

Via email
Todd Gunther, AS-ERA
Investigator-in-Charge
National Transportation Safety Board
490 L'Enfant Plaza SW
Washington, DC 20594

RE: Aerial Banners Party Submission to the NTSB
Date of Accident: May 25, 2023
NTSB Investigation Number: ERA23LA245

Dear Mr. Gunther:

The purpose of this letter is to provide recommendations on behalf of Aerial Banners regarding the National Transportation Safety Board (NTSB) Report and NTSB Materials Laboratory Report, for Investigation Number ERA23LA245.

On behalf of all the hardworking men and women at Aerial Banners, we appreciate the opportunity to submit these comments in our common pursuit of aviation safety.

I. INTRODUCTION

The NTSB preliminary report indicates the following. On May 25, 2023, about 1209 eastern daylight time, a Piper PA-25-260, N454AB, operated by Aerial Banners, was substantially damaged when it was involved in an accident near Hollywood, Florida. The commercial pilot was seriously injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 banner tow flight.

According to Aerial Banners' director of ground operations, who supervised the flight from the banner pickup point and communicated with the operator's airplanes with a handheld radio, the pilot took off from runway 10L at North Perry Airport (HWO), Hollywood, Florida around 11:55 for a scheduled 12 o'clock banner tow flight.

The pilot did his first pass in the banner box for hook deployment and verification of a properly deployed hook. He then missed on his first three attempts to pick up the banner. All seemed normal (airspeed & altitude) to the director, but he noticed that the pilot was making his crosswind turns progressively closer and closer than the Aerial Banner standard operating turn procedure.

There had been a change for his scheduled banner tow and the director needed to assign him another banner to fly which was already set up and ready for him. He relayed that information to

him via radio and told him to go around and fly his approach on a different lane than the previous one that was assigned to him. All seemed “fine and normal,” regarding the airplane’s airspeed and altitude.

The pilot proceeded to approach to pick the banner and missed again (his fourth miss), and this time, the hook hit the ground very hard, and either the hook or the rope struck the cone placed on the right side of the lane as the airplane climbed out. The director was a couple of feet from his lane, where he usually stood, and advised the pilot that he missed on his attempt to pick up the banner. The director then took a couple of steps towards the pick lane to fix the cone, and as he turned to watch the airplane, he observed that it was at an approximate altitude of 100 feet above ground level in a “spin” towards the ground where it then “crashed.”

According to a commercial-rated pilot with banner towing experience, she observed the accident from about 1,000 feet away while riding as a passenger in a car that her husband was driving. As they approached the banner tow pickup area, they saw the towplane come in to pick up a banner. As they watched, the towplane dived with the grappling hook out behind it for a normal-looking “pick” heading east. The hook failed to catch the rope attached to the banner, and then the towplane pitched up to about 50 feet in altitude and then started a steep banked climbing turn to the left. The airplane then rolled wings level flying westbound at approximately 200 feet in altitude, as it approached their car. Moments later the left wing suddenly dropped and the towplane pitched nose down, rotating to the left in a spin. It rotated 180 degrees and then impacted the ground, almost horizontal in about a 20-degree nose down attitude.

Review of preliminary Automatic Dependent Surveillance Beacon data provided by the Federal Aviation Administration (FAA) confirmed that the pilot had flown a progressively tighter pattern on each attempted banner pickup prior to the accident.

The pilot held a commercial pilot certificate with ratings for airplane single-engine land, multiengine land, and instrument airplane. His most recent FAA first-class medical certificate was issued on January 10, 2023. On that date, the pilot had reported that he had accrued approximately 821 total hours of flight experience.

Company records indicated that the pilot was hired on November 14, 2022. He had completed 60 hours of classroom, ground, and flight training, along with several written and practical examinations. The records also indicated that he had been flying on a regular basis with the company since being hired.

According to FAA and maintenance records, the airplane was manufactured in 1974 and was powered by a Lycoming O-540-G1A5, 260-horsepower engine. The airplane’s most recent annual inspection was completed on March 6, 2023, at 9573.1 total hours of operation.

Examination of the cockpit indicated that both magneto switches were in the “ON” position, The electric boost pump was “ON,” the throttle was full forward, the mixture was full rich, and the carburetor heat control knob was in the “OFF” position. The vertical speed indicator needle indicated about 300 feet per minute down.

Examination of the propeller revealed that the propeller had separated from the engine. The fracture surface signatures were consistent with torsional overload. One blade of the two-blade propeller displayed, S-bending, leading-edge gouging, and chordwise scratching. The other blade displayed curling on the outer portion and about 4-inches of the tip had separated from the rest of the blade.

Examination of the engine revealed that there was oil in the rocker boxes, galleries, and sump. Continuity was established from the front of the engine to the rear gears. Both magnetos were functional and fired when tested. Thumb compression and suction was present on all cylinders. The carburetor jets were clear, the carburetor floats were devoid of fuel, and the float valve assembly was functional.

The carburetor bowl contained trace amounts of fuel. Testing of the fuel in the carburetor bowl revealed no evidence of contamination. Examination of the fuel strainer also revealed that it was full of fuel, had some debris (in the bottom of the strainer bowl outside the screen), and when the fuel was tested, it also revealed no evidence of contamination. The screens for the electric boost pump, fuel strainer, and carburetor were clean.

Examination of the pitch control system revealed that continuity could be established from the control stick in the cockpit, through the breaks in the system to the elevator. Examination of the roll control system also revealed that continuity could be established from the control stick in the cockpit, through the breaks in the system to the ailerons. Examination of the yaw control system revealed that continuity could be established from the rudder pedals in the cockpit, to the left rudder control horn, but could not be established to the right rudder control horn.

Examination of the rudder control horn revealed that it was fractured. The wreckage was retained for further examination.

Through this submission, Aerial Banners respectfully submits its analysis of the facts obtained during the NTSB investigation of this accident, and also provides its conclusions as to why the rudder horn fractured and the pilot failed to maintain control of the aircraft.

II. CONCLUSIONS AND RECOMMENDATIONS

Aerial Banners submits that each of the below conditions contributed to the accident and should be included in the NTSB final report.

- a. The NTSB Materials Laboratory report dated November 15, 2023 should be corrected to report that the right rudder horn had fractured about 1.25 inches from the vertical arm.**
 - a. The last paragraph on page 2 of 16 incorrectly states that the “left rudder horn” had fractured about 1.25 inches from the vertical arm assembly body – and then incorrectly states the right extension had been still intact. These references should be corrected to state the right rudder horn had fractured.
 - b. Figure 1 on page 5 of 16 shows the rudder horn assembly upside down and incorrectly states the left rudder horn had fractured. When turned right side up,

Figure 1 should show the fractured arm on the right side with the fracture surface bending at a 45 degree slant downward.

b. Inadvertent recoil of the tow rope, and impact between the tow hook and right rudder horn, most likely caused the overload fracture of the right rudder horn

- a. The NTSB Materials Laboratory report, dated November 15, 2023, reported that when the fracture surface was examined under Secondary Electron Micrograph, the fracture surface had features consistent with overstress fracture.
- b. Inadvertent recoil of the tow rope, and contact between the tow hook and the aircraft, is a known risk to Aerial Banner pilots and operators. This risk is specifically addressed in the Aerial Banners training manual which says if pilots suspect the tow hook and/or tow rope may have recoiled into the airplane, and is interfering with flight controls, pilots are instructed to use only the necessary control surface movement needed to maintain attitude and altitude.
- c. In the final pass before the accident, witnesses on the ground report the accident pilot came in lower than usual, the tow hook hit the ground very hard, and either the hook or the rope struck a cone and threw the cone out of position.
- d. Inspection of the tow hook after this accident identified that one of the tow prongs was severely bent outward into almost a flat position. The Aerial Banner director of ground operations reported that, in his nearly 20 years of experience, he had never seen a tow hook prong bent so far out of position. The tow hook was manufactured from ¼ inch thick steel rebar. The severity of damage to the tow hook is evidence it experienced a significant impact and significant energy passed through the tow hook during the accident sequence.
- e. Aerial Banners concludes that inadvertent recoil of the tow rope, and subsequent impact between the tow hook and right rudder horn, most likely caused the overload fracture of the right rudder horn.

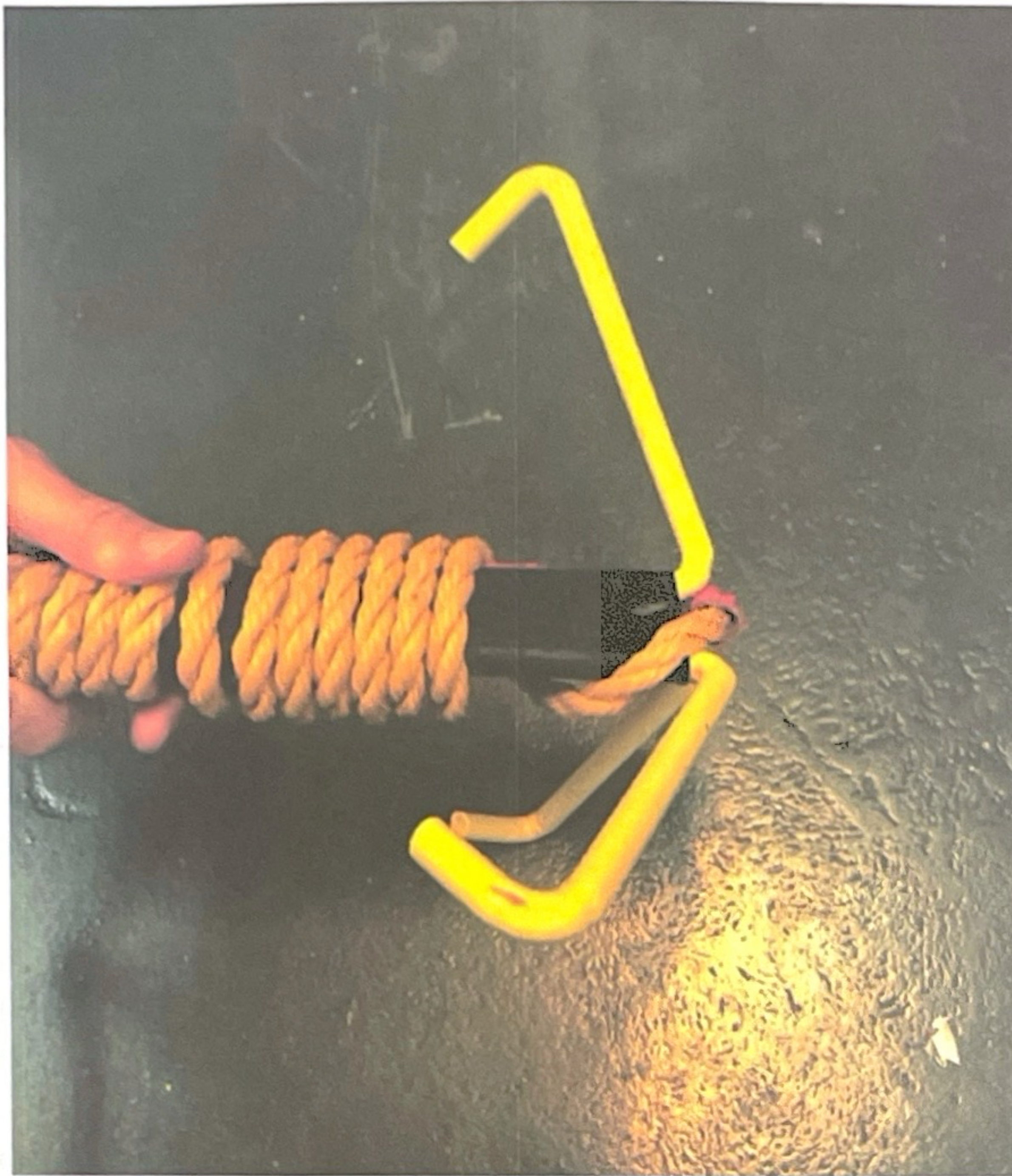


Image 1 – demonstrative photo of undamaged tow hook

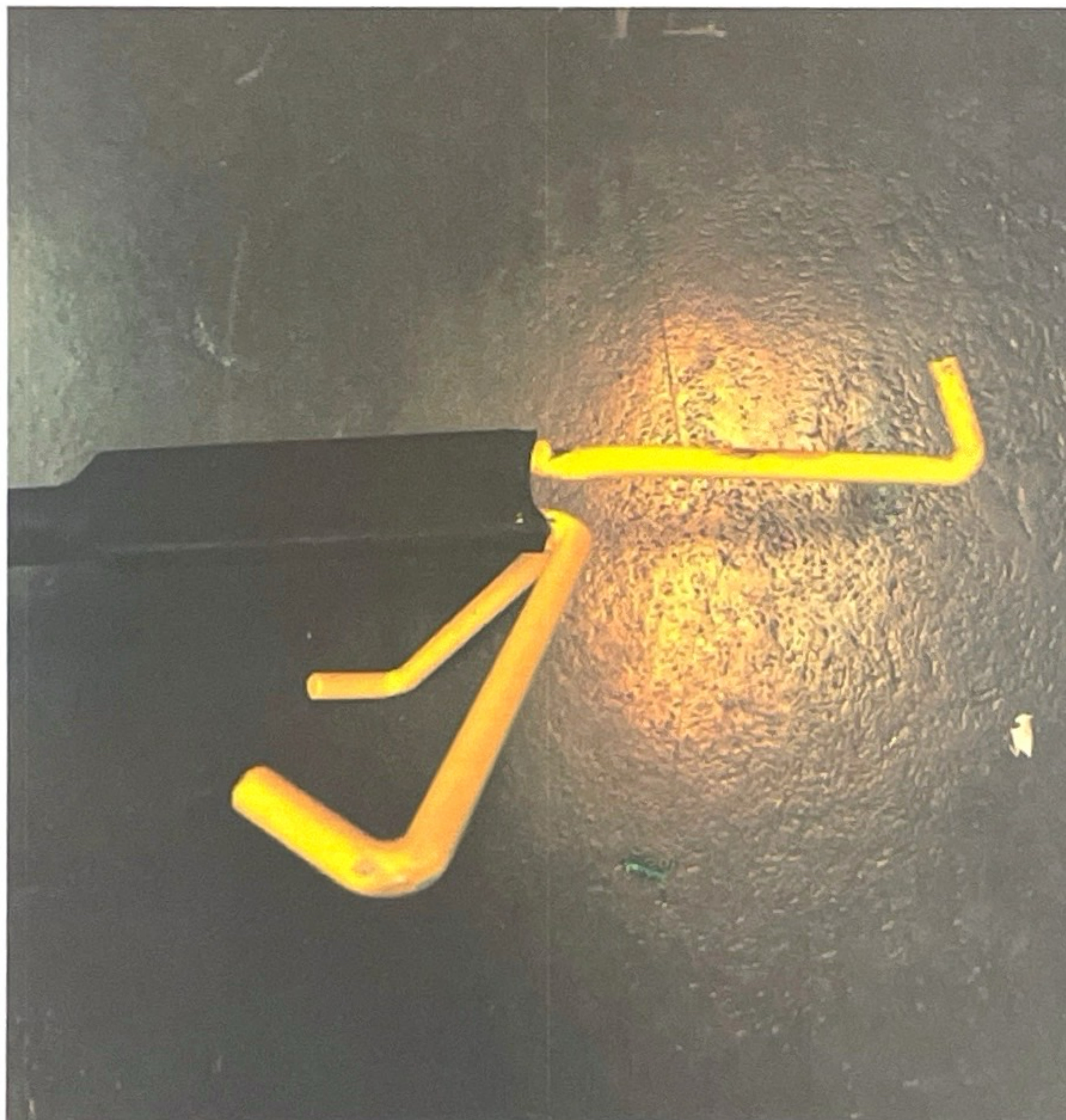


Image 2 – Photo of damaged tow hook after accident. Note that damaged prong is bent nearly straight.

c. The Pilot-in-Command of the accident aircraft was most likely fatigued at the time of the accident.

- a. Aerial Banners has learned that the morning of the accident, the accident pilot bragged to a fellow pilot that he had only slept a few hours the night before.
- b. Jay Schwartz, President and COO of Blue Sky Aviation and Pembroke Pines Commisioner, provided a written statement reporting that the morning of the accident he sat with the accident pilot on the FBO patio. The time was around 10:30-11am. At that time, Jay Schwartz overheard the accident pilot tell someone "I got here today at 9:30am, even though I got home this morning at 3am."
- c. Aerial Banners has obtained documents from Uber showing the accident pilot completed his final job with Uber at around 01:42AM, and went "offline" with Uber at around 01:45AM.
- d. The Aerial Banner training manual cautions pilots to never let a second job interfere with their responsibilities as a pilot, and further cautions pilots that inadequate sleep, sleep deprivation, and other outside stresses can be a deadly combination when operating an aircraft.
- e. The Aerial Banner training curriculum also teaches pilots the "IMSAFE" acronym to help pilots assess their physical and mental fitness before a flight. The acronym stands for: Illness; Medication; Stress; Alcohol; Fatigue; Emotion. Pilots are taught that fatigue can impair their cognitive abilities and make it more challenging to fly safely. Pilots are taught that fatigue can impair their ability to concentrate and erode hand-eye coordination. The Aerial Banners' training curriculum teaches pilots they should always ensure they receive an adequate amount of quality sleep before flying.
- f. The accident pilot was performing below expectation on the day of the accident and missed four attempted banner pickups in a row. Witnesses state his demeanor on the radio and decision making in the cockpit showed evidence of frustration during the several missed-passes before the accident. For example, his crosswind turns that were flown in a progressively tighter pattern following each miss.
- g. Aerial Banners concludes that the accident pilot was most likely fatigued which caused and contributed to the accident.

AHMED	ASHAAT	Miami	completed	5/24/23 12:04 AM	5/24/23 12:09 AM	5/24/23 12:22 AM
AHMED	ASHAAT	Miami	completed	5/24/23 7:20 PM	5/24/23 7:29 PM	5/24/23 8:05 PM
AHMED	ASHAAT	Miami	completed	5/24/23 9:08 PM	5/24/23 9:18 PM	5/24/23 9:39 PM
AHMED	ASHAAT	Miami	completed	5/24/23 10:01 PM	5/24/23 10:19 PM	5/24/23 10:31 PM
AHMED	ASHAAT	Miami	completed	5/24/23 11:06 PM	5/24/23 11:19 PM	5/24/23 11:41 PM
AHMED	ASHAAT	Miami	completed	5/25/23 12:53 AM	5/25/23 1:00 AM	5/25/23 1:10 AM
AHMED	ASHAAT	Miami	completed	5/25/23 1:22 AM	5/25/23 1:27 AM	5/25/23 1:42 AM
5/25/23 1:45 AM	\N	Miami	offline	25.77458644	-80.14097607	\N

Image 3 – Composite image from Uber showing accident pilot driving records the morning of the accident.

d. The Pilot-in-Command failed to follow the Aerial Banner's published emergency procedures for possible entanglement of tow hook with an aircraft control surface

- a. The Aerial Banners training manual states that if a pilot suspects the tow hook is entangled or possibly interfering with an aircraft control surface, the pilot should use only the necessary control surface movement needed to maintain attitude, altitude, and aircraft control. If the tow hook is possibly hindering the movement of any control surface, the pilot should use whatever force necessary to maintain control of the aircraft.
- b. Video of the accident shows the accident pilot failed to follow the Aerial Banners emergency procedures. The video shows that when the pilot identified a possible loss of rudder authority, the accident pilot improperly applied nearly full left rudder and applied increasing nose up elevator. These control inputs further eroded airspeed and resulted in an uncoordinated left turn that eventually resulted in a stall/spin and loss of control.
- c. Aerial Banners concludes that the accident pilot's failure to follow Aerial Banners emergency procedures, and failure to use only the necessary control surface movement needed to maintain attitude, altitude and control of the aircraft, caused the stall/spin and loss of control which resulted in the accident.

On behalf of the hardworking men and women at Aerial Banners, we thank the NTSB for its work and our opportunity to contribute to this investigation.

Very truly yours,



Bob Benyo
President