

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24FA083

OPERATIONAL FACTORS/HUMAN PERFORMANCE

Specialists' Factual Report

December 11, 2024

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A. ACCIDENT

Location: Westwater, Utah
Date: February 7, 2024
Time: 1048 mountain standard time (MST)¹
1748 Universal Time Coordinate (UTC)
Airplane: N900VA; Hawker Beechcraft Corp, Hawker 900XP, Serial number HA-0020

B. OPERATIONAL FACTORS/HUMAN PERFORMANCE SPECIALISTS

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C. SUMMARY

On February 7, 2024, about 1048 mountain standard time, a Hawker 900XP, N900VA, was destroyed when it was involved in an accident near Westwater, Utah. The pilot-in-command (PIC) and second-in-command (SIC) were the only two occupants and were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 maintenance and positioning flight. The flight departed from the Grand Junction Regional Airport (GJT), Grand Junction, Colorado at 1033 MST with an intended destination of Tacoma Narrows Airport (TIW), Gig Harbor, Washington.

D. FACTUAL INFORMATION

1.0 HISTORY OF FLIGHT

The aircraft had departed GJT, where it had been undergoing some maintenance work on the wings². The pilots had flown into the airport via commercial airline the day prior.

¹ All times in this report will be in local (MST) time. At the time of the incident local time was UTC-7 hours.

² For specific maintenance work reference the Maintenance Factual Report associated with this accident.

According to ADS-B data³, approximately 1033 the aircraft began taxiing from the maintenance facility to the runway via taxiway "A4" subsequently followed by a left turn on taxiway "A" and then a right turn on Taxiway "A1." The taxi ground speed indicated a maximum speed of 26 knots.

Approximately 1036:46 the airplane entered runway 11 and then began its takeoff roll.

Approximately 1037:17, about halfway between taxiway "A2" and "A3," the aircraft indicated an increase in altitude, as well as indicated a ground speed of 104 kts. Upon climbing through an altitude of about 5,625 ft msl, the airplane began a right turn towards the southeast where it continued on a ground track of approximately 160°.

Approximately 1038:57, and climbing through an altitude of 9,625 ft msl, the airplane's ground track indicated a right turn that continued for about one minute and indicated a ground track of about 275° and an altitude of 12,200 ft msl.

The airplanes 275° ground track continued until about 1042:17 where it then indicated a ground track of about 295° while continuing to climb through 17,525 ft msl.

Approximately 1044:27 the airplane indicated an altitude of 20,000 ft and a ground speed of 276 kts and a ground track of about 310°. The airplane's ground speed began to decrease over the next approximate two minutes.

Approximately 1046:42, the airplane indicated an altitude of 19,875 ft msl, 165 kts and the beginning of a right turn towards the north.

Approximately 1046:46, the airplane indicated 19,475 ft msl, 164 kts, and a ground track of about 355°. For about the next minute the airplane continued on a northeasterly ground track. During that minute the ground track varied and the ground speed indicated various speeds below 122kts.

At 1047:44 the last recorded data of the accident flight indicated 11,525 ft msl and a ground speed of 76 kts.

³ [ADS-B Exchange - track aircraft live](#)

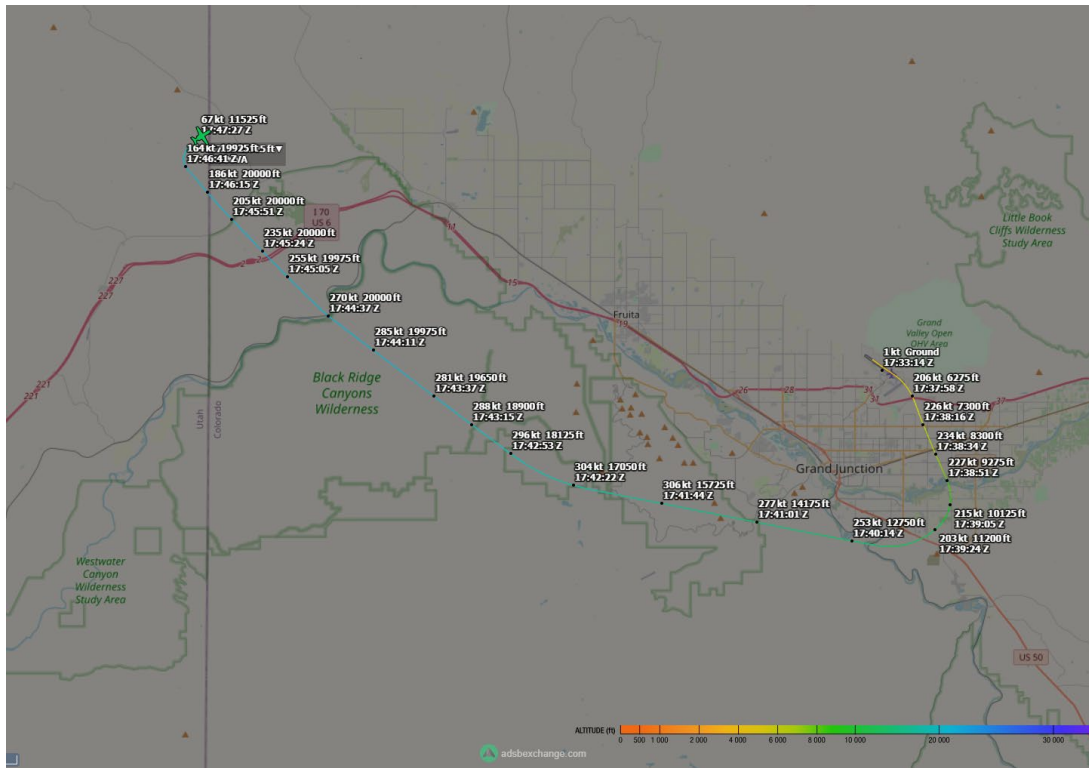


Figure 1: Overhead View of Entire Accident Flight (Source: ADSBExchange.com)

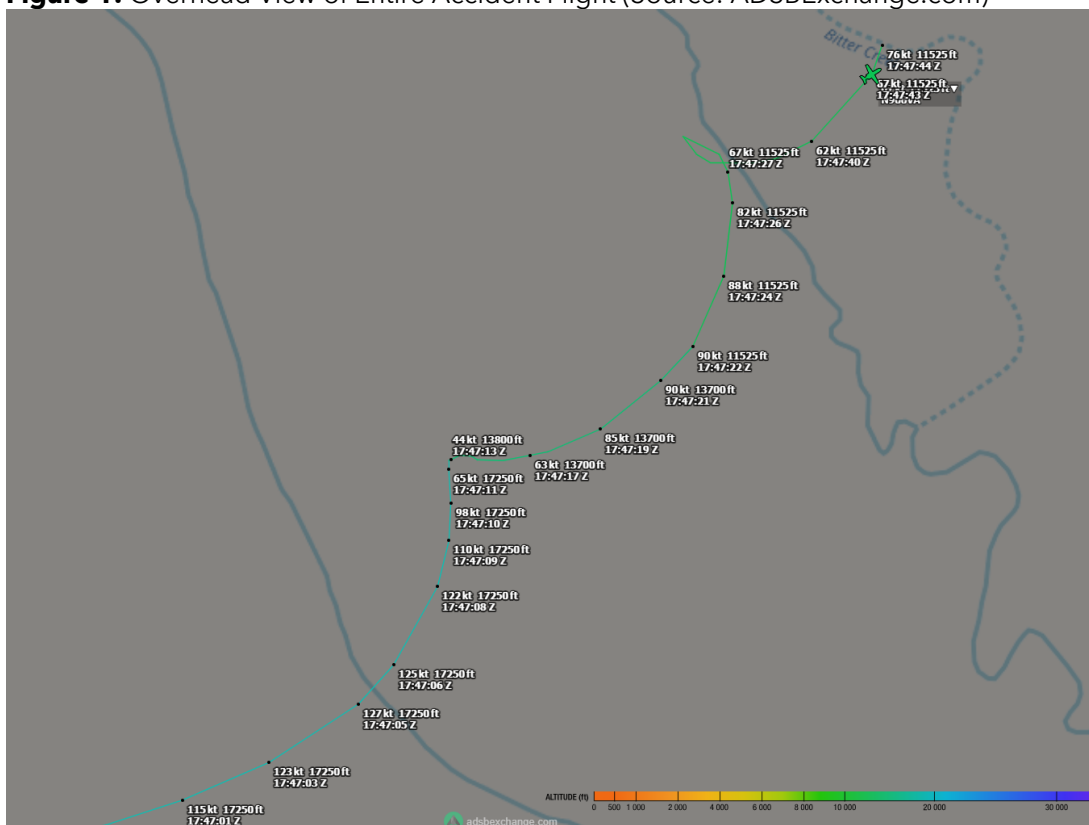


Figure 2: Expanded View of Last Approximate Minute of the Accident Flight (Source: ADSBExchange.com)

2.0 Hawker Beechcraft In Flight Stall Test Guidance

The Hawker Beechcraft Corporation, Pilot's Operating Manual, Revision A2, dated April 2010, Section V, Sub-section 1 "Normal Handling," provided the following guidance on conducting intentional stalls and stalling techniques:

STALLS

Conditions For Stalls

When intentional stalls are carried out the following conditions apply:

- 1. The altitude must be above 10,000 ft AGL, 10,000 ft above clouds and below 18,000 ft MSL.*
- 2. Stalls must be conducted during day VMC with good visual horizon.*
- 3. The autopilot must be disengaged.*
- 4. The Stall Identification System must be operative.*
- 5. All the external surfaces must be free from ice.*
- 6. The ventral fuel tank must be empty.*
- 7. The weather radar must be at standby.*

Stalls may be demonstrated with the yaw damper switched on or off. To limit the altitude loss, to maintain acceptable stalling characteristics and to prevent structural abuse, it is strongly recommended that the procedure given below should be followed.

Technique For Stalls

The stalling technique is as follows:

- 1. All stalls are to be made in straight (wings level) flight.*
- 2. Stalls with flaps retracted and in the take-off configuration should be carried out at idle thrust. To reduce altitude loss with approach or landing flaps, thrust should be adjusted not to exceed 77% N1.
Once thrust is set it should not be reduced during the approach to the stall and recovery.*
- 3. The airplane should be trimmed at an airspeed of approximately 1.4 VS1 in the appropriate configuration after setting the required thrust.*
- 4. The airspeed should be reduced at not more than one knot per second. Rapid or violent movements of any control during the approach to the stall should be avoided, particularly at air speeds below the operation of the stick shaker.*

With the yaw damper off, any tendency to yaw during the approach to the stall should be corrected by normal use of the rudder.

5. The stall is identified by a short forward movement of the control column provided by the Stall Identification System. The red STALL VLV OPEN annunciators will illuminate. The airplane should be allowed to pitch nose down until the stick push has cancelled, and should then be recovered to normal controlled flight. Any tendency to roll should be corrected by use of ailerons.

Do not attempt to hold the airplane in the stall.

Stall Characteristics

CAUTION: A FREQUENT REASON FOR UNACCEPTABLE STALL CHARACTERISTICS IS A TENDENCY TO ROLL AT THE STALL. IT IS ACCEPTABLE FOR A MODERATE ROLL TO OCCUR, PROVIDED THAT NORMAL USE OF AILERONS CAN LIMIT THE ROLL ANGLE TO NO MORE THAN 20°.

AILERON SNATCH MAY OCCUR AT OR PRIOR TO STALL AND IS NOT ACCEPTABLE. THE AILERON SNATCH MAY BE STRONG ENOUGH TO AFFECT RECOVERY USING AILERON INPUT, IN WHICH CASE THE ELEVATOR CONTROL MUST BE MOVED FORWARD TO DECREASE THE ANGLE OF ATTACK AND ALLOW THE RETURN OF NORMAL AILERON CONTROL. IN SUCH AN EVENT THE PILOT MUST BE PREPARED TO RECOVER FROM AN UNUSUAL ATTITUDE.

PILOTS CONDUCTING STALL CHECKS SHOULD HAVE PRIOR EXPERIENCE IN PERFORMING STALLS IN THE HAWKER AND MUST BE PREPARED FOR UNACCEPTABLE STALL BEHAVIOR AT ANY POINT LEADING UP TO AND THROUGHOUT THE MANEUVER.

There is no natural stall warning or aerodynamic buffet prior to the stall.

Stall warning is provided by a stick shaker which is set to operate at an indicated airspeed of 7% to 9% above the stalling speed.

It is acceptable for stick pusher operation to be coincident with the natural stall, provided that any rolling tendency can be restrained to within 20° of bank angle by normal use of ailerons. Some aerodynamic buffet may occur briefly at the point of stall.

Power-off stalling speeds in terms of indicated air speed (IAS) are given for various configurations in the Airplane Flight Manual, Section 5 - PERFORMANCE, Sub-section 5.05 - GENERAL. These airspeeds apply to an

altitude of 15,000 feet and are the stall identification speeds at forward CG and therefore differ from the values shown in the AFM Figure 5.10.4 which are based on the minimum airspeed obtained during the stall.

2.1 Interview with Hawker Test Pilot⁴

A former Textron Aviation test pilot that used to conduct factory stall tests while at Textron and now conducts Hawker stall test flights on a contract basis since 2013 was interviewed. He stated that he had conducted approximately 350 stall test since 2013. He further stated that the inflight stall test must be done after wing maintenance; however, there was no guidance that directed a pilot on how many configurations must be tested, where an initial stall warning should occur, or that it should coincide with the low side of the speed tape. He stated that the test required four flap configurations to be accomplished, which were flaps 0, flaps 15, flaps 25 with the landing gear down, and flaps 45 with the landing gear down. He further described that an unacceptable stall test could be due to items such as aircraft roll, overbalanced ailerons, or aileron snatch⁵. An aileron snatch was if there was airflow separation over the aileron instead of the wing root, and that would cause the control yoke to "snatch." He also stated that if the airplane were to roll during the test it should only roll a maximum of 20 degrees after the stick pusher.

He stated he learned to the stall test while flying with other test pilots from the factory and that were no schools that trained this stall test.

3.0 Operator's Guidance on Stalls

The Clay Lacy, Standard Operator Procedures Manual, dated January 27, 2020, provided the following guidance on *"Enhanced Stall and Stick Pusher Training:"*

1. *Notwithstanding any specific "aircraft profile" listed here in the following general procedure shall be used during training and checking of Stall and Stick Pusher, as applicable:*
 - a. *The reduction of angle of attack is required to initiate recovery of all types of stalls during training and testing.*
 - b. *All aircraft, that have an installed Stick Pusher, will conduct Stick Pusher training allowing the Pusher to reduce the Angle of Attack (AOA).*
 - c. *Note: Deliberate activation of the pusher is not an evaluated maneuver during testing.*

⁴ Source: Operational Factors/Human Performance – Attachment 5 - Memorandum for Record – Gary Grommet.

⁵ According to a representative of Textron an aileron snatch was defined as *"Roll upset can be caused by airflow separation (aerodynamic stall), which induces self-deflection of the ailerons and loss of, or degraded, roll handling characteristics."*

4.0 Training on Conducting Stalls

The pilots had conducted their training at CAE.

The PIC conducted his most recent Hawker 800XPi Instrument Proficiency Check on October 6, 2023. The training included both an oral and simulator examination, which was part of a *CFR 135.297* check⁶.

The SIC conducted the initial training in the Hawker 800XPi on October 9, 2023. The training included 60 hours of ground school over eight days and 31.4 hours in the simulator which included, 17 hours of pilot flying in the simulator and 14.4 hours as pilot monitoring in the simulator. The simulator sessions included eight sessions plus a checkride following the training. In a review of the simulator training sessions, there were 135 areas to be trained and evaluated. One simulator session dated October 24, 2023, and listed as "S7" indicated that under "*Inflight Maneuvers*" the "*Stall Prev.[ention]-Part/Flap*" the pilot received a rating of "1." According to the grading scale on the "*Flight Training and Evaluation Record*" that indicated "*Insufficient Progress in acquiring the knowledge and skills to achieve proficiency.*" Additionally on that simulator session the pilot received six other areas with a rating of "1" which included areas under "*Take Offs*," "*Missed Approaches*," "*Crew Resource Management*," and "*Emergencies and Abnormals*." The record also indicated that the next day the pilot repeated the simulator session and achieved a "3" for all events that were evaluated. A "3," according to the grading scale, was considered "*Proficient. The exercise has been mastered and performance is consistently repeatable.*" The pilot completed his *CFR135.293*⁷ and 135.297 checkout on October 28, 2023. During the checkout, the pilot received a grade of "S" (satisfactory) for all events include three "*Stall Prev*" events.

During interviews with CAE instructors, they indicated that they do not teach full stalls and have a demonstration of the stick pusher in one simulator session. One instructor explained "*We will do a demonstration especially for an initial class of what the -- it's called stick pusher on the airplane. That's up at a simulator high altitude like, I don't know, 30,000 feet or so, and we'll have them slow right down and we demonstrate the features of the stall protection system. So, once they get into the caution regime. We do this on autopilot, because we demonstrate that once the stick shaker goes off, your autopilot turns off. So now you've got to fly the airplane, but then we have them wait because if you haven't recovered by then, you're going to get a stick pusher, and that's hydraulically actuated. So it's dramatic and they just descend down, and it's a demonstration. There's no proficiency required for that.*"⁸

⁶ [eCFR :: 14 CFR 135.297 -- Pilot in command: Instrument proficiency check requirements. \(FAR 135.297\)](#)

⁷ [eCFR :: 14 CFR 135.293 -- Initial and recurrent pilot testing requirements. \(FAR 135.293\)](#)

⁸ Source: Operational Factors/Human Performance - Attachment 1 - "CAE Personnel Interview Transcripts and Clarifying Statement" pg. 160, lines 6 thru 17.

Another instructor stated, in part, *"As a demo. Well, they're flying it. So they are taught -- it's a demo, don't do this. This is what happens. Here's how you get out of it... Everybody -- every student who comes through here gets three aerodynamics, stick shakers, and then a pusher."*⁹ Additionally, another instructor stated that *"we never teach through a full stall."*¹⁰

When asked how the stick pusher demonstration is taught, one instructor provided the following: *"...bring the aircraft up to -- not it's full service ceiling but I think -- I forgot the exact number, but it's most of its service ceiling. You put it into a clean approach to stall. That's one. You also do another one where you bring it into a stall where you purposely go to the pusher and then recover."*¹¹

5.0 Flight Crew Recent Activities

The following information was developed based on cellular telephone records and witness statements.

Limited information was available about the PIC's recent activities. On February 5, 2024, cellular telephone activity started at 1020. There was a break in activity from 1138 until 1251, 1338 until 1453, 1456 until 1832, and 1915 until 2031. Cellular activity ended at 2031. His actual wake and asleep times were unknown. On February 6, cellular activity started at 0748. There was a break in activity from 844 until 1027, 1140 until 1514, and 1638 until 1913. Cellular activity ended at 2002. His actual wake and asleep times were unknown. On February 7, cellular activity started at 0757; his actual wake time was unknown.

Limited information was available about the SIC's recent activities. On February 5, 2024, cellular telephone activity started at 0949. There was a break in activity from 1142 until 1806. Activity started at 1806 until 2227. His actual wake and asleep times were unknown. On Feb. 6, activity started at 0759. There was a break in activity from 1047 until 1543, 1627 until 1743, and 1743 until 1912. Activity ended at 1924. His actual wake and asleep times were unknown. On February 7, there was outgoing cellular telephone activity at 0800; his actual wake time was unknown.

On the day of the accident, February 7, the flight crew was picked up from the hotel at about 0830 and arrived at the hangar about 0845. The flight crew was observed around the hangar and aircraft until they departed on the accident flight about 1033.

⁹ Source: Operational Factors/Human Performance – Attachment 1 - "CAE Personnel Interview Transcripts and Clarifying Statement" pg. 245, line 23 thru pg. 246, line 2.

¹⁰ Source: Operational Factors/Human Performance – Attachment 1 - "CAE Personnel Interview Transcripts and Clarifying Statement" pg. 57, line 15 thru 16.

¹¹ Source: Operational Factors/Human Performance – Attachment 1 - "CAE Personnel Interview Transcripts and Clarifying Statement" pg. 10, lines 16 thru 23.

6.0 Flight Crew's Experience Conducting Inflight Stall Test

Documentation¹² provided by a representative of Clay Lacy Aviation, indicated that on December 7, 2019, the accident PIC had conducted an inflight stall test. On that flight the PIC was listed as the SIC. The flight log for that flight indicated that it departed Van Nuys Airport (VNY), Los Angeles, California, at 1444 with a destination of TIW. In addition the aircraft used on that flight was N900VA, the accident airplane. Although the flight log did not specify what type of flight it was, a representative of Clay Lacy Aviation reported that it was a required stall check flight, similar to the accident flight. This was the only record of the accident PIC conducting a previous inflight stall test.

There was no documentation provided that the accident SIC had ever done an inflight stall test prior to the accident flight.

E. LIST OF ATTACHMENTS

- Attachment 1 - CAE Personnel Interview Transcripts and Clarifying Statement
- Attachment 2 - Memorandum for Record - Gary Grommet
- Attachment 3 - Hawker Beechcraft Corporation Pilot's Operating Manual
[Excerpt]
- Attachment 4 - Simulator Evaluation
- Attachment 5 - Clay Lacy Aviation Flight Log - Previous PIC Inflight Stall Test

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¹² Source: Operational Factors/Human Performance - Attachment 2 - "Clay Lacy Aviation Flight Log - Previous PIC Inflight Stall Test"