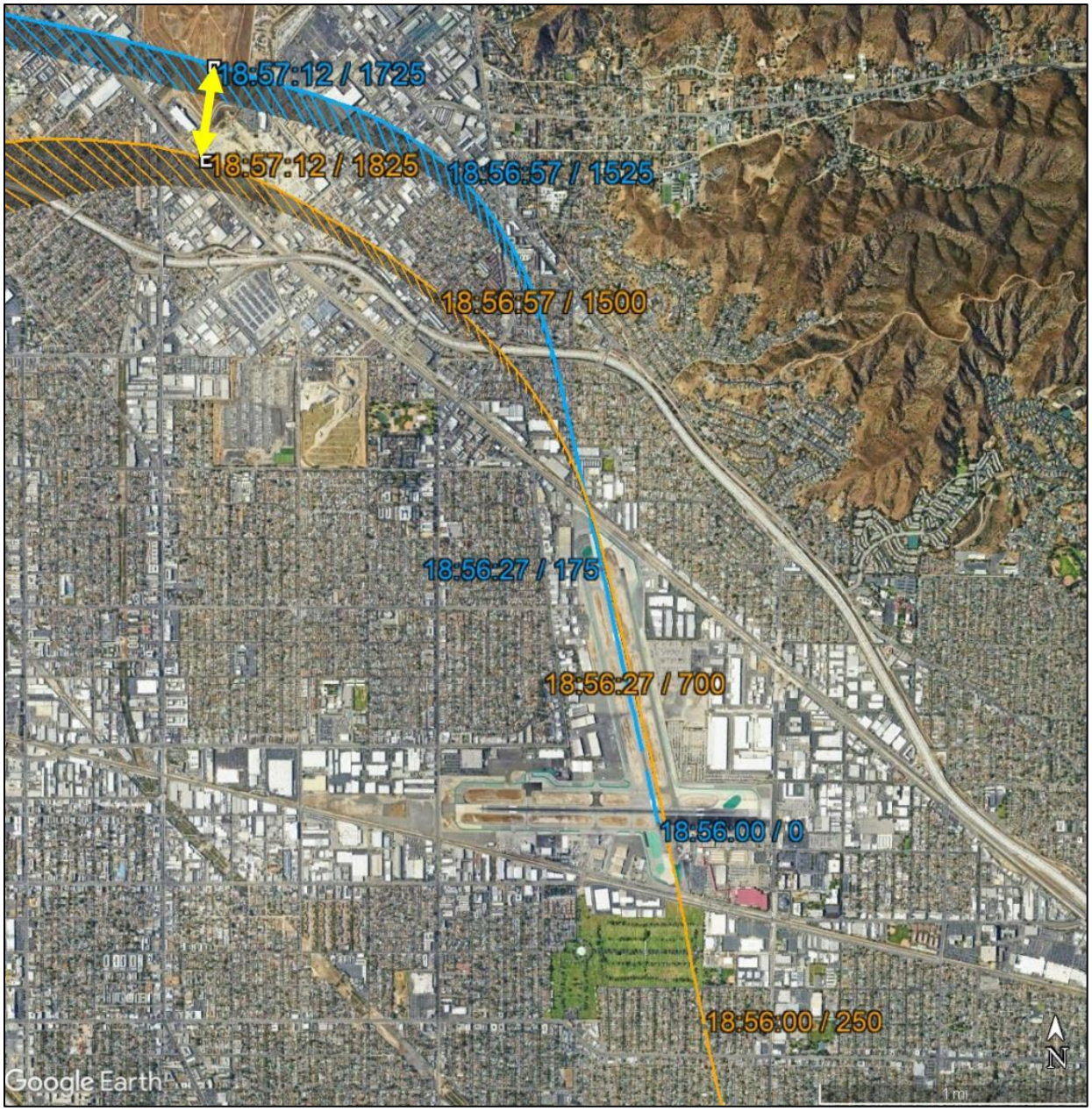

Figure 3. Flight paths for ASH5826 (orange) and SKW5326 (blue) with times and altitudes. The yellow arrow indicates the position and time (1857:12) that the airplanes were at their closest proximity (1,680 ft horizontally) to each other.

At 1856:00, the LC controller stated "roger" and then instructed ASH5826 to climb and maintain 4,000, and fly runway heading. The crew of ASH5826 did not respond.

At 1856:14, the crew of ASH5826 asked the LC controller for the altitude, and the LC controller stated 4,000. The crew acknowledged and read back 4,000 feet.

At 1856:27, the LC controller then instructed the ASH5826 to turn right heading 270 degrees and subsequently corrected that instruction by stating "left 270 [degrees]". The crew acknowledged and readback left 270 [degrees].

At 1856:57, the LC controller instructed the crew of SKW5326 to continue on the SID[9]. The crew read back the instruction as issued.

At 1857:02, the LC controller instructed ASH5826 to continue their climb. The crew read back the instructions as issued.

At 1857:12, according to the Aircraft Performance Study, and as indicated by the yellow arrow in figure 3, the minimum separation of 1,680 ft horizontally occurred between ASH5826 and SKW5326.

At 1857:14, the LC controller asked the crew of ASH5826 if had the Embraer in sight at 2,500 off to their right. The crew stated negative and reported that they were responding to an RA[10] and were complying with that. The LC controller responded "roger, turn right 30 degrees", then corrected that instruction and stated, "left 30 degrees". The crew acknowledged and readback left 30 degrees.

At 1857:38, the LC controller instructed SKW5326 to contact SoCal[11] approach on frequency 120.4. The crew acknowledged and readback 123.4. The LC controller responded that the frequency was 120.4. The crew readback the instruction as issued.

No further ATC communication between the crew of SKW5326 and BUR.

At 1858:10, the LC controller instructed ASH5826 to fly heading 190 degrees. The crew readback the instructions as issued. The LC controller then instructed ASH5826 to contact SoCal approach on frequency 120.4. The crew read back the instruction as issued.

About 1900, the crew ASH5826 contacted SoCal approach control (WDLR Woodland Sector) and reported they were at 4,000 ft, heading 270 degrees.

The WDLR sector controller instructed ASH5826 to fly heading 280 degrees and advised the crew that they needed to vector their airplane north, before they could vector them south again to runway 33.

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[9] A Standard Instrument Departure Route (SID) is a standard air traffic service (ATS) route identified in an instrument departure procedure by which aircraft should proceed from take-off phase to the en-route phase.

[10] Resolution Advisory (RA) is a specific instruction given to pilots by the traffic alert and collision avoidance system (TCAS), to maneuver their aircraft vertically (climb or descend) to avoid a potential mid-air collision with another aircraft when a conflict is detected.

[11] SoCal is an abbreviated name for SCT.

The crew asked the controller how long that would take and how far out they would need to fly.

The WDLR sector controller stated that their go-around [at BUR] was clearly unplanned, and then advised the crew they would be vectored westbound for at least a mile, then they would be issued a 160 degree heading to bring them back in for the approach.

The crew of ASH5826 replied that would be fine and stated, "that was a catastrophe back there [at BUR]."

The WDLR sector stated they agreed and issued the crew a left turn heading 160 degrees. The WDLR sector controller advised the crew they could expect a 080 degree heading in a couple of miles. The crew of ASH5826 readback the instructions as issued.

At 1901:15, the WDLR sector controller instructed ASH5826 to fly heading 080 degrees. The crew read back instruction as issued.

At 1901:58, the WDLR sector controller instructed ASH5826 to maintain 3,300 ft. The crew read back the instruction as instructed.

At 1902:05, the WDLR sector controller informed the crew of ASH5826 that Van Nuys airport was at their 11 o'clock position at about 7 miles, and Burbank airport was at their 11 o'clock at about 12 miles. The controller instructed the crew to advise when they had the airport in sight. The crew acknowledged the instructions.

At 1902:16, the WDLR sector controller sector controller informed the crew of ASH5826, that they asked BUR tower to keep everybody out of their way this time. The crew responded," thank you we appreciate it."

At 1903:13, the crew of ASH5826 reported BUR in sight. The WDLR sector controller cleared ASH5826 for the visual approach runway 33, provided traffic on a Diamond Star talking to BUR tower, and then instructed the pilot to contact BUR. The crew readback the instructions as issued.

At 1903:50, the crew of ASH5826 contacted BUR LC and reported they were on base for a visual approach runway 33. The LC controller acknowledged and cleared ASH5826 to land on runway 33. The crew of ASH5826 readback the instruction as issued.

At 1904:31, the LC controller advised the crew of ASH5826 that traffic was holding in position runway 26. The crew acknowledged.

About 1906:51, the LC controller instructed ASH5826 to turn right at taxiway Alpha 2 (A2) and contact ground control. The crew readback the instructions as issued.

About 1907:21, ASH5826 advised the LC controller they were clear of taxiway A2. The LC controller instructed the crew of ASH5826 to ground control. The crew acknowledged.

The crew of ASH5826 were provided taxi instructions to their gate and no further ATC communications occurred between the crew and BUR.

2.0 Automatic Dependent Surveillance – Broadcast (ADS-B)

Certified ADS-B data was provided by the FAA. These data were provided in comma separated value (.csv) and keyhole markup language (.kml) formats. The ADS-B data provided flight track surveillance information for both flights while in the BUR and SCT airspace.

3.0 Weather Information

An automated surface observing system (ASOS) [12]was located on the BUR airport. The official weather observation current at the time of the incident was documented using standard aviation routine weather reports (METAR)[13]. The following METAR was recorded at 1853 PST:

METAR KBUR 230253Z VRB06KT 10SM BKN035 08/00 A2987 RMK AO2 SLP112 T00780000 53020=

METAR in plain language stated: BUR weather observation at 0253 UTC/1853 PST reported wind variable at 6 knots, visibility 10 statute miles or greater, ceiling broken at 3,500 feet agl, temperature of 8°C, dew point temperature of 0°C, altimeter setting of 29.87 inches of mercury; Remarks: Station with a precipitation discriminator, sea level pressure 1011.2 millibars, temperature of 7.8°C, dew point temperature of 0.0°C, pressure rose 2.0 millibars in last three hours.

[12] ASOS – Automated Surface Observing System is equipped with meteorological instruments to observe and report wind, visibility, weather phenomena, ceiling, temperature, dewpoint, altimeter, and barometric pressure. ASOS are maintained by the NWS.
[13] METAR – Aviation Routine Weather Report – The METAR has been adopted by the United States to provide surface observations of current weather conditions in support of aviation for the terminal. It is issued at fixed times hourly.

4.0 BUR Airport Information

Hollywood Burbank Airport (BUR), also known as Bob Hope Airport, was a medium sized multi-use airport, located 3 miles northwest of the city of Burbank, California. It was 15 miles northeast of the Los Angeles International airport and served as a reliever airport, primarily for traffic and passengers in the San Fernando valley. The smaller primarily general aviation airports of Van Nuys, Whiteman Airport, and Santa Monica Airport, were in close proximity to the Burbank airport. BUR had Class Charlie airspace, which was adjacent to the Los Angeles Class Bravo and overlying the Class Delta airspaces at Van Nuys and Whiteman Airports.[14]

The airport was owned by the Burbank–Glendale–Pasadena Airport Authority and controlled by the governments of those cities.

Burbank had two intersecting runways, 8/26 and 15/33. The dimensions and construction material for those runways were:

- Runway 15/33 was 6886 ft. x 150 ft. constructed of asphalt-concrete.
- Runway 8/26 was 5802 ft. x 150 ft. constructed of asphalt-concrete.

The normal runway configuration was almost always runway 8 for ILS approaches and 15 for visual approaches and departures. Burbank did not switch runways until there was more than a 10 knot tailwind. The runways were also very short, (only about 6,000 feet), hence jets larger than the B757 tend to avoid the field, with the B737 being the most frequent visitor to the field.[15]

Figure 4 is a google earth aerial view screenshot of BUR airport. Runway 33 and the BUR air traffic control tower are pointed out.

[14] Information retrieved from FAA Website: Hollywood Burbank Airport (BUR) | Federal Aviation Administration.
[15] Information retrieved from the ZLA Los Angeles ARTCC website: https://laartcc.org/airport/KBUR .

Figure 4. Google Earth aerial view of BUR; ATC tower and Runway 33 depicted.

5.0 BUR Airport Traffic Control Tower

The BUR air traffic control tower was built in 1992 and was located 700 feet to the east of runway 15/33 and to the north of runway 8/26 and stands at a height of 94 ft.[16]

[16] Information retrieved from Los Angeles Times website: https://www.latimes.com/archives/la-xpm-1992-02-20-me-3804-story.html

Figure 5 is a photo of the BUR airport traffic control tower.

Figure 5. Photo of BUR air traffic control tower. Credit: JetPhotos.com

Figure 6 is the tower cab layout depicting the location of the workstations and the location of the LC position.

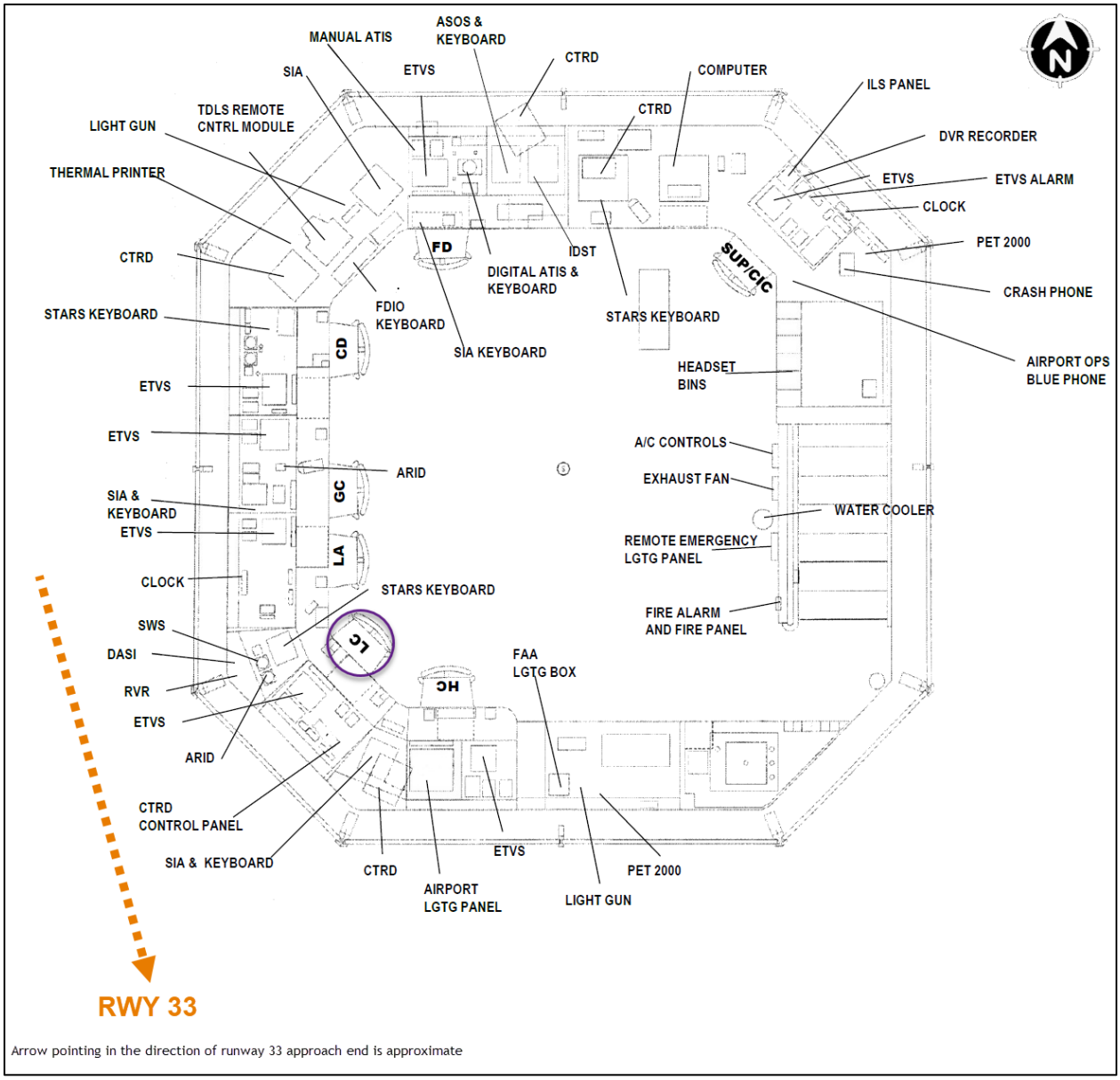


Figure 6. Tower Cab layout depicts the location of workstations; LC is circled.

6.0 Air Traffic Control Personnel Interviews

6.1 Air Traffic Manager (ATM)

The ATM's air traffic control career with the FAA began in May 1998 when he was hired under the Veteran's Recruitment Appointment (VRA) direct hire program. He worked at the East Texas Regional Airport (GGG) Longview, TX from 1998 to 2003; Oakland Air Route Traffic Control Center (ZOA) as a certified professional controller (CPC) from 2003 to 2010 and operations supervisor (OS) from 2010 to 2011; San Francisco Bay Oakland International Airport (OAK) Oakland, CA, as an OS from 2011 to 2017 and ATM from 2017 to 2020; and BUR as ATM from 2020 to

present. Prior to working for the FAA, he served 10 years as an air traffic controller in United States Navy.

6.2 Operations Supervisor (OS)

The OS's air traffic control career with the FAA began in 2008 when he attended initial air traffic control training at the FAA Academy in Oklahoma City, OK. After successful completion of initial training, he worked at Harry Reid International Airport (LAS) Las Vegas, NV from 2008 to 2022 as a CPC; and BUR as an OS from 2022 to present. He obtained a Bachelor of Science degree from the Arizona State University and held a commercial single engine with Instrument pilot license.

6.3 Controller in Charge (CIC)

The CIC's air traffic control career with the FAA began in 2017 when he attended initial air traffic control training at the FAA Academy in Oklahoma City, OK. After successful completion of initial training, he worked at BUR from 2017 to present. He was qualified and maintained currency on all positions in the tower and was certified as a CIC and on-the-job training instructor (OJTI). He obtained a Bachelor of Science degree from the University of North Dakota.

6.4 Local Control (LC) Controller

The LC controller's air traffic control career with the FAA began in 2015 when she was hired under the Veteran's Recruitment Appointment (VRA) direct hire program. She worked at BUR from 2015 to present. She was qualified and maintained currency on all positions in the tower and was certified as a CIC and on-the-job training instructor (OJTI). Prior to working for the FAA, she served four years in the United States Air Force as an air traffic controller and worked 10 months in a federal contract tower.

6.5 Ground Control (GC) Controller

The GCs air traffic control career with the FAA began in 2016 when he attended initial air traffic control training at the FAA Academy in Oklahoma City, OK. After successful completion of initial training, he worked at BUR from 2016 to present. He was qualified and maintained currency on all positions in the tower and was certified as a CIC and on-the-job training instructor (OJTI). He obtained a Bachelor of Arts degree from the University of California, Irvine.

6.6 Clearance Delivery (CD) Controller

The CDs air traffic control career with the FAA began in 2008 when he attended initial air traffic control training at the FAA Academy in Oklahoma City, Oklahoma. After successful completion of initial training, he worked at BUR from

2008 to 2010, Ontario International Airport (ONT) Ontario, CA from 2010 to 2015, and BUR from 2015 to present. He was qualified and maintained currency on all positions in the tower and was certified as a CIC and on-the-job training instructor (OJTI).

7.0 Air Traffic Control Procedures

7.1 FAA Order JO 7110.65Z, Air Traffic Control

7.1.1 Purpose of This Order

Chapter 1, Section 1, General, paragraph 1–1–1, Purpose of This Order, stated in part:

> This order prescribes air traffic control procedures and phraseology for use by persons providing air traffic control services. Controllers are required to be familiar with the provisions of this order that pertain to their operational responsibilities and to exercise their best judgment if they encounter situations that are not covered by it.

7.1.2 ATC Service

Chapter 2, Section 1, paragraph 2−1−1, ATC Service, stated in part:

a. The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.

b. In addition to its primary purpose, the ATC system also:

1. Provides a safe, orderly, and expeditious flow of air traffic.
2. Supports National Security and Homeland Defense missions.

c. The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:

1. Volume of traffic.
2. Frequency congestion.
3. Quality of surveillance.
4. Controller workload.
5. Higher priority duties.
6. The physical inability to scan and detect situations falling in this category.

7.1.3 Duty Priority

Chapter 2, Section 1, paragraph 2-1-2 Duty Priority, stated in part:

a. Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.

*N*OTE–

Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgment based on the facts and circumstances known to them. That action which is most critical from a safety standpoint is performed first.

7.1.4 Safety Alert

Chapter 2, section 1, paragraph 2-1-6, Safety Alert, stated in part:

Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude that, in your judgment, places it in unsafe proximity to terrain, obstructions, or other aircraft. Once the pilot informs you action is being taken to resolve the situation, you may discontinue the issuance of further alerts. Do not assume that because someone else has responsibility for the aircraft that the unsafe situation has been observed and the safety alert issued; inform the appropriate controller.

NOTE–

1. The issuance of a safety alert is a first priority (see paragraph 2–1–2, Duty Priority) once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft. Conditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations. While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized.

2. Recognition of situations of unsafe proximity may result from MSAW/E−MSAW, automatic altitude readouts, Conflict/Mode C Intruder Alert, observations on a PAR scope, or pilot reports.

3. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, will be taken.

7.1.5 Visually Scanning Runways

Chapter 3, section 1, paragraph 3-3-12, Visually Scanning Runways, stated in part:

a. Local controllers must visually scan runways to the maximum extent possible.

b. Ground control must assist local control in visually scanning runways, especially when runways are in close proximity to other movement areas.

7.1.6 Line Up and Wait (LUAW)

Chapter 3, section 9, paragraph 3-9-4, Line Up and Wait (LUAW), stated in part:

a. The intent of LUAW is to position aircraft for an imminent departure. Authorize an aircraft to line up and wait, except as restricted in subparagraph g, when takeoff clearances cannot be issued because of traffic. Issue traffic information to any aircraft so authorized. Traffic information may be omitted when the traffic is another aircraft which has landed on or is taking off the runway and is clearly visible to the holding aircraft. Do not use conditional phrases such as "behind landing traffic" or "after the departing aircraft."

b. First state the runway number followed by the line up and wait clearance.

PHRASEOLOGY−RUNWAY (number), LINE UP AND WAIT.

NOTE−

When using LUAW, an imminent departure is one that will not be delayed beyond the time that is required to ensure a safe operation. An aircraft should not be in LUAW status for more than 90 seconds without additional instructions.

7.1.7 Cancellation of Takeoff Clearance

Chapter 3, section 9, paragraph 3-9-11, Cancellation of Takeoff Clearance, stated in part:

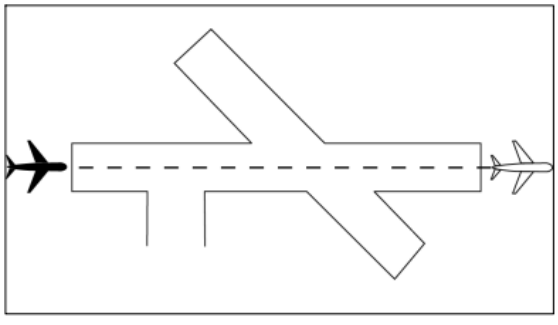
> Cancel a previously issued clearance for takeoff and inform the pilot of the reason if circumstances require. Once an aircraft has started takeoff roll, cancel the takeoff clearance only for the purpose of safety.
>
> NOTE–
> In no case should a takeoff clearance be canceled after an aircraft has started its takeoff roll solely for the purpose of meeting traffic management requirements/EDCT.
>
> *PHRASEOLOGY– CANCEL TAKEOFF CLEARANCE (reason).*

7.1.8 Same Runway Separation

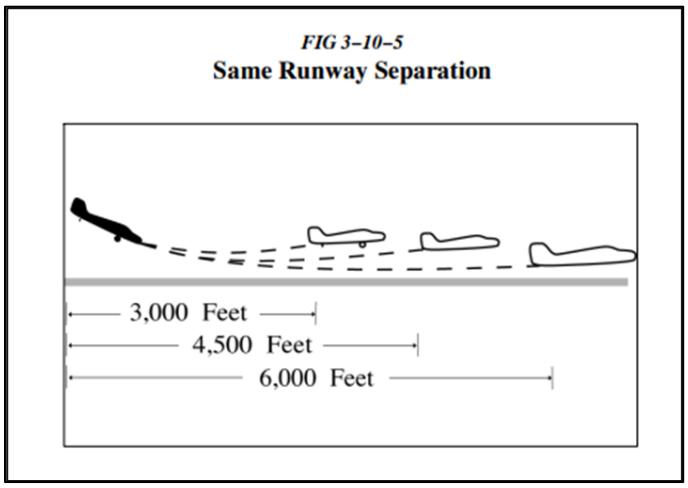
Chapter 3, Section 10, paragraph 3-10-3, Same Runway Separation, stated in part:

> a. Separate an arriving aircraft from another aircraft using the same runway by ensuring that the arriving aircraft does not cross the landing threshold until one of the following conditions exists or unless authorized in paragraph 3−10−10, Altitude Restricted Low Approach.
>
> 2. The other aircraft has departed and crossed the runway end. (See FIG 3−10−4). If you can determine distances by reference to suitable landmarks and the other aircraft is airborne, it need not have crossed the runway end if the following minimum distance from the landing threshold exists:

FIG 3−10−4
Same Runway Separation



(a) Category I aircraft landing behind Category I or II– 3,000 feet.
(b) Category II aircraft landing behind Category I or II– 4,500 feet.
(c) When either is a category III aircraft–6,000 feet. (See FIG 3–10–5.)



F. LIST OF ATTACHMENTS

Attachment 1: Interview Transcriptions
Attachment 2: BUR ATC Local Control (LC) Audio
Attachment 3: BUR ATC Ground Control (GC) Audio
Attachment 4: BUR ATC Controller in Charge (CIC) Audio
Attachment 5: BUR ATIS[17] Recording
Attachment 6: SCT ATC WDLR (Woodland) Sector Audio
Attachment 7: ADS-B Data
Attachment 8: BUR ATC Administrative Documents
Attachment 9: FAA ATC Radar Data

Submitted by:

Betty Koschig
Senior Air Traffic Control Investigator

[17] ATIS – Automatic Terminal Information Service – A continuous broadcast of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or specified portion of the day.