

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



DCA24FA017

AIR TRAFFIC CONTROL

Group Chairman's Factual Report

September 22, 2025

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. AIR TRAFFIC CONTROL GROUP	3
C. SUMMARY	3
D. DETAILS OF THE INVESTIGATION	4
E. FACTUAL INFORMATION	5
1.0 HISTORY OF FLIGHT	5
2.0 FLIGHT TRACK SURVEILLANCE INFORMATION	7
2.1 Automatic Dependent Surveillance - Broadcast	7
3.0 METEOROLOGICAL INFORMATION	9
4.0 WILLIAM P. HOBBY AIRPORT TRAFFIC CONTROL TOWER	10
4.1 Pertinent Tower Equipment	13
5.0 INTERVIEWED PERSONNEL	14
5.1 Local Control Controller	15
5.2 Flight Data / Clearance Delivery Controller	15
5.3 Ground Control Controller	16
5.4 Operations Supervisor	16
F. AIR TRAFFIC CONTROL PROCEDURAL REFERENCES	17
1.0 FAA ORDER JO 7110.65AA - GENERAL CONTROL	17
2.0 FAA ORDER JO 711.065AA - AIR TRAFFIC CONTROL - TERMINAL	17
3.0 DEPARTMENT OF TRANSPORTATION ORDER 3910.1D, DRUG AND ALCOHOL-FREE DEPARTMENTAL WORKSPACE PROGRAM	18
G. LIST OF ATTACHMENTS	19

A. ACCIDENT

Location: Houston, Texas
Date: October 24, 2023
Time: 1520 central daylight time (CDT)¹
2020 coordinated universal time (UTC)
Airplane 1: N510HM; Cessna Citation Mustang (C510)
Airplane 2: N269AA; Raytheon Hawker 850XP

B. AIR TRAFFIC CONTROL GROUP

Group Chairman	Brian Soper National Transportation Safety Board Washington, DC
Group Co-Chairman	Sarah Lewis National Transportation Safety Board Washington, DC
Subject Matter Expert ²	Katherine Wilson National Transportation Safety Board Washington, DC
Group Member	Michael Vandini Federal Aviation Administration Chicago, IL
Group Member	Kristen McTee National Air Traffic Controllers Association Kansas City, MO

C. SUMMARY

On October 24, 2023, about 1520 central daylight time, a Raytheon Hawker 850XP, N269AA, was taking off on runway 22 when its left wing collided with the vertical stabilizer of a Textron Aviation (Cessna) Citation Mustang, N510HM, that was landing on runway 13R at William P. Hobby Airport (HOU), Houston, Texas. Day visual meteorological conditions prevailed at the time of the accident.

¹ All times are in central daylight time (CDT) unless otherwise noted.

² A Senior Human Performance (HP) Investigator from AS-60 was embedded with, but not an actual member of the ATC group, and was present only for the interviews conducted on October 27, 2023.

There were no injuries to the 2 pilots and 1 passenger aboard N269AA or to the 1 pilot and 3 passengers aboard N510HM. N269AA sustained minor damage and N510HM was substantially damaged during the collision. N269AA was operating as a Title 14 *Code of Federal Regulations (CFR)* Part 135 on-demand passenger flight from HOU to Waukesha County Airport (UES), Waukesha, Wisconsin. N510HM was operating as a Title 14 *CFR* Part 91 flight from Fulton County Executive Airport/Charlie Brown Field (FTY), Atlanta, Georgia, to HOU.

D. DETAILS OF THE INVESTIGATION

On October 24, 2023, the air traffic control (ATC) work group was formed. Notification was made to the FAA advising our intent to conduct on-site investigative work at Houston Hobby Airport Traffic Control Tower (HOU ATCT), the facility that was providing services to both N510HM and N269AA at the time of the accident. The notification identified those personnel the group wished to interview. The ATC group consisted of the group chairman and co-chairman from the NTSB, a subject matter expert from the Federal Aviation Administration (FAA), and an air safety investigator (ASI) from the National Air Traffic Controllers Association (NATCA).

On October 25, 2023, the group arrived in Houston, Texas and attended an organizational meeting with the IIC and other investigative groups. The groups accompanied the IIC for a visual examination of the damage to both aircraft and reviewed the tentative agenda for the week.

On October 26, 2023, the group met at HOU ATCT and was provided an in-brief by the Acting Air Traffic Manager (AATM) and members of their staff. Also in attendance at the meeting were representatives from the FAA's Safety Intelligence and Response Group (SIRG), Central Service Area Quality Control Group (CSA QCG), FAA Office of Chief Counsel, the Houston District (TCHU) Assistant General Manager (AGM), and an FAA ATC subject matter expert to the Event Response Team (ERT). The group was provided with an operational tour of the tower cab with emphasis on the positions that had provided services during the accident, after which the group reviewed data and controller background information and conducted an interview with the Flight Data/Clearance Delivery (FD/CD) controller that was working at the time of the accident. The group attended the progress meeting with the IIC and other investigative groups and concluded on-scene activities for the day.

On October 27, 2023, the group returned to HOU ATCT, reviewed additional data, and returned to the tower cab to provide the HP investigator with an orientational tour, and to document the tower control workstations and view of the airport operating area from the Local Control (LC) position. The group then conducted interviews with the LC controller and Operations Supervisor (OS) that were working at the time of the accident. The group then returned to the hotel and

attended the progress meeting with the IIC and other investigative groups, then worked on the group field notes.

On October 28, 2023, the group continued work on the field notes in the morning then returned to HOU ATCT and conducted an interview with the Ground Control (GC) controller that was working at the time of the accident. The group then reconciled the data requested and received and concluded the work at the ATCT. The group then returned to the hotel, completed field notes, obtained concurrence, and concluded the on-scene portion of the ATC field investigation.

E. FACTUAL INFORMATION

1.0 History of Flight

The following is a basic summary timeline constructed from certified audio recordings provided by the FAA (attachment 1), and OpsVue track data.³ Altitudes are in feet above mean sea level (msl). A partial transcript of ATC audio recordings was produced and included as attachment 2.

- 1455:02 The pilot of N269AA contacted the FD/CD controller and requested an IFR⁴ clearance to the Waukesha County Airport (UES) and stated they were in receipt of ATIS⁵ information "delta."
- 1455:54 The FD/CD controller issued the clearance then asked the crew of N269AA if they had ATIS information echo. The crew of N269AA stated that they would get it. The FD/CD controller then instructed the crew to contact GC when ready to taxi.
- 1514:09 The crew of N269AA contacted GC and requested to taxi for departure "with the information." After clarifying which entrance to the ramp the crew desired, the GC controller instructed them to taxi via Kilo.

³ OpsVue data is track data only. Passur's OpsVue uses NextGen Data which includes flight identification and location data for advisory purposes only. This NextGen Data is a multi-sensor system that aggregates and georeferences FAA data sources including data from FAA ASDE-X and ASSC systems, FAA Terminal and En Route Radars, the FAA certified ADS-B Network and Flight Plan data from the En Route Automation Modernization (ERAM) system. The reported altitude is derived from the reported pressure altitude, adjusted for the local pressure reported with the Rapid Update Cycle (RUC) data within the Continental United States (CONUS). Outside of the CONUS, only pressure altitude is reported. The accuracy of altitude data can vary, sometimes up to several hundred feet, however trend information (ie; rates of climb and descent) is considered accurate and reliable.

⁴ IFR - Instrument Flight Rules [ICAO]- A set of rules governing the conduct of flight under instrument meteorological conditions.

⁵ 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.

- 1515:21 The crew of N510HM checked in with the LC controller on a nine-mile final for runway (RWY) 13R with ATIS information echo. The LC controller cleared the pilot of N510HM to land and asked where they would be parking. The crew of N510HM stated that they would be parking at Wilson Aviation.
- 1515:50 The GC controller instructed the crew of N269AA to monitor tower frequency.
- 1517:32 The crew of N510HM reported a four-mile final. The LC controller acknowledged.
- 1518:01 The LC controller instructed the crew of N269AA to line up and wait (LUAW) on RWY 22. The crew of N269AA acknowledged with a correct readback.
- 1518:29 The LC controller instructed an uninvolved aircraft following N510HM (on a 1.5 mile final) to reduce their speed.
- 1519:26 The LC controller broadcasted wind 140° at 17 knots with gusts to 23 knots.
- 1519:47 The LC controller stated *"nine alpha alpha, stop hold your position."*
- 1519:52 The LC controller stated *"alpha alpha hold your position stop."*
- 1520:14 [The LC controller began providing go around instructions to all airborne aircraft that were on final behind N510HM.]
- 1520:29 The crew of N269AA advised the LC controller that they needed to return to the airport. The LC controller then provided vectors to return for landing on RWY 13R.
- 1521:08 The LC controller cleared N269AA to land on RWY 13R.
- 1521:14 The crew of N510HM advised the LC controller that they had been involved in the collision and that they were taxiing to Wilson Aviation. The LC controller acknowledged and instructed the pilot of N510HM to remain on the LC frequency.
- 1521:32 The GC controller instructed the crew of N510HM to hold their position. The crew did not respond.
- 1522:15 The LC controller instructed the crew of an uninvolved aircraft to expedite their climb to 3,000 feet to ensure separation with N269AA.
- 1523:17 The LC controller provided a wind check to N269AA.
- 1524:37 The LC controller instructed the vehicle driver of operations vehicle 11 (OPS11) to proceed onto RWY 13R and follow N269AA. The driver of OPS11 was confused about which aircraft was the emergency and was still expecting it to be the Southwest aircraft [SWA1073] that had been previously coordinated. The LC controller

advised the driver of OPS11 that SWA1073 had been diverted and would not be coming to HOU.

- 1525:27 The driver of OPS11 questioned the LC controller if the debris was from Southwest. The LC controller explained that two different aircraft had collided with each other, and that the debris was not from Southwest. The driver of OPS11 closed the airfield.
- 1526:03 The crew of N269AA checked in with the GC controller and reported clear of RWY 13R. The GC controller instructed the crew of N269AA to hold their position.
- 1527:42 The pilot of N269AA checked back in with the GC controller and advised they had been cleared by the fire department to return to Signature Aviation. The GC controller instructed them to taxi via taxiways November, Lima, Juliet, Kilo, and to hold short of RWY 13R.
- 1528:17 The driver of OPS11 instructed the LC controller to *"have that plane stop right away."*
- 1528:29 The GC controller instructed the crew of N269AA to hold their position.
- 1537:08 The GC controller asked the crew of N269AA if there were any injuries and discussed the aircraft damage.

[All further communication and coordination are contained in the certified audio recordings provided in attachment 1.]

2.0 Flight Track Surveillance Information

2.1 Automatic Dependent Surveillance - Broadcast

Certified ADS-B data was provided by the FAA, attachment 3. The data was provided in .csv format, as well as .kml. The ADS-B data provided flight track surveillance information for N510HM's entire flight, however, there was minimal information on N269AA. Figures 1 and 2 below were produced using OpsVue track data from attachment 4 due to the lack of ADS-B data obtained on N269AA.



Figure 1. Overhead view of both flight tracks with the ground collision included.

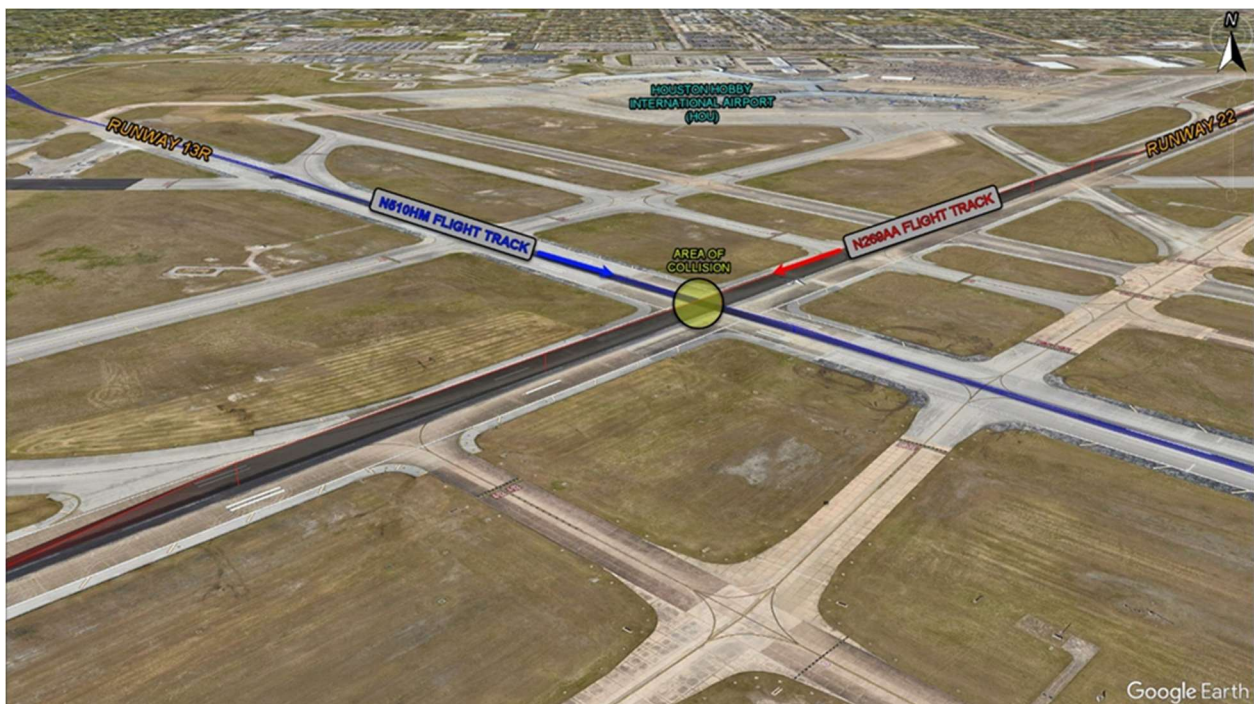


Figure 2. Profile view of both flight tracks with the area of the ground collision included.

3.0 Meteorological Information

KHOU is located at an elevation of 46 feet and had an Automated Surface Observing System (ASOS)⁶ which was augmented by contract weather observers. The latest sectional chart for the area indicated a magnetic variation of 3° E over the area.

Surrounding the time of the accident the following conditions were being reported and disseminated via longline⁷ to users:

At 1453, KHOU⁸ reported wind from 150° at 17 knots with gusts to 27 knots, visibility of 10 statute miles, scattered clouds at 3,500 feet above ground level (agl), scattered clouds at 5,500 feet agl, temperature 29° Celsius (C), dew point temperature 20° C, and altimeter 29.95 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind 170° at 30 knots at 1924 UTC, sea level pressure 1014.6 hectopascals (hPa), temperature - 29.4° C, dew point temperature 20.0° C.

The longline observations that were disseminated on weather circuits and general flight categories were as follows (observation closest to accident time is in bold for emphasis):

VFR METAR KHOU 241853Z 13019G28KT 10SM BKN040 30/20 A2997
 RMK AO2 PK WND 14028/1847 SLP153 T03000200

**VFR METAR KHOU 241953Z 15017G27KT 10SM SCT035 SCT055
 29/20 A2995 RMK AO2 PK WND 17030/1924 SLP146
 T02940200**

⁶ ASOS - Automated Surface Observing System - Automated sensor suites equipped with meteorological instruments to observe and report wind, visibility, ceiling, temperature, dewpoint, altimeter, and barometric pressure. These systems generally report at hourly intervals, but also report special observations if weather conditions change rapidly and cross aviation operation thresholds.

⁷ "Longline" refers to the dissemination of weather observations with the intent that they are available in near-real time to national databases (effectively, the whole world) and accessible to the general global public from a large number of vendors. This does not include public accessibility to observations from a reporting station's Very High Frequency (VHF; line-of-site) or telephone broadcast, where applicable. Longline dissemination of weather observations is the primary vehicle through which the general global public has access to surface weather observations, particularly outside of the aviation community.

⁸ The NWS uses the 4-digit International Civil Aviation Organization (ICAO) format for station identifiers (as seen in the body of some formatted weather observations). This report uses the 3-digit International Air Transport Association format for station identification, which does not use the geographic designating digit ("K" for stations in the continental U.S. and "P" for U.S. stations in Alaska and the Pacific region) as found in the ICAO format.

4.0 William P. Hobby Airport Traffic Control Tower



Figure 3. Photo of HOU ATCT taken from the internet.

HOU ATCT was a level 8 tower only facility. The ATCT was dedicated in 2000, stood 147 feet tall, and was situated on the west side of the airport (see figures 3 above and 4 below). Figure 5 is a photograph showing the positions that the LC, FD/CD, GC controllers and OS were working from at the time of the accident with pertinent equipment information annotated. Figure 6 is an overhead diagram/layout of the tower cab showing position locations and various tower equipment locations.

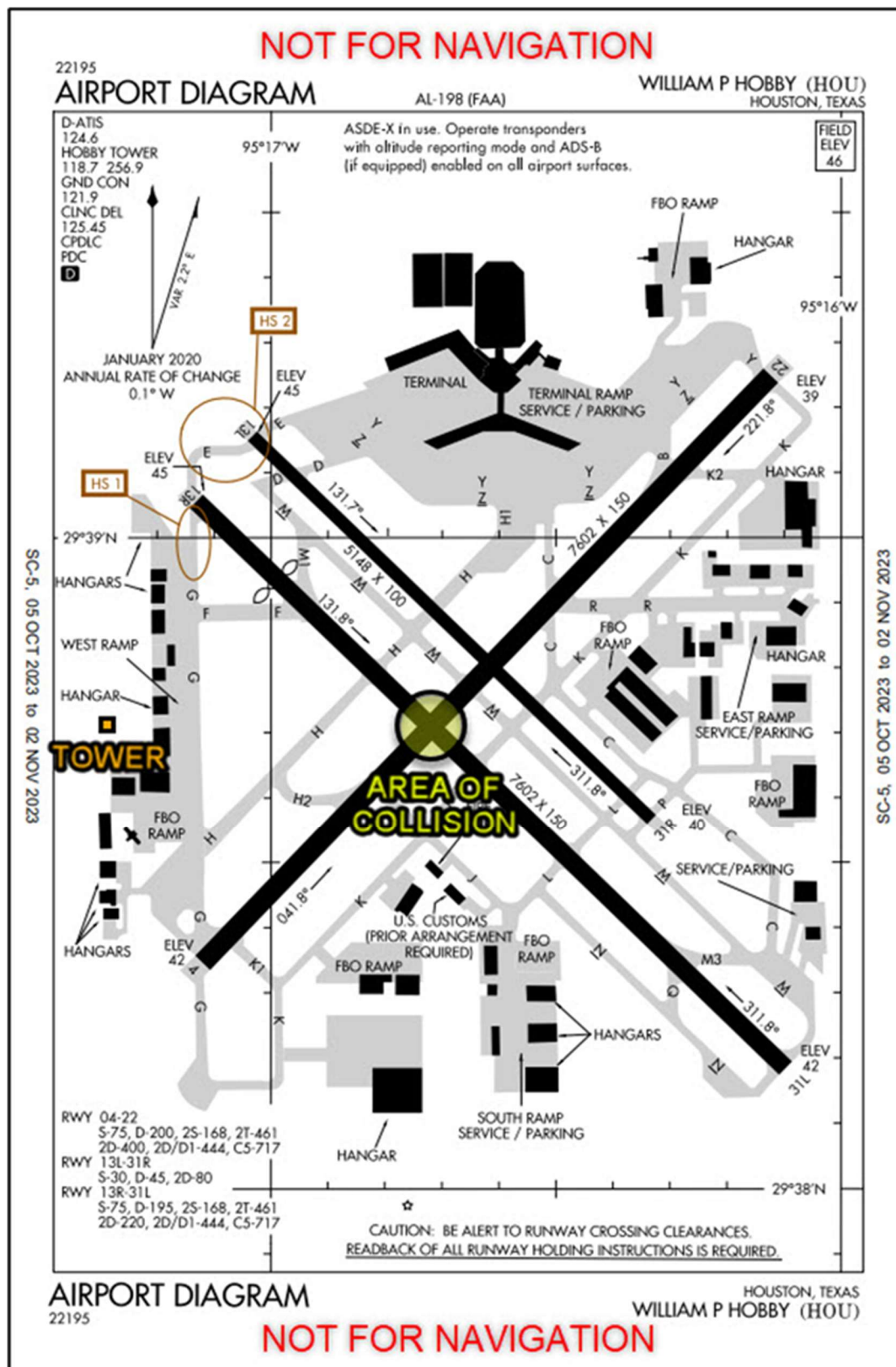




Figure 5. Tower cab with controller and pertinent equipment locations.

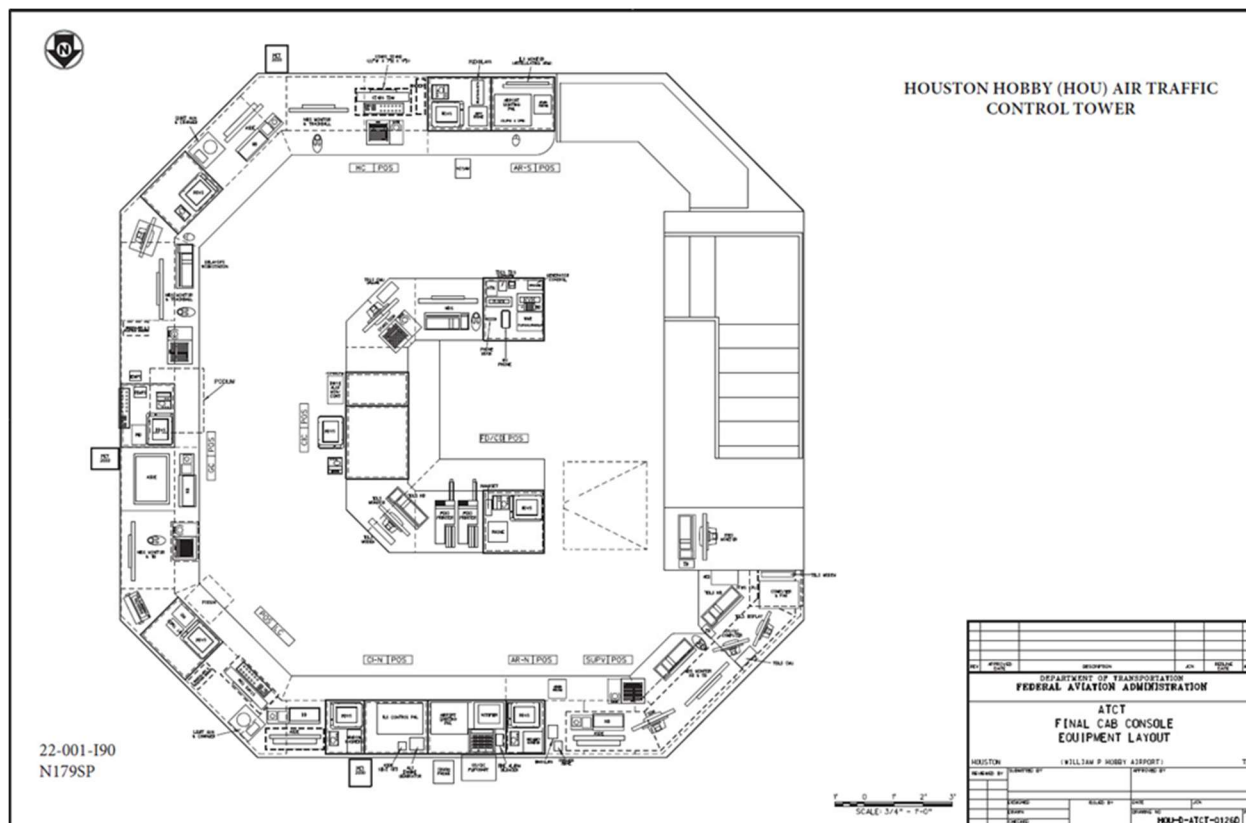


Figure 6. Tower cab layout diagram.

4.1 Pertinent Tower Equipment

The tower was equipped with an Automatic Surface Detection Equipment - Model X (ASDE-X)⁹ system that included displays located at the LC, GC, OS, and Helicopter Control (HC) position workstations. A post event ASDE-X replay analysis was provided by the FAA Technical Center. Figure 7 below is a screen capture from the analysis showing the time the ASDE-X first alerted, and figure 8 is a screen capture closeup of the displayed information at the time of the collision.

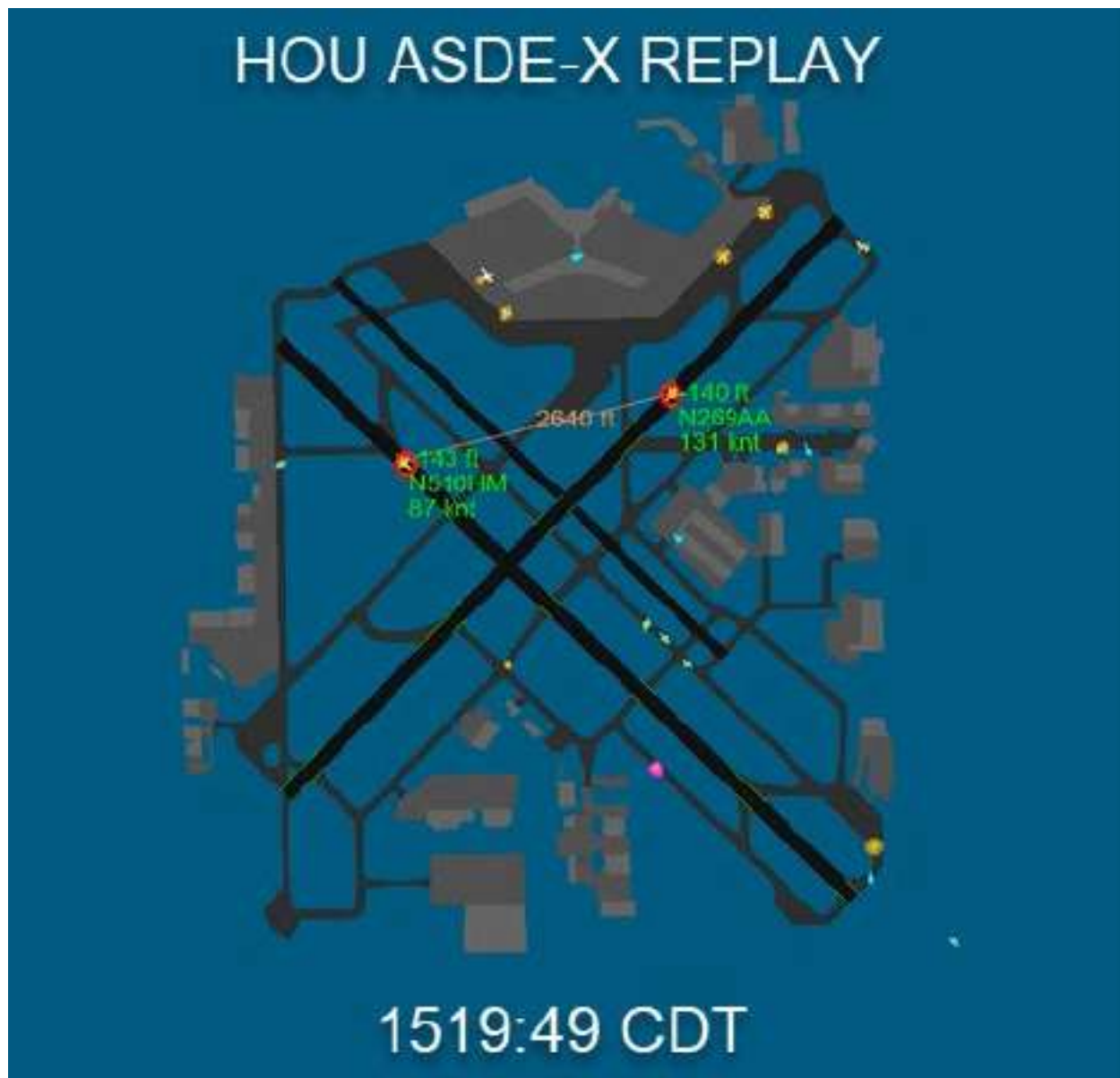


Figure 7. ASDE-X Screen capture taken at the time of the first alert.

⁹ ASDE-X - A surface movement radar that enables air traffic controllers to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. ASDE-X collects data from a variety of sources to track vehicles and aircraft on the airport movement area and obtain identification information from aircraft transponders.



Figure 8. ASDE-X Screen capture taken at the time of the collision.

5.0 Interviewed Personnel

There were four Certified Professional Controllers (CPCs), one CPC in-training (CPC-IT), and one OS on duty at the time of the accident. Three of the CPCs and the OS were on position, while one CPC was on break. The OS was working standalone and providing general oversight from the Watch Desk (WD) position. All those on position at the time of the accident except the CPC-IT were interviewed and all interviews were recorded and were transcribed by Free State Reporting.¹⁰ The transcripts were provided to the group members and interviewees for review and all

¹⁰ Free State Reporting is the NTSB's contracted court reporting and transcription service.

required corrections were made and re-certified through Free State Reporting. All interview transcripts and administrative items are included in attachments 5 and 6, respectively.

5.1 Local Control Controller

The LC controller was providing services to both N510HM and N269AA at the time of the accident. He had been certified on LC since May 2023 and was current on all positions for which he was certified in accordance with facility standards on the day of the accident. He held a second-class medical clearance with no documented waivers or limitations. Post-accident drug testing was conducted within 32 hours as required; however, alcohol testing was not conducted for undetermined reasons.

Table 1. Hours worked by the LC controller for the week leading up to and day of the accident

Day	Date	Shift	Hours	Total Working Hours
Wednesday	Oct 18	Day	0703-1503	08 hours + 00 minutes
Thursday	Oct 19	Day	0530-1200	06 hours + 30 minutes
Friday	Oct 20	Day	0530-1330	08 hours + 00 minutes
Saturday	Oct 21	Off	None	None
Sunday	Oct 22	Off	None	None
Monday	Oct 23	Eve	1425-2225	08 hours + 00 minutes
Tuesday	Oct 24	Eve	1308-1853	5 hours + 45 minutes

5.2 Flight Data / Clearance Delivery Controller

The FD/CD controller was working combined positions during the time of the accident. He had been certified on FD and CD since October 2017 and was current on all positions for which he was certified in accordance with facility standards on the day of the accident. He held a second-class medical clearance with no documented waivers or limitations. Neither post-accident drug nor alcohol testing were ordered or conducted.

Table 2. Hours worked by the FD/CD controller for the week leading up to and day of the accident

Day	Date	Shift	Hours	Total Working Hours
Wednesday	Oct 18	Leave	None	None
Thursday	Oct 19	Leave	None	None
Friday	Oct 20	Leave	None	None
Saturday	Oct 21	Leave	None	None
Sunday	Oct 22	Off	None	None
Monday	Oct 23	Off	None	None
Tuesday	Oct 24	Eve	1430-2230	08 hours + 00 minutes

5.3 Ground Control Controller

The GC controller was signed on and was monitoring a trainee at the GC position at the time of the accident. Almost immediately after the accident occurred, the trainee signed off and the GC controller continued to work through the event. He had been certified on GC since January 2011 and was current on all positions for which he was certified in accordance with facility standards on the day of the accident. He held a second-class medical clearance with documented waivers that included prescription medication. He stated that he was in compliance with all medical waivers and was taking his medication as prescribed on the day of the accident. Neither post-accident drug nor alcohol testing were ordered or conducted.

Table 3. Hours worked by the GC controller for the week leading up to and day of the accident

Day	Date	Shift	Hours	Total Working Hours
Wednesday	Oct 18	Leave	None	None
Thursday	Oct 19	Day	0645-1445	08 hours + 00 minutes
Friday	Oct 20	Leave	None	None
Saturday	Oct 21	Off	None	None
Sunday	Oct 22	Off	None	None
Monday	Oct 23	Eve	1430-2330	09 hours + 00 minutes
Tuesday	Oct 24	Eve	1308-2108	08 hours + 00 minutes

5.4 Operations Supervisor

The OS was working standalone and providing general supervision from the WD position in the tower cab during the time of the accident. He had been certified OS since July 2022 and was current on all positions for which he was certified in accordance with facility standards on the day of the accident. He held a second-class medical clearance with a requirement to wear corrective lenses “when needed” while performing ATC duties and stated he was not wearing them on the day of the accident, nor were they needed. Neither post-accident drug nor alcohol testing were ordered or conducted.

Table 4. Hours worked by the OS for the week leading up to and day of the accident

Day	Date	Shift	Hours	Total Working Hours
Wednesday	Oct 18	Day	0714-1514	08 hours + 00 minutes
Thursday	Oct 19	Day	0715-1515	08 hours + 00 minutes
Friday	Oct 20	Day	0713-1613	09 hours + 00 minutes
Saturday	Oct 21	Eve	1245-2045	08 hours + 00 minutes
Sunday	Oct 22	Off	None	None
Monday	Oct 23	Eve	1245-2130	8 hours + 45 minutes
Tuesday	Oct 24	Eve	1308-2108	8 hours + 00 minutes

F. AIR TRAFFIC CONTROL PROCEDURAL REFERENCES

1.0 FAA Order JO 7110.65AA - General Control

FAA Order JO 7110.65AA, *General Control*, Chapter 2, Section 4 *Radio and Interphone Communications*, Section 4, paragraph 2-4-3, *Pilot Acknowledgment / Read Back* stated in part:

Ensure pilots acknowledge all Air Traffic Clearances and ATC Instructions.

When a pilot reads back an Air Traffic Clearance or ATC Instruction:

- a. Ensure that items read back are correct.*

NOTE—

- 1. ATC Clearance/Instruction Read Back guidance for pilots in the AIM states:*

- c. Initial read back of a taxi, departure or landing clearance should include the runway assignment, including left, right, center, etc. if applicable*

2.0 FAA Order JO 711.065AA - Air Traffic Control - Terminal

FAA Order JO 7110.65AA, *Air Traffic Control - Terminal*, Chapter 3, *Departure Procedures and Separation*, 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.

- j. When aircraft are authorized to line up and wait on runways that intersect, traffic must be exchanged between that aircraft and the aircraft that is authorized to line up and wait, depart, or arrive to the intersecting runway(s).*

EXAMPLE—

"United Five, Runway Four, line up and wait, traffic holding Runway Three-One."

"Delta One, Runway Three–One, line up and wait, traffic holding Runway Four."

Or, when issuing traffic information to an arrival aircraft and an aircraft that is holding on runway(s) that intersect(s):

"Delta One, Runway Four, line up and wait, traffic landing Runway Three–One."

"United Five, Runway Three–One, cleared to land. Traffic holding in position Runway Four."

3.0 Department of Transportation Order 3910.1D, Drug and Alcohol-Free Departmental Workspace Program

Department of Transportation Order 3910.1D described the requirements for determination and testing. Regarding the post-accident drug and alcohol testing determination process, chapter III stated in part:

- i. Post-Accident or Post-Incident Testing. *Post-accident or post-incident testing may be required of any employee when management determines an accident or incident (as defined in Chapter I, Definitions) has occurred that qualifies according to the provisions in the subparagraphs below.*

- (1) Post-Accident or Post-Incident Testing Determination. *Post-accident or post-incident testing must be conducted as soon as possible following an accident or incident that involves one or more of the following covered events:*

- *A fatality;*
- *Requiring medical treatment away from the accident site;*
- *Substantial damage¹ to aircraft or vehicles, and/or, substantial damage to other property; or,*
- *Other unsafe practices as defined by OA¹¹ orders or regulations, such as operational errors, runway incursions, etc.*

- (2) Determining Who Will Be Post-Accident or Post-Incident Tested. *Employees are subject to post-accident or post-incident testing when their performance at or about the time of an accident or incident provides reason to believe that such performance may have contributed to the accident or incident, or their job performance cannot be completely discounted as a contributing factor to the accident or incident.*

Only the LC controller was selected to have toxicology testing. Although drug testing was performed within 32 hours of the accident, alcohol testing was not

¹¹ Operating Administration - definition as defined in DOT Order 3910.1D

conducted. The FAA provided no explanation as to why alcohol testing was not conducted. Regarding the post-accident drug and alcohol testing process, chapter III stated in part:

- (6) Post-Accident or Post-Incident Drug Testing. *Whenever possible, a drug test must be completed within four hours after the accident or incident. If a post-accident or post-incident drug test has not been completed within five calendar days following the accident or incident, the OA must stop all attempts to conduct a drug test.*
- (7) Post-Accident or Post-Incident Alcohol Testing. *Whenever possible, an alcohol test must be completed within 2 hours following the accident or incident. If a required post-accident or post-incident alcohol test is not conducted within 8 hours following the accident or incident, the OA must cease all attempts to conduct an alcohol test.*

G. LIST OF ATTACHMENTS

Attachment 1: ATC Audio Recordings
Attachment 2: ATC Voice Partial Transcript
Attachment 3: ADS-B Data
Attachment 4: OpsVue Data
Attachment 5: Interview Transcripts
Attachment 6: HOU ATCT Administrative Paperwork
Attachment 7: FAA Accident Package
Attachment 8: STARS Radar Data

Submitted by:

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