

# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety  
Washington, D.C. 20594

July 28, 2021

## Specialist's Factual Report

### HUMAN PERFORMANCE

CEN19FA238

#### A. ACCIDENT

Operator: US Aviation Group, LLC  
Location: Gainesville, Texas  
Date: July 28, 2019  
Time: 1620 central daylight time (CDT)<sup>1</sup>  
Aircraft: Piper PA-34  
Registration: N456AG

#### B. SPECIALIST

Katherine Wilson  
Human Performance and Survival Factors Division (AS-60)  
National Transportation Safety Board  
Washington, DC 20594

#### C. SUMMARY

On July 28, 2019, about 1620 central daylight time, a Piper PA-34 airplane, N456AG, impacted terrain near Gainesville Municipal Airport (GLE), Gainesville, Texas. The airplane was owned and operated by US Aviation Group, LLC. The instructor pilot and student pilot were fatally injured, and the airplane was destroyed by post-crash fire. The airplane was operated under 14 *Code of Federal Regulations* Part 141 as an instructional flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated at Denton Enterprise Airport (DTO), Denton, Texas about 1430.

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<sup>1</sup> All times are based on a 24-hour clock and are in CDT unless otherwise noted. Time of the accident is approximate.

## **D. DETAILS OF THE INVESTIGATION**

The Human Performance Investigator was assigned to the investigation on August 15, 2019. Investigative activities included conducting interviews, gathering relevant documentation, and reviewing training and guidance materials. Information relevant to the pilots' training and experience and company policies and procedures are contained in this factual report.

### **1.0. Instructor pilot information**

The pilot information was documented through FAA and company records. The instructor pilot, age 25, lived in North Richland Hills, Texas. She was hired by US Aviation Academy (USAA) on November 29, 2018. She completed her instructor proficiency check for the C-172M on December 4, 2018, and for the PA-34-200 on March 1, 2019, which included an engine shut down and restart in flight. Her most recent first-class FAA medical certificate was issued on August 27, 2018. According to company flight records, she had a total of 536 hours of flight time, of which 96 hours were in multi-engine airplanes. She had 71 hours in the accident airplane make and model. Her total time as an instructor was 203 hours. Her flight time in the last 90 days, 30 days, and 24 hours was 36 hours, 36 hours, and 0 hours, respectively. Her most recent flight before the accident was with the accident student pilot on July 25, 2019.

### **2.0. Student pilot information**

The student pilot, age 22, lived in Denton, Texas. He had been a student at USAA since January 29, 2018. According to FAA records, the student pilot held a private pilot certificate for airplane single-engine land, with an instrument airplane rating. His most recent first-class medical certificate was issued February 2, 2018, and had no limitations. According to company flight records, the student pilot had a total of 214 hours of flight time, of which 79.6 hours were in a simulator. He began flying a Piper PA-34 airplane on May 16, 2019, and had a total of 16.1 hours in make and model at the time of the accident. The student had failed the company's Stage 1 flight check of his commercial rating two times<sup>2</sup> prior to the accident flight. According to USAG Review Board records, the student receiving instruction "struggles with basic aircraft control, instrument procedures, lack of situational awareness, and understanding of the aircraft's avionics. During both flight checks, [the student] did not maintain positive control of the aircraft during engine failures in the pattern." The Review Board recommendations stated, "USAA requests 5 hours of additional flight training before [the student] is resubmitted for Stage Check." His flight time in the last 90 days, 30 days and 24 hours was 16 hours, 2 hours and 0 hours, respectively. His most recent flight before the accident was with the accident instructor pilot on July 25, 2019. Instructor remarks noted "Student needed constant reminder to maintain heading during all maneuvers, especially engine out. Student was reminded of maintaining directional control and Vyse during single engine when unable to maintain altitude."

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<sup>2</sup> On June 5, 2019, and June 12, 2019

### **3.0. Medical and pathological information**

Toxicology tests performed by the laboratory at FAA Forensic Sciences on specimens from the instructor pilot tested negative for a wide range of drugs, including major drugs of abuse, and ethanol. The results were positive for medications used in the resuscitative efforts after the accident including ketamine, norketamine, midazolam, lorazepam, morphine, fentanyl, norfentanyl, and etomidate. Toxicology tests performed during autopsy performed by the Southwestern Institute of Forensics Sciences, Dallas, Texas, on specimens from the student pilot tested negative for a wide range of drugs, including major drugs of abuse, and ethanol. The results were positive for carboxyhemoglobin which is consistent with a post-accident fire.

### **4.0. US Aviation Group**

#### **4.1. Organization Overview**

US Aviation Group was a flight training academy and aviation services organization which had two divisions – US Aviation Academy, which operated two FAA and one CAAC certificates from three training bases (Denton Enterprise Airport, North Texas Regional Airport and Alliance Airport), and US Jet Center, which was an FBO operating out of Denton Enterprise Airport. All training aircraft were maintained by an in-house FAA-approved 145 repair station.

#### **4.2. Policies and procedures**

##### **4.2.1. Simulated engine failures/simulated emergency landings**

The US Aviation Academy Company Training Policy and Procedures, revision 4.0, revised 7/2/18, section 2 “Maneuvers”, subsection 2.1.6 “Simulated Engine Failures/Simulated Emergency Landings”, stated:

2.1.6.1. No Simulated Engine Failures / Simulated Emergency Landings will be conducted without a CFI on board.

2.1.6.2. All simulated engine failures will be done in accordance with the Maneuvers Manual and the FAA Airplane Flying Handbook. Additionally, the aircraft must be recovered prior to passing below five hundred (500) feet AGL unless over an active runway.

2.1.6.2.1. Pilots must receive specific clearance from ATC before altering the traffic pattern for emergency landing practice (receive ‘short-approach’ clearance).

2.1.6.2.2. Simulated engine failure and single-engine maneuvers in a multi-engine airplane must be performed in accordance with the POH and approved training materials.

##### **4.3. Student FOM**

The US Aviation Academy outlined the standard operating procedures for use at the US Aviation Academy flight training facility in the Flight Operation Manual (FOM) and FOM

Appendix. The FOM was provided to all students. The FOM, section 1.0 “General Operations”, subsection 1.10 “Student Availability (International)” stated:

1.10.1 Unless otherwise approved by USAA management, all international students enrolled in USAA Training Academy must complete at least 20 events per month. An event may be described as either flight training or ground training.

1.10.2 Students enrolled at USAA cannot be out of contact with the school for more than five (5) days. At no time will a student leave the immediate area without notifying USAA. A travel letter issued by USAA must accompany the student. Failure to comply may result in termination of the student’s I-20 and active status with SEVIS.

#### 4.4. FOM Appendix

The US Aviation Academy FOM Appendix provided “for uniform dissemination of policies and procedures applicable to US Aviation Academy students, pilots and staff. This manual describes how to effectively represent US Aviation Academy. By assuring that all students, pilots and staff members are familiar with the information contained within, US Aviation Academy can provide a safe and efficient learning environment.” The following are excerpts from the FOM Appendix.

Section 1.0 “Expectations”, subsection 1.1 “Instructors Standards of Excellence” stated, in part [emphasis original]:

##### SAFETY

Excellent instructors are known for their high regards of safety. They habitually operate in accordance with Federal Aviation Regulations, Company Policies, Standard Operating Procedures and common practices to ensure safety of flight. These habits are emulated by their students who assimilate a safety-oriented attitude. This level of excellence consistency demands the practice of thorough preflight planning.

Excellent instructors realize that good preflight planning increases safety of flight. Planning also means preparation. They also recognize the importance a through post flight and assist their student with properly securing and checking the aircraft. Post flight also includes a post briefing. Keeping their student informed as to their progress, what to expect next time and what to study and work on in the meantime is crucial to their excellence.

These instructors are prepared with alternatives to handle changes of conditions during flight. They are aware of what course of action to take and avoid unexpected hazards.

Excellent instructors are aware of their student’s limits. They regulate the student’s parameters in accordance of the students’ abilities and level of confidence. They provide safe and supervised situations that allow a gain in experience and self-reliance. These instructors also know their own limitations and have decided on personal limits. It is common for their students to have preset limits.

Excellent instructors master the practice of decision making by developing a broad understanding of the operational environment. They arm themselves with all available facts to ensure clear situational awareness. Once a situation presents itself they are able to follow Decision Making steps to reach a desirable outcome.

Section 2.0 “School Policy”, subsection 2.4 “Responsibilities”, stated [emphasis original]:

Instructors and students are expected to portray a positive and cooperative attitude toward their duties, US Aviation Academy and its employees. Always emphasize safe flight practices with reference to current data, FAR’s, and the Airman Certification Standards. Instructors and students are required to know and follow the US Aviation Academy SOP/ FOM and any other company policies or procedures.

**Instructors and students are responsible for checking the following:**

PAVE checklist

**Pilot in Command and Student** – Is the PIC and student ready to accomplish this lesson in terms of their experience, currency, physical and emotional conditions? Have they passed the “IM SAFE” checklist?

**Aircraft** – Is the aircraft going to be within the operating and performance limitation throughout the duration of the lesson in conjunction with the POH/AFM of the aircraft, FAR’s and the Academy’s set operational requirements/ limitations?

**EnVironment** – Is the current and forecast weather conducive to being able to accomplish/ complete the scheduled lesson as per the curriculum, FAR’s and the Academy’s set operational requirements/ limitations? In route, is there any special use airspace or TFR’s to consider? With respect to the destination and alternate airports, are they appropriately equipped and are there any NOTAMs?

**External Pressure** – Are there any external pressures that may apply pressure toward attempting the flight when not all aspects of the flight are completely within personal, FAA and/ or Academy standards? Management of external pressures is the single most important responsibility when it comes to risk management.

Section 2.0 “School Policy”, subsection 2.10 “Review Board”, stated:

The Review Board acts as a formal panel to review student conduct, progress or training issues. Its purpose is to document such events/ issues and to formulate a corrective action/ plan and/ or disciplinary actions, including termination of a student’s enrollment with US Aviation Academy.

The Review board form will be fully filled out and signed by all parties present. A copy needs to be given to the student and the original placed in the student's folder. No student will be terminated without a thorough proceeding by the review board.

The Review Board shall consist of; (sic)

1. Two (2) or more members of US Aviation Academy staff depending upon the reason for the review board. General outlines are listed below.
  - a. Lack of progress or attendance (first time review board)
    - i. Primary Flight Instructor
    - ii. Group Manager
  - b. Lack of progress or attendance (not first review board)
    - i. Primary Flight Instructor
    - ii. Group Manager
    - iii. Director of Flight Standards
  - c. Unprofessional conduct
    - i. Primary Flight Instructor
    - ii. Group Manager
    - iii. Director of Flight Standards
    - iv. Any necessary staff
  - d. Violation of Academy rules or policy or FAR's
    - i. Primary Flight Instructor
    - ii. Group Manager
    - iii. Director of Flight Standards
    - iv. Chief Flight Instructor
    - v. Vice President of Flight Operations
2. No less than the Instructor, an Assistant Chief and the student in question present for an official review board to be conducted.

Section 2.0 "School Policy", subsection 2.14 "Student Compliant Policy", stated:

When problems arise, students should exercise the channels available within the Academy to resolve the problem through formal complaint procedure.

It is desirable, if there is a student problem/complaint within the training area, the student should first address this complaint to his/her instructor or Flight Leader. If that is not feasible or the issue is not being addressed in a timely manner the Group Manager that is responsible for that student should be consulted and made aware of the situation. If the problem is not resolved, the student should place the problem/concern/ issue in writing to the Chief Flight Instructor. The Chief Flight Instructor will contact the student within 5

days to discuss the problem/complaint/ issue. Problems/complaints/ issue other than those within the training area should be addressed to that specific area.

Section 5.0 “Curriculum”, subsection 5.5 “Stage-Checks/EOC/Check Ride”, stated:

All stage checks, EOCs and check rides must be requested through Scheduling via a request form which will enable the students needing the event to have the priority before normal flight missions. Stage checks, EOCs and check rides will be scheduled as soon as possible.

A stage check, EOC or check ride contains an oral and a flight or sim evaluation of a student’s competence in the pilot operation appropriate to his/her stage in the training program. The required tasks involved and the standards for each are published in the course syllabus and/or the appropriate FAA Practical Test Standards. In preparing for one of these events, students should review the operations to be covered and the completion standards and resolve questions they have with their instructor before the commencement.

Students must report to the stage-check, EOC or check ride properly prepared and with the following items:

- Pilot Certificates
- Valid Government Issued Picture ID
- Current Medical Certificate
- Flight Logbook with endorsements
- Weight and Balance
- Flight Plan (if applicable)
  - Private Pilot must be done on paper
  - Instrument and Commercial may be electronic
- Current Publications and PTS
- Current Navigation Charts, Approach Plates and AFD o Private Pilot must be paper
  - Instrument and Commercial may be electronic
- Current Weather Charts as listed in the PTS

Missing **ANY** of the previous items for a stage-check, EOC or check ride will result in a “no-show.”

Students can expect the stage-check, EOC or check ride to be an objective evaluation. During this Evaluation, the check pilot is not acting in an instructional capacity.

Students are responsible for radio communications and in-flight operational decisions during the Evaluation.

Students will continue with the same check airman until they fail twice in the same phase, oral or flight if possible. The Chief Flight Instructor or the Vice President of Flight Operations or the Director of Flight Standards can, under extreme circumstances, give written approval for the student to check with another check airman.

## **Unsatisfactory Performance**

If a student's performance does not meet the completion standards prescribed in the curriculum for one or more tasks on a stage-check or EOC, the student will fail the entire check. The Check Pilot will immediately inform the student of such failure and the stage-check will be continued only at the consent of the student.

In an effort to maintain an effective procedure, the following guidelines will be adhered to when a stage-check or EOC failure occurs:

Normally only items failed and/or incomplete on the stage-check or EOC will be evaluated on the recheck. If the student elects to discontinue a stage-check after failing one item/task all the incomplete items will be considered failed. The re-check will consist of all failed and incomplete items/tasks.

If the flight cannot be completed due to weather, mechanical problems, or any other unforeseen circumstances, the incomplete items will be graded as Incomplete (I). The next stage-check or EOC flight will proceed as a continuation of the first flight.

If any of the incomplete items from the first stage-check or EOC flight is failed, the flight will be stopped when all the incomplete items have been evaluated. The student will then have to do the re-check.

Students will complete at least one retraining mission with an instructor prior to a recheck. Exceptions must be approved by the Chief Flight Instructor.

During any stage-check, the ability of the student to perform to the specified standards for each required pilot operation will be based on the guidelines set forth by FAR 61.3; Flight tests, general procedures. Specific completion standards for EOC's leading to pilot certification are found in the applicable FAA Practical Test Standards.

After two consecutive failures on any one section of the check, whether it is oral or flight, the SP will have to restart the stage check or EOC from the beginning.

After the third and any subsequent failure, the SP will have to complete a review board with their instructor and Class Coordinator. Excessive failures may result in a formal dismissal review board as prescribed in Section 2.10.

Section 5.0 "Curriculum", subsection 5.6 "Extra Training Time", stated:

Whenever a student is unable to achieve at least a minimum standard on any item within a lesson unit and is marked unsatisfactory, whenever a student is unable to complete certain times in a unit or lesson within the allotted times and receives an incomplete, or whenever an oral or flight stage-check is unsatisfactory, extra training will be required.



When extra training is required, the student and instructor will coordinate with the flight department the schedule necessary to complete the tasks. Each extra training period will be limited to the time necessary to resolve the existing problem, at the student's expense.

Section 5.0 "Curriculum", subsection 5.7 "Flight Standards and Attrition", stated:

In the event of two failed attempts at any one stage-check or EOC, the Group Manager, Vice President of Flight Operations, Director of Flight Standards and Chief Flight Instructor will be notified immediately. They will conduct a review board with the student in an attempt to find the root cause of the problems. Following the interview, Group Manager and Chief Flight Instructor may assign a senior flight instructor to fly with the student. This flight instructor may use up to 3 hours to help improve the student's performance. Upon completion of this training, the student is eligible to re-take the stage check.

Subsequent unsatisfactory reports will require an immediate evaluation by a review board consisting of all involved parties including the Group Manager, Director of Flight Standards and Chief Flight Instructor. If this board agrees, recommendation of termination will be proposed and the President/ VP/ GM will have the final decision as to the status of the student.

Section 11.0 "Local Operations", subsection 11.13 "Excessive RPM Drop on Mag Check", stated [emphasis original]:

Improper leaning can foul spark plugs. Unburned carbon and lead from excess or unburned fuel can build up on spark plugs and create poor or rough running engines. All aircraft should be leaned to show a rise 50-75 RPM from 1000 RPM for taxi operations.

For the run-up full rich needs to be used. If you experience excessive RPM drop on the mag checks, perform a simple procedure before returning to the ramp and squawking the plane.

Throttle.....Full Power  
Mixture.....Lean to Best Power (peak RPM)

**Wait for 30 Seconds-1 Minute**

Mixture.....Full Rich  
Throttle.....Return to Mag Check RPM  
Magnetos.....Check

If excessive RPM drop is corrected, continue with run-up. If not, repeat 1 time and execute for 1 full minute. If still no, return to ramp and squawk the aircraft.

Section 11.0 “Local Operations”, subsection 11.20 “Flows”, stated, in part [emphasis original]:

### **Emergency (Engine Out) Flows**

#### **Multi Engine (Seneca)**

Mixtures – Full Rich  
Throttles – Full Forward  
Propellers – Full Forward  
Pitch – Vyse (blue line)  
Roll – Counter with Aileron and Rudder  
Identify Inop Engine – (Dead Foot, Dead Engine)  
Fuel Selector – Fullest cross feed  
Fuel Shut Off Valve – On  
Trim – Set for Vyse  
Fuel Pump – On  
Master – On  
Magnetos  
Check: Left, Right and Both  
Engage Starter  
Verify with Checklist

Section 16.0 “Emergency Operations” (highlighted red in the manual), stated, in part [emphasis original]:

This section contains policies and guidelines of US Aviation Academy pilots involved in various emergency situations. At no time is it intended that these guidelines supersede those emergency procedures detailed in the approved Pilot Operating Handbook and Aircraft Flight Manuals. Each pilot is responsible for accomplishing emergency checklist items as specified by the manufacturer in the approved and current POH/AFM.

For the purpose of this section, “emergency” describes those situations that would cause departure from the normally planned activity or operation.

Some emergencies are more immediate than others. Emergency procedures may require steps to be performed from memory. These steps will be denoted as memory items on the appropriate checklist and the Standard Operating Procedures. Pilots will demonstrate proficiency in the use of memory items as well as checklist implementation prior to qualification.

When an emergency occurs, the primary duty of a pilot is to fly the aircraft. Listed below are the three basic rules to remember that will aid immeasurably for a safe emergency situation resolution:

1. Maintain Aircraft Control
2. Analyze The Situation And Take Corrective Action
3. Land As Soon As Conditions Permit

It must be remembered that above all else the **PIC is the final authority as to how the emergency situation will be handled.** However, if time permits, the assistance offered by Flight Service and ATC often provides helpful ideas that may have otherwise been overlooked.

Section 18.0 “Safety Program”, stated, in part [emphasis original]:

The goal of the US Aviation Academy safety program is to prevent unsafe situations through superior training, education and self-evaluation. US Aviation Academy will provide an active, positive Aviation Safety Program. The primary goal of this program is to:

1. Identify risks
2. Eliminate those it can
3. Reduce others to an acceptable level

The Aviation Safety Program will include:

1. Aviation education programs
2. Aircraft and equipment maintenance
3. Flight line and fueling operations
4. Adherence to checklist and procedures
5. Fire protection
6. Icing protection

Responsibility for implementation and enforcement of the program rests with all levels of supervision. Management is responsible for assigning trained, knowledgeable, and qualified personnel to perform assigned duties related to the US Aviation Academy mission. The instructor is responsible for training and supervision of the student. The Student is responsible for all policies, regulations and procedures listed in the FAR’s and the SOP/FOM. Accident prevention is the first duty of the entire aviation community.

## **18.1 PHILOSOPHY OF SAFETY**

The philosophy of the safety program is to prevent injury and equipment damage by identifying and eliminating unsafe situations and or mitigating as much risk as possible. The Chief Flight Instructor or Safety Officer will collect safety related information and disseminate this data to all Academy students, pilots and staff members in an effort to educate and apply safety procedures. This will create a safe work and flight environment where safety is a way of thinking.

## 18.2 SAFETY ATTITUDE

Operational components at all US Aviation's locations will strive to develop and maintain the following safety attitude.

1. An absolute commitment to safety as a behavioral pattern – a way of life.
2. Safe life patterns and work habits.
3. Availability of quality equipment.
4. Clear and easily understood SOP's – followed without deviation.
5. Inclusive system of communications for collecting, analyzing and exchanging incident data related to safety.
6. A non-punitive environment, one that prevents retribution for submission of incident data.
7. Retraining without penalty or stigma when safety is involved.
8. System for tracking accident and incident data, analysis of trends and feedback of results.
9. Peer acceptance that accidents are preventable.
10. Acceptance that safety is a matter of life-style – a matter of attitude.

## 18.6 REPORTING HAZARDOUS EVENTS OR BEHAVIORS

In the interest of safety, all staff and students are responsible for reporting any hazardous events or observed unsafe behaviors to management.

### 4.5. Student Handbook

The US Aviation Academy Student Handbook outlined expectations for students participating in the program. The section "Welcome to US Aviation Academy" stated, in part:

If you violate academy rules, do not pass the ground school exams, do not study or are not prepared for your lessons, or do not do well in flight training, we will provide written reports to your airline. If this situation should occur, then US Aviation has the power to recommend your dismissal from the academy. We make every effort to help students be successful, we do not want to terminate a student's training, but if students do not follow the rules or do not work hard in training, it causes a safety concern for fellow students. In some cases, additional flight training can help students succeed; however, most of the time, extra training is not conducive for safe flight training.

The Student Handbook, Chapter 2 "Expectations for Flight Training", stated, in part [emphasis original]:

### **What is a stage check?**

- The exams leading up to the end of course check are called stage checks. They include an oral portion and flight portion. You must pass each stage check before you continue on to the next stage.

**What if I fail a stage check?**

- If you fail an oral:
  - You can do it again; however, you must study and prepare for another oral. Your instructor may review with you after you study to make sure you are ready.
- If you fail a flight:
  - You can do it again; however, you will have to complete extra training from your instructor. You must also keep up with progress of your class.
  - If you fail a stage oral or flight check more than twice, you will be required to pay for the third and all subsequent checks.

**General Rules for Flight Training**

In any of the following cases or a combination thereof, you will be assessed and may face termination from training.

- 2 or more failures in one stage check.
- 3 or more failures of stage checks within one program.
- 2 failures of End of Course check.
- Failure in PPL and IR End of Course checks.
- A total of 5 failures of stage checks and end of course checks.

**Extra Tuition and Fees**

You will incur extra charges for tuition and fines due to making up flights due to being late or absent; failure in stage checks or end of course checks or No Show in training.

**4.6. Safety Procedures and Practices**

The US Aviation Academy Safety Procedures and Practices were “designed to ensure regulatory compliance per 14 CFR §141.93(a)(3) as well as provide critical information about safety policies, procedures, and practices applicable to all pilots and staff at USAA in the conduct of flight operations.” See Attachment 2 “USAA Safety Procedures and Practices Excerpts” for information on maintenance discrepancies and airworthiness.

**4.7. MEL Maneuvers**

The US Aviation Academy Multi-Engine Land Maneuvers (MEL) detailed the maneuvers followed during training. See Attachment 3 – MEL Maneuvers Excerpts for maneuvers pertaining to a single engine out.

**Attachments**

1. Interview Summaries
2. USAA Safety Procedures and Practices Excerpts
3. MEL Maneuvers Excerpts