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

WPR22LA251

AIR TRAFFIC CONTROL

Group Chair Factual Report

June 20, 2024

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A. ACCIDENT

Location:	Salt Lake City, UT
Date:	July 13, 2022
Time:	1852 mountain daylight time (MDT)[1]
	0052 coordinated universal time (UTC)[2] / July 14, 2022
Airplane:	Cessna 208B, Corporate Air flight 7727 (CPT7727), N877FE

B. AIR TRAFFIC CONTROL GROUP

Group Chair	Betty Koschig National Transportation Safety Board Washington, DC
Group Member	Sarah Lewis[3] National Air Traffic Controllers Association (NATCA) Oklahoma City, OK
Group Member	David Leslie Federal Aviation Administration (FAA) Las Vegas, NV
Meteorologist Subject Matter Expert[4]	Paul Suffern NTSB Washington, DC

C. SUMMARY

On July 13, 2022, about 1852 mountain daylight time, a Cessna 208B, N877FE, was substantially damaged when it was involved in an accident at the Salt Lake City International Airport (SLC), Salt Lake City, Utah. The pilot sustained minor injuries. The airplane was operated by Corporate Air as a Title 14 *Code of Federal Regulations (CFR)* Part 135 cargo flight. The flight originated from the Friedman Memorial Airport (SUN), Hailey, Idaho.

The pilot stated that during the flare for landing the airplane encountered a wind shear, and he was unable to maintain directional control and executed a go-

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[1] All times are mountain daylight time (MDT) unless otherwise noted.
[2] UTC is an international time standard using four digits of a 24-hour clock in hours and minutes based on the time in Greenwich, England.
[3] Due to the group member transferring to another federal agency and no longer a NATCA member, the party coordinator reviewed and approved the factual report.

around. The accident flight climbed to about 30 ft above ground level (agl) and then encountered a downdraft that pushed the airplane towards the runway. Subsequently, the airplane impacted terrain, off the right side of the runway, in a left-wing low attitude.

D. DETAILS OF THE INVESTIGATION

On August 16, 2022, the case was assigned to ATC investigator, and ATC data were requested from SLC airport traffic control tower (ATCT) and Salt Lake terminal radar approach control facility (TRACON) (S56).

On August 24, 2022, the investigator in charge (IIC) determined an onsite investigation at SLC would be conducted.

On September 7, 2022, the ATC group convened at the SLC ATCT/S56 facilities which were co-located in the same building but were managed by two different air traffic managers (ATMs), the SLC and S56 ATMs, respectively. An NTSB Meteorologist and a Meteorologist group member participated in the onsite portion of the investigation as subject matter experts (SME). A separate Meteorology Factual Report is located in the docket.

The group attended an in-brief conducted by SLC and S56 ATMs and their staff. Also in attendance were representatives from the FAA's Safety Intelligence and Response Group (SIRG), Western Service Area Quality Control Group, Radar Automation Coordinator, SLC and S56 Support Managers, SLC Technical Services for Radar, SLC Technical Services, Seattle TWSE Quality Control Service Manager, NATCA SLC Representative, and NATCA S56 Representative (phoned in).

The group conducted a tour of the SLC ATCT and S56 facilities. Following the tours, the group reviewed data associated with the accident, and conducted interviews with the SLC local control center (LCC), and the technical operations technician in depth (TID).

On September 8, 2022, the group reconvened at the SLC and S56 facilities. The group reviewed data and conducted interviews with the Operations Supervisor (OS), Final sector Radar Controller (F controller), and the System Support Center (SSC) Manager. The Investigator in charge (IIC) attended the F controller and SSC Manager interviews.

On September 9, 2022, the group and IIC reconvened at the SLC and S56 facilities. The group and IIC interviewed the SLC ATM, S56 ATC, and the Automation Radar manager. The group then concluded the on-scene phase of the ATC field investigation and completed the group field notes.

E. FACTUAL INFORMATION

1.0 History of Flight

The factual data for this history of flight was compiled using the FAA source data provided in Attachments 2 through Attachment 9.

ATC services provided by Salt Lake City Air Route Traffic Control Center (ARTCC) ZLC were routine and uneventful. CPT7727 was transferred to S56 about 1822 MDT.

1823:05 The crew of CPT7727 checked in with S56 Bear (B) sector controller, reporting they were at 12,000 feet[5] and had Automatic Terminal Information Service (ATIS) India. The Sector B controller informed the flight crew that ATIS information Juliet was current, to expect runway 34L and runway 34R was on request. The B controller cleared CPT7727 direct DYANN, ANNTY, CEEDR[6] and issued a descent to 11,000 feet. The crew responded they would pick up ATIS information Juliet and read back the clearance correctly.

1835:32 The B controller transmitted a blanket broadcast to all aircraft that SLC ATIS information kilo (K) was current, the altimeter was 29.97, expect light to moderate precipitation once abeam SLC airport and all the way to the airport.

1838:13 An uninvolved airplane informed the B controller that the altimeter was incorrect on ATIS information K. The B controller informed SLC about the discrepancy.

1839:44 The B controller transmitted a blanket broadcast to all aircraft that SLC ATIS information lima (L) was current.

1841:49 The B controller advised the crew of CPT7727, they had traffic at 6 o'clock, 5 miles southbound, 12,600 feet descending to 12,000 feet, a heavy Airbus 330, which would pass overhead and to the downwind. The crew acknowledged the advisory.

1842:17 The B controller instructed CPT7727 to contact approach [final (F) sector controller.

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[5] All altitudes are in feet above mean sea level (msl) unless otherwise noted.

[6] Waypoints in a standard Terminal Arrival (STAR) approach. A STAR is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. STARs simplify clearance delivery procedures, and also facilitate transition between en route and instrument approach procedures.

1842:32 The crew of CPT7727 checked in with the F controller at 11,000 feet.

1844:49 The crew reported they had the Airbus [A330] in sight and would maintain visual. The F controller acknowledged and instructed CPT7727 to maintain 9,000 feet. The crew read back the instruction.

1845:54 The F controller asked the crew of CPT7727 if they had the airport in sight, the crew confirmed that they did. The controller acknowledged and instructed the crew to expect runway 34R.

1846:05 The F controller instructed CPT7727 to fly heading 150 degrees .The crew read back the instruction.

1846:32 The F controller instructed CPT7727 to maintain 8,000 feet and turn left 5 degrees. The crew readback the instructions.

1846:52 The SLC control tower called the F controller and passed a pilot report (PIREP[7]) of a wind shear gain of 20 knots on an 8 to 9 mile final.

1846:56 The F controller transmitted a blanket broadcast to all aircraft relaying the PIREP information.

1847:08 The F controller instructed the crew of CPT7727 that they were following a B757, 11 o'clock, 6 miles straight in descending out of 7,000 feet. The crew did not respond.

1847:20 The F controller again instructed the crew of CPT7727 there was traffic 10 o'clock, 5 miles straight-in to their right, 6,700 feet descending, a B757, and asked if they had it in sight. The crew stated they had it in sight. The F controller instructed CPT7727 to follow the B757, advised them to caution wake turbulence, and cleared the flight for the visual approach to runway 34R. The crew read back the clearance.

1847:47 The F controller instructed CPT7727 to contact tower. The pilot acknowledged to contact tower.

1847:55 The F controller transmitted a blanket broadcast to all aircraft that there was a wind shear alert for runway 34L arrival with a 15 knot loss at 2 miles.

[7] Pilot Weather Report – A report made by a pilot of meteorological phenomena encountered by an aircraft in flight.

1848:00 The SLC Local controller transmitted a blanket broadcast to all aircraft that there was a wind shear alert for runway 34L arrival with a 15 knot loss at 2 miles.

1848:12 The crew of CPT7727 contacted SLC ATCT reporting they were on a visual runway 34R approach.

Figure 1 is the SLC airport diagram identifying the location of runway 34R. The blue arrow points to the approach end of runway 34R.

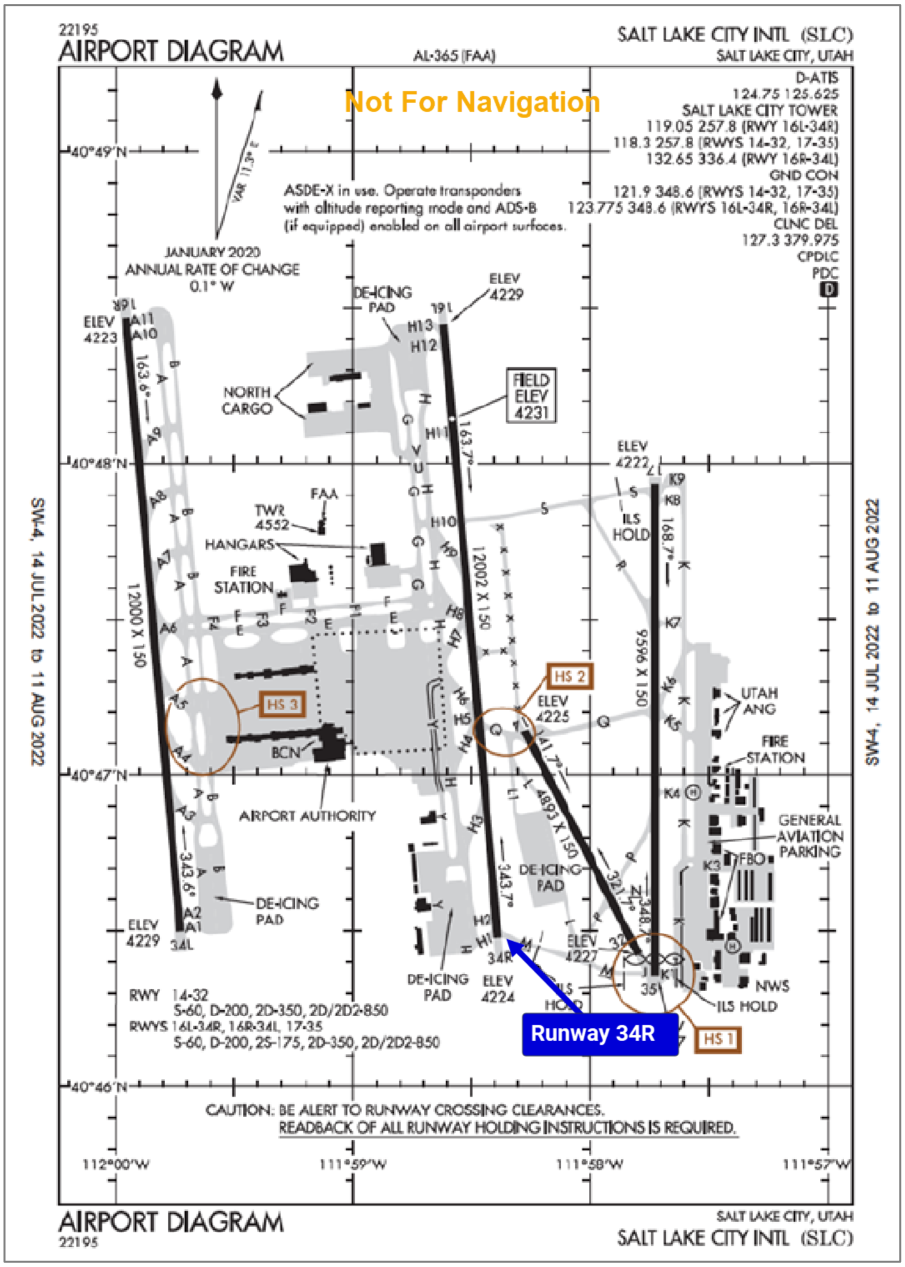

Figure 1. SLC airport diagram depicts the location of runway 34R.

1848:20 The local control center (LCC) controller instructed the CPT7727 that they were following a B757 on a five-mile final, issued wind 300 at 18 knots gust 29, and cleared CPT7727 to land on runway 34R. The crew acknowledged the clearance to land.

1848:29 The LCC controller asked the crew if they had the B757 in sight. The crew responded they did.

1848:41 The LCC controller instructed the crew to maintain visual separation from the B757. The crew acknowledged the instruction.

Figure 2 is a satellite imagery overlaid with CPT7727's Automatic Dependent Surveillance–Broadcast (ADS-B)[8] flight track data. The figure illustrates CPT7727's route of flight after checking in with the SLC tower. The blue dots indicate the airplane's ADS-B targets, and the arrows indicate the direction of flight. The boxes provide the time and any pertinent information that occurred at those locations.

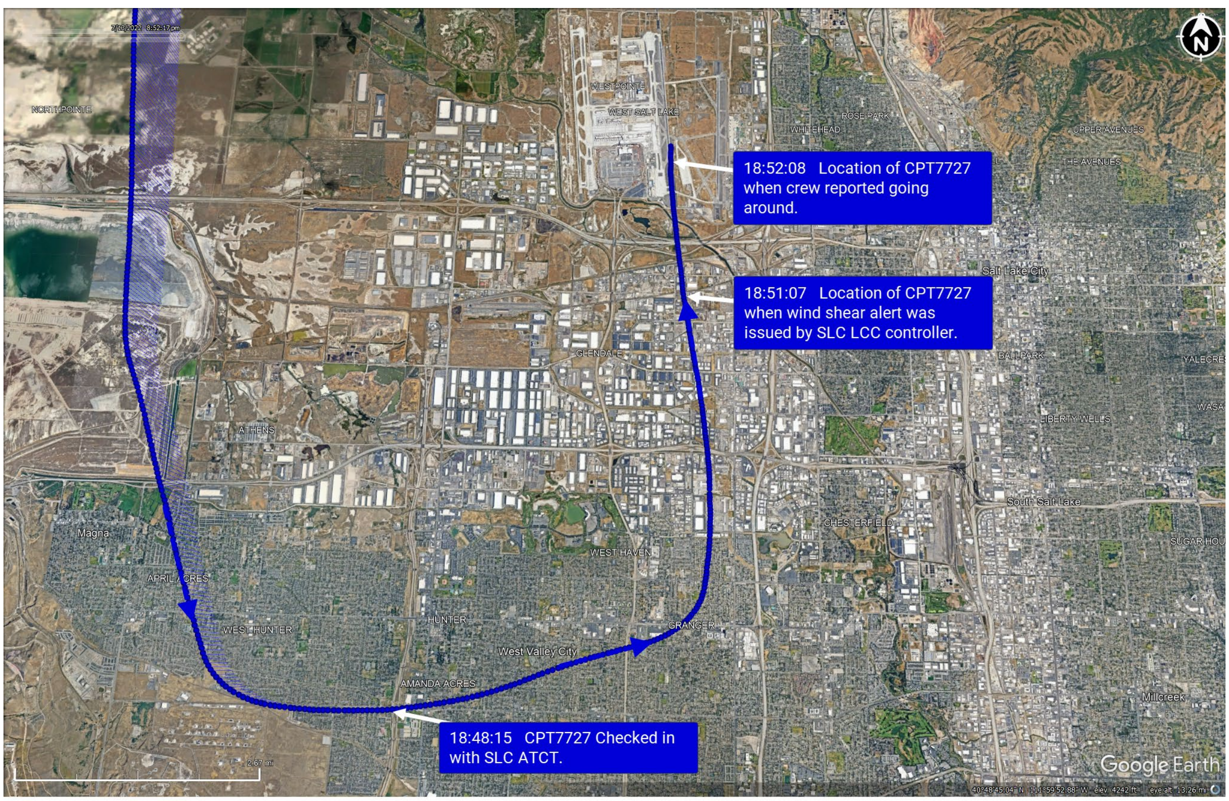

Figure 2. CPT7727's route of flight after checking in with the SLC airport traffic control tower.

[8] 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 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.

1850:01 The LCC controller asked an uninvolved airplane, which had just departed runway 34R, if they had encountered wind shear on the climbout. The pilot reported negative wind shear, but the midfield gusts were strong.

1850:50 The LCC controller solicited a PIREP from the B757, that CPT7727 was following on final and had just landed on runway 34R, and the B757 crew reported they had wind shear of plus/minus 10 knots on final.

1851:07: The LCC controller transmitted a blanket broadcast to all aircraft that there was a wind shear alert for 34R arrivals and departures with 15 knot loss over the runway.

1852:08: The crew of CPT7727 reported they were going around. The LCC controller instructed the pilot to climb and maintain 9,000 feet, fly runway heading. The pilot did not acknowledge.

1852:41 The LCC contacted S56 and reported that CPT7727 crashed on the runway, and they could not accept arrivals.

1853:56 The LCC attempted to contact CPT7727. The pilot did not respond.

No further communications with the pilot.

Figure 3 is a satellite imagery overlaid by CPT7727's ADS-B flight track data. The figure illustrates the location where the crew of CPT7727 reported going around and the location of the wreckage. The blue dots indicate the airplane's ADS-B targets, and the arrows indicate the direction of flight. The boxes provide the time and pertinent information that occurred at those locations.

Figure 3. Location where the crew of CPT7727 reported going around and the location of the wreckage.

2.0 Airport Information

SLC was s a joint military/public airport located about 4 miles west of downtown Salt Lake City, Utah. The airport was owned by the City of Salt Lake City and was administered by the municipal Department of Airports. The airport complex was made up of one terminal, two concourses and 66 gates.

The airfield consisted of three air carrier runways and a general aviation runway; runway 16L/34R was 12,002 feet long, runway 16R/34L was 12,000 feet long, runway 17/35 was 9,596 feet long and runway 14/32 was 4,892 feet long.[9]

3.0 Automatic Dependent Surveillance – Broadcast

ADS-B data for CPT7727 was provided by the FAA and is included in attachment 7.

[9] Information retrieved from Salt Lake City Department of Airports (visitsaltlake.com) and https://slcairport.com/about-the-airport/

4.0 Meteorological Information

Salt Lake City International Airport (KSLC) had the closest official weather station to the accident site. KSLC had Automated Surface Observing System (ASOS[10]). The KSLC ASOS was located around 5,000 ft south-southeast of the accident site, at an elevation of 4,226 ft, and issued the following observations surrounding the period of the accident:

[1833 MDT] SPECI KSLC 140033Z 34016G21KT 10SM TS FEW110CB SCT150 BKN240 37/08 A2995 RMK AO2 LTG DSNT SW TSB27 CB VC SW MOV NE T03720083

KSLC weather at 1833 MDT, wind from 340° at 16 knots with gusts to 21 knots, visibility 10 miles or greater, thunderstorm, few cumulonimbus clouds at 11,000 ft above ground level (agl), scattered clouds at 15,000 ft agl, broken ceiling at 24,000 ft agl, temperature of 37° Celsius (C), dew point temperature 8°C, and an altimeter setting of 29.95 inches of mercury (inHg). Remarks, automated station with a precipitation discriminator, lightning distant southwest, thunderstorm began at 1827 MDT, cumulonimbus cloud in the vicinity southwest moving northeast, temperature 37.2°C, dew point temperature 8.3°C.

Accident Time 1852 MDT:

[1854 MDT] METAR[11] KSLC 140054Z 30029G48KT 9SM -TSRA FEW018 FEW120 BKN140 BKN240 33/13 A2997 RMK AO2 PK WND 32048/0054 LTG DSNT SW RAB51 TSB27E42B50 SLP081 CB OHD MOV NE P0000 T03280128

KSLC weather at 1854 MDT, wind from 300° at 29 knots with gusts to 48 knots, visibility 9 miles, thunderstorm with light rain, few clouds at 1,800 ft agl, few clouds at 12,000 ft agl, broken ceiling at 14,000 ft agl, broken clouds at 24,000 ft agl, temperature of 33°C, dew point temperature 13°C, and an altimeter setting of 29.97 inHg. Remarks, automated station with a precipitation discriminator, peak wind at 1854 MDT from 320° at 48 knots, lightning distant southwest, rain began at 1851 MDT, thunderstorm began at 1827 MDT and ended at 1842 MDT, thunderstorm began again at 1850 MDT, sea level pressure 1008.1 hPa, cumulonimbus clouds overhead moving northeast, a

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[10] 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.

[11] 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.

trace of precipitation since 1754 MDT, temperature 32.8°C, dew point temperature 12.8°C.

5.0 Personnel Interviewed

5.1 Air Traffic Control Personnel

5.1.1 Local Control Center (LCC)

The LCC controller's air traffic control career began at the FAA on September 30, 2016, when he attended the FAA Academy in Oklahoma City, OK. After successful completion of initial air traffic control training, he worked in Lubbock, TX until February 2020, then SLC from March 2020 to present. He was a certified professional controller (CPC) and had qualified on all positions in the control tower; and was certified as a Controller in Charge (CIC) for the mid shift only.

5.1.2 Operations Supervisor (OS)

The OS's air traffic control career began with the FAA on March 31, 2003, as a direct hire to Salt Lake City Air Route Traffic Control Center (ARTCC) (ZLC). In September 2014 he transferred to SLC, where he was currently employed. He had qualified on all positions in the tower and had worked as a Front Line supervisor prior to working as an OS.

5.1.3 SLC Air Traffic Manager (SLC ATM)

The SLC ATM's air traffic control career began with the FAA in August 1997, as a direct hire to Cleveland ARTCC. Prior to transferring to SLC as the ATM in June 2022, he had worked at ZLC from October 1999 to June 2022. During his employment at ZLC, he had completed a 3 month detail at SLC as the acting ATM.

5.1.4 S56 Air Traffic Manager (S56 ATM)

The S56 ATM's air traffic control career began with the FAA in July 2006, as a direct hire to Los Angeles International Airport. Prior to transferring to S56 as the ATM in December 2021, he had worked at Northern California TRACON, and Joshua TRACON.

5.1.5 Final Sector Controller (F Controller)

The F controller's air traffic control career began with the FAA in May 2008, when he attended the FAA Academy in Oklahoma City, OK. After successful completion of initial air traffic control training, he worked at Maui, Hawaii, Cape TRACON, and then S56 from 2015 to present. He was a certified professional controller (CPC) and had qualified on all positions in the TRACON including certified as CIC.

5.2 Non Air Traffic Control Personnel Interviews

5.2.1 Radar Automation Manager

The Radar Automation Manager's career began with the FAA in Sep 2005 when she was hired as an FAA intern at SLC, where she was currently employed as the Radar Automation manager. Her maintained and repaired the radar and automation equipment.

5.2.2 Technician in Depth (TID)

The TID's career began at the FAA on November 8, 2009, when he was hired at the Gallop long-range radar enroute environment. Prior to working at Salt Lake City Tech Support (TSOC), he worked in the Salt Lake City Radar group for a year.

5.2.3 System Support Center (SSC) Manager

The SCC Manager's career began at the FAA in 1996, when she was hired to work at Oakland Bay TRACON. On February 20, 2000, she transferred to SLC, where she was currently employed as the SSC Manager for Navigation, Communication and Environmental.

6.0 Air Traffic Control Procedures

6.1 PIREP Solicitation and Dissemination

FAA order 7110.65Z, *Air Traffic Control*, paragraph 2−6−2, PIREP Solicitation and Dissemination, provided procedures and guidance for controllers on solicitation and dissemination of urgent and routine PIREPS. The paragraph stated in part:

> Emphasis must be placed on the solicitation and dissemination of Urgent (UUA) and Routine (UA) PIREPs. Timely dissemination of PIREPs alerts pilots to weather conditions and provides information useful to forecasters in the development of aviation forecasts. PIREPs also provide information required by ATC in the provision of safe and efficient use of airspace. This includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

NOTE–

Routine PIREPs indicating a lack of forecasted weather conditions, for example, a lack of icing or turbulence, are also valuable to aviation weather forecasters and pilots. This is especially true when adverse conditions are expected or forecasted but do not develop or no longer exist.

a. Solicit PIREPs when requested, deemed necessary or any of the following conditions exists or is forecast for your area of jurisdiction:

1. Ceilings at or below 5,000 feet. These PIREPs must include cloud bases, tops and cloud coverage when available. Additionally, when providing approach control services, ensure that at least one descent/climb-out PIREP and other related phenomena is obtained each hour.
2. Visibility (surface or aloft) at or less than 5 miles.
3. Thunderstorms and related phenomena.
4. Turbulence of moderate degree or greater.
5. Icing of light degree or greater.
6. Wind shear.
7. Braking action reports less than good.
8. Volcanic ash clouds.
9. Detection of sulfur gases (SO_2 or H_2S), associated with volcanic activity, in the cabin.

b. Record with the PIREPs:

1. Time.
2. Aircraft position.
3. Type aircraft.
4. Altitude.
5. When the PIREP involves icing include:
   (a) Icing type and intensity.
   (b) Air temperature in which icing is occurring.

c. Obtain PIREPs directly from the pilot, or if the PIREP has been requested by another facility, you may instruct the pilot to deliver it directly to that facility.

d. Disseminate PIREPs as follows:

1. Relay pertinent PIREP information to concerned aircraft in a timely manner.
   NOTE–
   Use the word gain and/or loss when describing to pilots the effects of wind shear on airspeed.
2. EN ROUTE. Relay all operationally significant PIREPs to the facility weather coordinator.
3. TERMINAL. Relay all operationally significant PIREPs to:
   (a) The appropriate intrafacility positions.
   (b) The OS/CIC for long line dissemination via an FAA approved electronic system (for example, AIS−R, or similar systems); or,
   (c) Outside Alaska: The overlying ARTCC's Flight Data Unit for long−line dissemination.

(d) Alaska Only: The FSS serving the area in which the report was obtained.

6.2 Issuing Weather and Chaff Areas

FAA order 7110.65Z, *Air Traffic Control,* paragraph 2−6−4, Issuing Weather and Chaff Areas, provided procedures and guidance to controllers for issuance of pertinent information on observed/reported weather and chaff areas to potentially affected aircraft. The paragraph stated in part:

a. Controllers must issue pertinent information on observed/reported weather and chaff areas to potentially affected aircraft. Define the area of coverage in terms of:
   1. Azimuth (by referring to the 12−hour clock) and distance from the aircraft and/or
   2. The general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

   NOTE−
   Weather significant to the safety of aircraft includes conditions such as funnel cloud activity, lines of thunderstorms, embedded thunderstorms, large hail, wind shear, microbursts, moderate to extreme turbulence (including CAT), and light to severe icing.

b. Inform any tower for which you provide approach control services of observed precipitation on radar which is likely to affect their operations.

c. Use the term "precipitation" when describing radar−derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word "turbulence" in describing radar−derived weather.
   1. LIGHT.
   2. MODERATE.
   3. HEAVY.
   4. EXTREME.

   NOTE−
   Weather and Radar Processor (WARP) does not display light intensity.

d. TERMINAL: In STARS, correlate precipitation descriptors from subparagraph c as follows:
   1. Level 1 = LIGHT
   2. Level 2 = MODERATE
   3. Levels 3 and 4 = HEAVY
   4. Levels 5 and 6 = EXTREME

e. When precipitation intensity information is not available.

   NOTE−
   Phraseology using precipitation intensity descriptions is only applicable when the radar precipitation intensity information is determined by NWS

radar equipment or NAS ground based digitized radar equipment with weather capabilities. This precipitation may not reach the surface.

6.3 Low Level Wind Shear/ Microburst Advisories

FAA order 7110.65Z, *Air Traffic Control*, paragraph 3−1−8, Low Level Wind Shear/ Microburst Advisories, provided procedures and guidance to controllers on issuance of a wind shear or microburst alert when it was received. The paragraph stated in part:

a. When low level wind shear/microburst is reported by pilots, Integrated Terminal Weather System (ITWS) or detected on wind shear detection systems such as LLWAS NE++, LLWAS−RS, WSP, or TDWR, controllers must issue the alert to all arriving and departing aircraft. Continue the alert to aircraft until it is broadcast on the ATIS and pilots indicate they have received the appropriate ATIS code. A statement must be included on the ATIS for 20 minutes following the last report or indication of the wind shear/microburst.

NOTE−

Some aircraft are equipped with Predictive Wind Shear (PWS) alert systems that warn the flight crew of a potential wind shear up to 3 miles ahead and 25 degrees either side of the aircraft heading at or below 1200' AGL. Pilot reports may include warnings received from PWS systems.

b. At facilities without ATIS, ensure that wind shear/microburst information is broadcast to all arriving and departing aircraft for 20 minutes following the last report or indication of wind shear/microburst.

1. At locations equipped with LLWAS, the local controller must provide wind information as follows:

   NOTE−

   The LLWAS is designed to detect low level wind shear conditions around the periphery of an airport. It does not detect wind shear beyond that limitation.

   (a) If an alert is received, issue the airport wind and the displayed field boundary wind.

   NOTE−

   The requirements for issuance of wind information remain valid as appropriate under this paragraph, paragraph 3−9−1, Departure Information, and paragraph 3−10−1, Landing Information.

2. Wind shear detection systems, including TDWR, WSP, LLWAS NE++ and LLWAS−RS provide the capability of displaying microburst alerts, wind shear alerts, and wind information oriented to the threshold or departure end of a runway. When detected, the associated ribbon display allows the controller to read the displayed alert without any need for interpretation.

(a) If a wind shear or microburst alert is received for the runway in use, issue the alert information for that runway to arriving and departing aircraft as it is displayed on the ribbon display.
(b) If requested by the pilot or deemed appropriate by the controller, issue the displayed wind information oriented to the threshold or departure end of the runway.
(c) LLWAS NE++ or LLWAS−RS may detect a possible wind shear/microburst at the edge of the system but may be unable to distinguish between a wind shear and a microburst. A wind shear alert message will be displayed, followed by an asterisk, advising of a possible wind shear outside of the system network.
NOTE−
LLWAS NE++ when associated with TDWR can detect wind shear/microbursts outside the network if the TDWR fails.
(d) If unstable conditions produce multiple alerts, issue an advisory of multiple wind shear/ microburst alerts followed by specific alert or wind information most appropriate to the aircraft operation.
(e) The LLWAS NE++ and LLWAS−RS are designed to operate with as many as 50 percent of the total sensors inoperative. When all three remote sensors designated for a specific runway arrival or departure wind display line are inoperative then the LLWAS NE++ and LLWAS−RS for that runway arrival/departure must be considered out of service. When a specific runway arrival or departure wind display line is inoperative and wind shear/microburst activity is likely; (for example, frontal activity, convective storms, PIREPs), the following statement must be included on the ATIS, "WIND SHEAR AND MICROBURST INFORMATION FOR RUNWAY (runway number) ARRIVAL/DEPARTURE NOT AVAILABLE."
NOTE−
The geographic situation display (GSD) is a supervisory planning tool and is not intended to be a primary tool for microburst or wind shear.

6.4 Wake Turbulence Cautionary Advisories

FAA order 7110.65Z, *Air Traffic Control,* paragraph 2−1−20, Wake Turbulence Cautionary Advisories, provided procedures and guidance for controllers to issue cautionary wake turbulence advisories. The paragraph stated in part:

a. Issue wake turbulence cautionary advisories including the position, altitude if known, and direction of flight to aircraft operating behind an aircraft that requires wake turbulence separation when:

1. TERMINAL. VFR aircraft not being radar vectored are behind the larger aircraft.
2. IFR aircraft accept a visual approach or visual separation.

3. TERMINAL. VFR arriving aircraft that have previously been radar vectored and the vectoring has been discontinued.

b. Issue cautionary information to any aircraft if in your opinion, wake turbulence may have an adverse effect on it. When traffic is known to be a Super aircraft, include the word Super in the description. When traffic is known to be a Heavy aircraft, include the word Heavy in the description.

NOTE−

Wake turbulence is generated when an aircraft produces lift. Because the location of wake turbulence is difficult to determine, the controller is not responsible for anticipating its existence or effect. Aircraft flying through a Super/Heavy aircraft's flight path may have an increased chance of a wake encounter.

F. LIST OF ATTACHMENTS

Attachment 1: Interview Summaries and Transcript
Attachment 2: Aircraft Accident Package
Attachment 3: Local Control Center Audio
Attachment 4: Final Sector (F) Audio
Attachment 5: Approach Sector (Bear) Audio
Attachment 6: ATIS Audio
Attachment 7: ADS-B Data
Attachment 8: FAA ATC Radar Data
Attachment 9: Training and Administrative Supporting Documents

Submitted by:

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