



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

November 2, 2017

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

WPR16FA172

Table Of Contents

A.	ACCIDENT	3
B.	AIR TRAFFIC CONTROL GROUP.....	3
C.	SUMMARY	3
D.	DETAILS OF THE INVESTIGATION	3
E.	FACTUAL INFORMATION	3
1.0	History of Flight.....	3
2.0	Radar Data	5
3.0	Weather Information.....	5
4.0	FAA Airport Information.....	5
5.0	RNO Airspace	5
6.0	Air Traffic Control Procedures	6
F.	LIST OF ATTACHMENTS	9

A. ACCIDENT

Location: Sparks, Nevada
Date: August 30, 2016
Time: 1801 Pacific daylight time (PDT)
0101 coordinated universal time (UTC)
Airplane: N958CA, Beechcraft A36, Bonanza

B. AIR TRAFFIC CONTROL GROUP

Andy Olvis
Group Chairman
Operational Factors Division (AS-30)
National Transportation Safety Board

Daniel Creedon
FAA Air Traffic Organization
Safety & Technical Training
Federal Aviation Administration (FAA)

Eric Stormfels
Air Safety Investigator
Pittsburgh ATCT (PIT)
National Air Traffic Controllers Assn

C. SUMMARY

On August 30, 2016, about 1801 Pacific daylight time, a Beechcraft A-36 Bonanza, N985CA, was destroyed when it impacted the ground in a recreational vehicle (RV) park about one-half mile prior to the threshold of runway 16L at Reno/Tahoe International Airport (RNO), Sparks, Nevada. The airplane was owned by Venture Aviation Services of Reno Nevada, and was on leaseback to, and operated by, Flying Start Aero, a flight school based at RNO. Both persons on board received fatal injuries; there were no ground injuries. The flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed.

D. DETAILS OF THE INVESTIGATION

On September 21, 2016, the air traffic control group convened remotely and conducted an interview via telephone with the RNO local controller working on the day of the accident. (See attachment 1.)

E. FACTUAL INFORMATION

1.0 History of Flight

Bonanza N958CA entered the RNO airspace under visual flight rules (VFR) from the south for landing at RNO. The NCT approach controller had issued the pilot a vector of 350 with an altitude restriction to maintain 8,500 feet above mean sea level (msl). As N958CA approached RNO from about 6 miles southeast, the NCT approach controller advised the pilot of N958CA there would be a “slight delay for runway 25, ah you’re number four now for the airport, ah traffic on a fifteen mile straight in is a Boeing seven fifty seven for one-six right.” The pilot acknowledged

and stated that he could accept runway 16L. The NCT approach controller instructed the pilot of N958CA to enter the downwind and to contact RNO tower; it was not specified which runway.

At 1754:33, the pilot of N958CA contacted the RNO local controller, “Reno tower good afternoon, Bonanza niner eight five Charlie Alpha restricted heading three-five-zero, eight thousand five hundred.”

At 1754:42, the RNO local controller answered a landline call from the NCT approach controller who informed him that the pilot of N958CA could accept runway 16L; would be the last aircraft for runway 16L; and, would be entering from the downwind.

At 1754:50, the RNO local controller instructed the pilot of N958CA to continue for runway 25; the pilot acknowledged. However, the pilot continued for runway 16L without the RNO controller correcting the pilot.

At 1755:08, an unknown pilot believed to be the pilot of N958CA transmitted “and ah tower, how about the restrictions?” There was no response by the RNO local controller.

At 1756:20, the pilot of N958CA reported that he was on a wide downwind for runway 16L. The RNO local controller instructed the pilot to continue for runway 16L; the pilot acknowledged.

At 1757:12, the pilot of N958CA advised that he was turning a wide left base for runway 16L. The RNO local controller acknowledged and informed the pilot “traffic, niner mile final for one-six right is a Boeing seven-fifty-seven, caution wake turbulence, wind two-six-zero at one-three gust one-eight, runway one-six left cleared to land.” The traffic was Federal Express flight 1359 (FDX1359). The pilot acknowledged the clearance and informed the local controller they did not have the B757 in sight. Also landing runway 16R preceding FDX1359 was United Parcel Service flight 9706 (UPS9706), also a B757. (See attachment 2, figure 1.)

At 1758:17, the pilot of N958CA reported seeing the traffic saying “five Charlie Alpha has got a visual on the airliner for the, for the right.” There were no further recorded transmissions from the pilot of N958CA. When the pilot of N958CA reported the “airliner” in sight, FDX1359 was about 5.95 nautical miles (NM) from the runway 16R threshold and UPS9706 was about 0.67 NM from the runway 16R threshold. (See attachment 2, figure 2.)

At 1758:26, the RNO local controller informed the pilot of FDX1359 that there was traffic “on a four-mile left base for one-six left six thousand two hundred feet, Bonanza, they do have you in sight.” The pilot of FDX1359 acknowledged the traffic call and said they were also looking for the traffic.

At 1801:09, the RNO local controller instructed the pilot of Horizon Air flight 320 (QXE320) to line up and wait on runway 16R. The pilot acknowledged the instruction and asked the RNO local controller “you see the flames off the end of ah the beginning of one-six right? Just, there is some smoke going up now.” (See attachment 2, figure 3.)

The RNO local controller made several attempts to contact the pilot of N958CA with no response.

2.0 Radar Data

Radar data for this report was obtained from the FAA NCT terminal radar approach control (TRACON). The NCT TRACON plot playback (.PPB) data was of good quality and was part of the standard terminal automation replacement system (STARS). The FAA radar sensor providing the radar data was an airport surveillance radar 11 (ASR-11) located on the RNO airport at latitude 39°30'4.55"N, and longitude 119°46'46.45"W. The RNO ATCT air traffic controllers used a Tower Display Workstation (TDW) to receive radar data and assist working traffic.

3.0 Weather Information

The 1755 RNO automated weather observation indicated winds from 290 degrees at 17 knots, gusting to 20 knots, visibility 10 miles, few clouds at 10,000 feet above ground level, temperature 31 degrees Celsius (C), dew point minus 5 degrees C, and an altimeter setting of 30.01 inches of mercury.

For further information, please see the Weather Group Chairman's factual report.

4.0 FAA Airport Information

RNO runway 16L was 9,000 feet long by 150 feet wide and was constructed of grooved concrete. The runway approach end was located at 39-30.830430N and 119-46.004433W at an elevation of 4414.8 feet msl. The threshold crossing height was 75 feet. The runway was served by a 3.00 degree glide slope, and a 4-light Precision Approach Path Indicator (PAPI) light system, installed on the left side of the runway at the approach end.

RNO runway 16R was 11,001 feet long by 150 feet wide and was constructed of grooved concrete. The runway approach end was located at 39-30.830635N and 119-46.153228W at an elevation of 4414.8 feet msl. The runway had a displaced threshold of 999.3 feet at the approach end of the runway. The threshold crossing height was 77 feet. The runway was served by a 3.06 degree glide slope, and a 4-light PAPI light system, installed on the left side of the runway at the approach end.

RNO runways 16R and 16L were parallel runways separated by 697.8 feet. (See attachment 2, figure 4.)

5.0 RNO Airspace

RNO was in class C airspace, and required RNO air traffic controllers to separate aircraft by specific class C standards. Federal Aviation Administration Joint Order 7110.65W (FAA JO 7110.65W), *Air Traffic Control*, paragraph 7-8-3 addresses class C service separation and says [in part]:

7-8-3. CLASS C SERVICES

Separate VFR aircraft from IFR aircraft by any one of the following:

c. Target resolution, except when ISR is being displayed.

NOTE– Apply the provisions of Paragraph 5-5-4, Minima, subparagraphs f and g, when wake turbulence separation is required.

6.0 Air Traffic Control Procedures

The air traffic controller was required to apply the provisions of FAA JO 7110.65, *Air Traffic Control*, chapter 5-5-4 which states [in part]:

5-5-4 MINIMA

h. In addition to subpara g, separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the following minima will exist at the time the preceding aircraft is over the landing threshold:

NOTE– Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.

1. Small behind large– 4 miles.
2. Small behind heavy– 6 miles.

FAA Order 7110.659C *Wake Turbulence Recategorization* addresses Wake Turbulence Recategorization (Recat). The 7110.659C was signed on February 29, 2016 and provided “procedural guidance to FAA Order JO 7110.65, *Air Traffic Control*, the Pilot/Controller Glossary, and FAA Order JO 7210.3, *Facility Operation and Administration*, related to the implementation and use of Wake Turbulence Recategorization procedures and separation minima.” At facilities authorized to use Recat for air traffic control services, the applicable provisions of FAA Order 7110.65, *Air Traffic Control*, are superseded by the provisions contained in the order. RNO was authorized to use Recat on May 26, 2016. FAA JO 7110.695C, *Wake Turbulence Recategorization*, 5-5-4 addresses wake turbulence separation standards and states in part:

WAKE TURBULENCE APPLICATION

h. ON APPROACH. In addition to subpara g, separate an aircraft on approach behind another aircraft to the same runway by ensuring the wake separation minima in table 5-5-2 will exist at the time the trailing aircraft is within 5 NM of the FAF.

NOTE - Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.

TBL 5-5-2

Wake Turbulence Separation for On Approach							
		Follower					
		A	B	C	D	E	F
Leader	A		5NM	6NM	7NM	7NM	8NM
	B		3NM	4NM	5NM	5NM	7NM
	C				3.5NM	3.5NM	6NM
	D						4NM
	E						
	F						

The B757 model 200 and 300 are considered wake category D according to FAA JO 7360.1, *Appendix A Aircraft Type Designator*, dated September 25, 2015 and stated [in part]:

9/25/2015

7360.1
Appendix A

Aircraft Type Designator	Class	Engine Number-Type/FAA Weight Class	ICAO WTC	Wake Category	SRS	LAHSO	MANUFACTURER, Model
B752	Fixed-wing	2J/L	Medium	D	III	7	BOEING, 757-200 BOEING, C-32
B753	Fixed-wing	2J/L	Medium	D	III	8	BOEING, 757-300

2-10. Aircraft Wake Categories. For the purposes of wake turbulence separation minima, aircraft are categorized as Category A through Category F. Each aircraft is assigned a category based on wingspan and maximum takeoff weight (MTOW).

NOTE – *Applicable only at facilities authorized to conduct operations in accordance with FAA Order JO 7110.659, Wake Turbulence Recategorization.*

- a. Category A - Aircraft capable of MTOW of 300,000 pounds or more and a wingspan greater than 245 feet.
- b. Category B - Aircraft capable of MTOW of 300,000 pounds or more and a wingspan greater than 175 feet and less than or equal to 245 feet.
- c. Category C – Aircraft capable of a MTOW of 300,000 pounds or more and a wingspan greater than 125 feet and less than or equal to 175 feet.
- d. Category D –
 - (1) Aircraft capable of a MTOW less than 300,000 pounds and a wingspan greater than 125 feet and less than or equal to 175 feet; or
 - (2) Aircraft capable of a MTOW greater than 41,000 pounds with a wingspan greater than 90 feet and less than or equal to 125 feet.
- e. Category E – Aircraft capable of a MTOW greater than 41,000 pounds with a wingspan greater than 5 feet and less than or equal to 90 feet.

f. Category F –

- (1) Aircraft capable of a MTOW of less than 41,000 pounds and a wingspan less than or equal to 125 feet; or
- (2) Aircraft capable of a MTOW less than 15,500 pounds regardless of wingspan; or
- (3) A powered sailplane.

The Beechcraft A36 Bonanza is considered wake category F according to FAA JO 7360.1, *Appendix A Aircraft Type Designator*, dated September 25, 2015 and stated [in part]:

Aircraft Type Designator	Class	Engine Number-Type/FAA Weight Class	ICAO WTC	Wake Category	SRS	LAHSO	MANUFACTURER, Model
BE36	Fixed-wing	1P/S	Light	F	I	2	BEECH, 36 Bonanza 36
							BEECH, A36 Bonanza 36
							BEECH, A36AT Bonanza 36
							BEECH, Bonanza 36
							BEECHCRAFT, Bonanza (G36)
							BEECHCRAFT, G36 Bonanza
							COLEMILL, Starfire Bonanza 36
							HAWKER BEECHCRAFT, Bonanza (G36)
							HAWKER BEECHCRAFT, G36 Bonanza
							RAYTHEON, A36 Bonanza 36
							RAYTHEON, A36 Chofit
							RAYTHEON, Bonanza (G36)
							RAYTHEON, Bonanza 36
							RAYTHEON, Chofit
							RAYTHEON, G36 Bonanza

FAAJO 7110.65 *Air Traffic Control*, paragraph 7-2-1 addresses visual separation and says [in part]:

7-2-1. VISUAL SEPARATION

Aircraft may be separated by visual means, as provided in this paragraph, when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, and known weather conditions. Reported weather conditions must allow the aircraft to remain within sight until other separation exists. Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation. Visual separation is not authorized when the lead aircraft is a category A.

2. Pilot-applied visual separation.

- (a) Maintain communication with at least one of the aircraft involved and ensure there is an ability to communicate with the other aircraft.
- (b) The pilot sees another aircraft and is instructed to maintain visual separation from the aircraft as follows:
 - (1) Tell the pilot about the other aircraft. Include position, direction, type, and, unless it is obvious, the other aircraft's intention.
 - (2) Obtain acknowledgment from the pilot that the other aircraft is in sight.
 - (3) Instruct the pilot to maintain visual separation from that aircraft.

The accident aircraft was operating under visual flight rules (VFR). FAA JO 7110.65, *Air Traffic Control*, addresses basic radar services provided to VFR aircraft. Paragraph 7-6-7 discusses sequencing for VFR aircraft to an airport and says [in part]:

7-6-7. SEQUENCING

- c. Apply the following procedures to a VFR aircraft being radar sequenced:
 - 1. The provisions of Paragraph 5-5-4, Minima, subparagraphs f and g.
 - 2. When parallel runways are less than 2,500 feet apart, do not permit an aircraft to overtake another aircraft established on final within the facility's area of responsibility when wake turbulence separation is required.

F. LIST OF ATTACHMENTS

Attachment 1: Interview summary of the air traffic controller involved.
Attachment 2: Radar graphics and a graphic of the RNO runways.

Submitted by:

Andy Olvis
Senior Air Traffic Investigator

THIS PAGE INTENTIONALLY BLANK