NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

December 17, 2017

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

CEN17MA183

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A. ACCIDENT

Location: Teterboro, New Jersey
Date: May 15, 2017
Time: 1530 eastern daylight time (EDT)
1930 coordinated universal time (UTC) [1]
Airplane: N452DA, Gates Learjet, LJ35

B. AIR TRAFFIC CONTROL GROUP

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C. SUMMARY

On May 15, 2017, at 1529 eastern daylight time, a Gates Learjet 35A, N452DA, operated by Trans-Pacific Jets, departed controlled flight while on a circling approach to runway 01 at the Teterboro Airport (TEB), Teterboro, New Jersey, and impacted a commercial building and parking lot. The captain and first officer died; no one on the ground was injured. The airplane was destroyed by impact forces and postcrash fire. The airplane was registered to A&C Big Sky Aviation LLC and operated by Trans-Pacific Air Charter LLC under the provisions of 14 *Code of Federal Regulations* (CFR) Part 91 as a positioning flight. Visual meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan was filed. The flight departed from the Philadelphia International Airport (PHL), Philadelphia, Pennsylvania, about 1504 and was destined for TEB.

D. DETAILS OF THE INVESTIGATION

On Wednesday, May 17, 2017, the air traffic control (ATC) work group convened at TEB airport traffic control tower (ATCT) in Teterboro, New Jersey. The group conducted an in brief with the TEB air traffic manager (ATM). Attending the in brief was the FAA NY Terminal district manager; a specialist from the Eastern Service Area quality control group; the TEB National Air Traffic Controllers Association (NATCA) representative; the NATCA General Counsel; and, event investigations managers (EIMs) from Compliance Services. The group reviewed controller records, ATC data and documents, and conducted an interview[2] with the local control (LC) on the job-training instructor (OJTI).

[1] All times are eastern daylight time (EDT) unless otherwise noted.
[2] All interviews are included in Attachment 1 - Interview Summaries.

On Thursday, May 18, 2017, the ATC group reconvened at TEB ATCT. The group reviewed ATC data and documents related to the accident, and conducted interviews with the combined ground control (GC) and gate hold (GH) controller, controller in charge (CIC), and the LC developmental controller. The group traveled to Westbury, New York to N90 (New York terminal radar approach control (TRACON)) to conduct an onsite investigation and interviews with N90 controllers.

On Friday, May 19, 2017, the group reconvened at N90 and conducted an in brief with the N90 ATM. Attending the in brief was the N90 NATCA representative; the FAA NY Terminal district manager; a representative from Terminal Services; the N90 staff manager; a representative from the Eastern Service Area quality control group; and the EIMs from Compliance Services. The group reviewed ATC data and documents related to the accident, and conducted interviews with the Newark area, Metro sector controller (412); Newark area, Mugzy sector controller (414); and the front line manager (FLM). The group completed and approved the field notes.

E. FACTUAL INFORMATION

1.0 History of Flight

About 1504, N452DA departed runway 35 from PHL destined for TEB. Attachment 2, figure 1[3] is a radar plot that depicts the flight path of N452DA from the time the flight departed PHL until the last radar target. After departing PHL, the pilot contacted Philadelphia TRACON North departure sector controller, reporting they were climbing out of l,000 feet[4] for 2,000 feet, flying the runway heading. The north departure controller instructed N452DA to climb and maintain 4,000 feet and to contact Philadelphia approach control [Yardley sector].

At 1505:59, the pilot of N452DA checked in with the Yardley sector controller, reporting they were climbing out of 2,500 for 4,000 feet, flying runway heading. The Yardley controller issued the altimeter, and then instructed the pilot to proceed direct MAZIE [an airspace fix].

At 1509:35, the Yardley controller asked N452DA, what's your airspeed?" The pilot responded, "were showing right now at two sixty (260) [knots]."

At 1512:04, N452DA asked the Yardley controller if there was any chance they could get a higher altitude. The Yardley controller responded, "unable higher, I would have to spin you back around and sequence you with the rest of the traffic going into Teterboro." The pilot responded with his callsign.

About 1513, the Yardley controller instructed N452DA to contact New York approach control [Metro sector]. The pilot acknowledged the instruction and checked in with the Metro approach controller at New York TRACON (N90). At 1513:58, the Metro controller issued N452DA the local altimeter setting, and instructed the pilot to, "… fly heading 020, vector ILS (instrument landing system)[5] six, circle one [sic]." About 10 seconds later the pilot responded,

[3] All figures are included in Attachment 2 - Figures.
[4] All altitudes are in feet above mean sea level (msl) unless otherwise noted.
[5] Instrument Landing System− A precision instrument approach system which normally consists of the following electronic components and visual aids: localizer, glideslope, outer marker, middle marker, and approach lights.

"okay we got two two niner er uh excuse me, what was that again, say that again, say altimeter ..." The Metro controller repeated the instructions and the pilot readback the instructions correctly. Attachment 2, figure 2 is the TEB airport diagram that depicts the locations of runways 6/24 and 1/19.

About 1515, the Metro controller instructed N452DA to descend and maintain 3,000 feet, followed by a right turn to a heading of 120°. The pilot acknowledged the instructions.

At 1519:17, the metro controller instructed N452DA to, "...fly heading of 090 intercept the six localizer, contact New York approach [Mugzy sector] …" The pilot readback the instructions and contacted the Mugzy sector controller, reporting he was at 3,000 feet on a 090° heading for the ILS runway 6 into Teterboro. The Mugzy controller acknowledged.

At 1520:42, the Mugzy controller advised N452DA, "…make sure you intercept the localizer." The pilot responded, "… copy." About 8 seconds later the Mugzy controller instructed N452DA, "turn left twenty (020°) heading to join" [the localizer]. The pilot responded, "…we got it."

About 1521, the Mugzy controller asked N452DA if he could go to VINGS and intercept the localizer runway 6. The pilot responded, "four five two delta alpha copy." About a minute later the Mugzy controller instructed N452DA to descend and maintain 2,000 feet. The pilot acknowledged. Attachment 2, figure 3 is the ILS RWY 6 approach chart which depicts the locations of VINGS, DANDY, and TORBY fixes.

At 1523:23, Mugzy controller instructed N452DA, "… 8 miles from VINGS cross VINGS at 2,000 feet cleared I-L-S runway six, circle one." The pilot readback the instructions. Four seconds later the Mugzy controller asked the N452DA his current airspeed. The pilot responded, 240 knots. The Mugzy controller instructed N452DA to maintain 240 knots until VINGS then slow to 180 knots and maintain that until TORBY[6]. The pilot readback the instructions.

About 1524, TEB tower called the Mugzy controller over the interfacility coordination line notifying them that GTH832 (Gotham 832) had gone around.

At 1526:32, the Mugzy controller instructed N452DA, "contact Teterboro tower on frequency one one niner point five (119.5), be sure to cross DANDY at fifteen hundred (1500) feet, circle at TORBY [final approach fix for the ILS runway 6]." The pilot responded, "alright DANDY at two hundred (200) feet circle at TORBY...." The pilot readback the altitude incorrectly, however, the Mugzy controller corrected the pilot by stating, "…DANDY at fifteen hundred (1500) feet…" The pilot acknowledged the altitude. Radar data indicated that the flight was about 10.1 nautical miles (nm) from the runway 6 threshold. Attachment 2, figure 4 is a radar plot that depicts the location of N452DA when the pilot was instructed to contact TEB tower.

[6] Final approach fix (FAF). A fix from which the final approach (IFR) to an airport is executed and which identifies the beginning of the final approach segment. It is designated on Government charts by the Maltese Cross symbol for nonprecision approaches and the lightning bolt symbol, designating the PFAF, for precision approaches; or when ATC directs a lower-than-published glideslope/path or vertical path intercept altitude, it is the resultant actual point of the glideslope/path or vertical path intercept.

About 1526, GTH832 checked in with the Mugzy controller. The Mugzy controller informed GTH832 to expect sequencing for the ILS runway 6, circle to runway 1 approach, and then asked the pilot why he went around at TEB. The pilot said "…the winds were not favorable at that time…"

About 1527, the Mugzy controller offered GTH832 a visual approach to runway 1, and informed the pilot that he would be sequenced behind the Learjet (N452DA). The pilot of GTH832 accepted the visual approach to runway 1. During this time, the TEB tower local controller had attempted to contact N452DA by broadcasting the callsign over the local control frequency. The pilot did not respond.

At 1528:06, the Mugzy controller issued approach instruction to GTH832, and informed the pilot that his sequence traffic was a Learjet (N452DA), at his 12'oclock and about 4 miles. As the Mugzy controller was providing those instruction to GTH832, the TEB local controller called over the interfacility coordination line and requested they transfer communications with N452DA to the TEB frequency. At 1528:17, after the pilot of GTH832 completed the readback and reported the traffic (N452DA) in sight, the Mugzy controller instructed N452DA to contact TEB tower and reiterated the frequency. The pilot of N452DA acknowledged the frequency change.

At 1528:29, the TEB local controller broadcasted N452DA's callsign over the frequency again. The pilot of N452DA responded, "yeah we ' re up ah for the circling now one two delta alpha."

At 1528:36, the local controller responded, "roger...wind three six zero [at] one six gust three two, runway one, continue, traffic holding in position." Radar data indicated that the pilot contacted TEB tower when the flight was about 3.17 nm from the threshold of runway 6. Attachment 2, figure 5 is a radar plot that depicts the location of N452DA when the pilot contacted TEB tower.

At 1528:51, the local controller cleared N452DA to land on runway 1, and asked the pilot where they would be parking. The pilot acknowledged the landing clearance, and stated that they would be parking at Jet Aviation.

At 1529:07, the local controller asked N452DA, "…you going to start that turn?" (At the same time the Mugzy controller called TEB over the interfacility coordination line and asked if N452DA was landing on runway 6.)

At 1529:09, the pilot of N452DA responded, "yes sir, we ' re doing it right now…" The local controller informed the Mugzy controller, "no he said he was in a circle when he came over." Radar data indicated that N452DA was about 1.54 nm from the runway 6 threshold. Attachment 2, figure 6 is a radar plot that shows the location of N452DA when the controller asked the pilot of N452DA if he was going to turn.

At 1529:44, an expletive was transmitted over the frequency. Five seconds later, the TEB local controller contacted New York TRACON informing them that N452DA had been involved in an accident.

The TEB tower personnel immediately alerted TEB airport emergency services about the accident, and completed the accident notification checklist.

2.0 Radar Data

Radar data for this report was obtained from the FAA ASR-9 sensors located at Newark Liberty International Airport (EWR), Newark, NJ, and at PHL.

3.0 Weather Information

The TEB weather for May 15, 2017 was obtained from the KTEB Automated Surface Observation System (ASOS). The current weather reported at the time of the accident was:

METAR KTEB 151852Z 35020G30KT 10SM SCT045 19/06 A2975

KTEB routine weather observation at 1452 EDT, wind from 350° at 20 knots gusting to 30 knots, visibility 10 miles or more, scattered clouds at 4,500 ft., temperature 19° Celsius (C), dew point 6° C, altimeter 29.75 inches of mercury (Hg).

4.0 Air Traffic Control Facility Information

4.1 TEB ATCT and Airport

TEB was a public general aviation relief airport located in Teterboro, New Jersey. It was owned and managed by the Port Authority of New York and New Jersey. The airport was located about 12 nm from midtown Manhattan. TEB was a level 7 air traffic control facility and was staffed 24 hours a day. Attachment 2, figure 7 is the TEB tower cab layout that shows the location of the operating positions in the tower.

The TEB airport had two active runways that intersected[7]:

Runway 6/24 was constructed of asphalt and grooved. The runway measured 6,013 feet (1,833 m) long and 150 feet (46 m) wide and was equipped with high intensity runway lights (HIRL). Runway 6 approach had an instrument landing system (ILS) and a medium intensity approach lighting system with runway alignment indicator lights (MALS-R) Runway 24 approach was equipped with both a precision approach path indicator (PAPI) and runway end identifier lights (REIL) systems.

Runway 1/19 was constructed of asphalt and grooved. The runway measured 7,000 feet (2,100 m) long and 150 feet (46 m) wide and was equipped with HIRL. Both runways 1 and 19 were equipped with centerline lighting, touchdown zone lighting, and REIL

[7] TEB airport and runway information retrieved from the FAA Chart Supplement.

systems. Runway 1 approach was equipped with a visual approach slope indicators (VASI) system. Runway 19 approach had an ILS and a PAPI.

4.2 New York TRACON (N90)

The New York TRACON (N90) was located in Westbury, New York. N90 was responsible for providing radar approach control services to three major airports, all located within the same New York Class B airspace: EWR, John F. Kennedy International Airport (JFK), and LaGuardia Airport (LGA). They were also responsible for dozens of smaller but busy airports. N90 was a level 12 air traffic control facility.

The Newark area of N90 was responsible for EWR along with the majority of the TRACON's satellite airports including TEB. Attachment 2, figure 8 is the N90 operational floor plan that shows the location of the Newark area and sectors.

5.0 ATC Procedures

5.1 Circling Approach

FAA order 7110.65W, Air Traffic Control, Pilot/Controller Glossary described "Circle-To-Land Maneuver" as:

> A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. At tower controlled airports, this maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport.

FAA order 7110.65W, Air Traffic Control, paragraph 4−8−6, "Circling Approach" provided guidance to air traffic controllers on circling approaches. The paragraph stated:

> a. Circling approach instructions may only be given for aircraft landing at airports with operational control towers.
>
> b. Include in the approach clearance instructions to circle to the runway in use if landing will be made on a runway other than that aligned with the direction of instrument approach. When the direction of the circling maneuver in relation to the airport/runway is required, state the direction (eight cardinal compass points) and specify a left or right base/downwind leg as appropriate.
>
> Phraseology−
> CIRCLE TO RUNWAY (number),
> or
> CIRCLE (direction using eight cardinal compass points) OF THE AIRPORT/RUNWAY FOR A LEFT/RIGHT BASE/DOWNWIND TO RUNWAY (number).
>
> NOTE− Where standard instrument approach procedures (SIAPs) authorize circling approaches, they provide a basic minimum of 300 feet of obstacle clearance at the MDA within the circling area considered. The dimensions of these areas, expressed in distances

from the runways, vary for the different approach categories of aircraft. In some cases, a SIAP may otherwise restrict circling approach maneuvers.

c. Do not issue clearances, such as "extend downwind leg," which might cause an aircraft to exceed the circling approach area distance from the runways within which required circling approach obstacle clearance is assured.

5.2 Approach Information

En route and terminal approach controllers were required to provide approach information to pilots. The requirements were contained in FAA order 7110.65W, Air Traffic Control, paragraph 4−7−10, "Approach Information," which stated in part:

a. Both en route and terminal approach control sectors must provide current approach information to aircraft destined to airports for which they provide approach control services. This information must be provided on initial contact or as soon as possible thereafter. Approach information contained in the ATIS (automatic terminal information service) [8] broadcast may be omitted if the pilot states the appropriate ATIS code. For pilots destined to an airport without ATIS, items 3−5 below may be omitted after the pilot advises receipt of the automated weather; otherwise, issue approach information by including the following:

1. Approach clearance or type approach to be expected if two or more approaches are published and the clearance limit does not indicate which will be used.
2. Runway if different from that to which the instrument approach is made.
3. Surface wind.
4. Ceiling and visibility if the reported ceiling at the airport of intended landing is below 1,000 feet or below the highest circling minimum, whichever is greater, or the visibility is less than 3 miles.
5. Altimeter setting for the airport of intended landing.

F. LIST OF ATTACHMENTS

Attachment 1 – Interview Summaries
Attachment 2 – Figures

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[8] ATIS provides advance noncontrol airport/terminal area and meteorological information to aircraft.