



National Transportation Safety Board

Washington, DC 20594

Response to Petition for Reconsideration

Date: July 17, 2020

Mr. Joshua Zimmer
c/o Salvatore Salibello
Attorney at Law

In accordance with its rules (Title 49 *Code of Federal Regulations* [CFR] 845), the National Transportation Safety Board (NTSB) has reviewed the May 9, 2017, petition for reconsideration and modification of the probable cause for the aircraft accident involving a Cessna 172S, N347SP, on September 21, 2015, in Bally, Pennsylvania (ERA15LA366). The petitioner has met the requirements for the NTSB's review of his petition; specifically, as a pilot of the accident airplane, he has a direct interest in the investigation, and he offered claims that our report was erroneous. On the basis of our review, the NTSB grants this petition, in part.

On September 21, 2015, about 1830 eastern daylight time, a Cessna 172S, N347SP, operated by Certified Flyers, was substantially damaged during a collision with terrain while maneuvering after takeoff from Butter Valley Golf Port, Bally, Pennsylvania. The commercial pilot incurred minor injuries. The personal flight was conducted under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the planned flight to Morristown Municipal Airport, Morristown, New Jersey.

The NTSB determined that the probable cause of the accident was the pilot's failure to maintain altitude during low-level aerobatic maneuvers. Contributing to the accident were the pilot's improper decision to attempt the low-level aerobatic maneuvers and his impairment due to psychiatric conditions and the medications he was using to treat them.

Petitioner's Claims

The petitioner is Mr. Joshua Zimmer, the pilot of the accident airplane. The petitioner requested that the NTSB reconsider/modify its final report for seven reasons. In support of his claims, the petitioner included the following exhibits with his petition: the aviation accident final report, photographs of the accident airplane, supporting information (pilot, weather, etc.), a physician's letter regarding prior treatment of the petitioner, the postaccident Lehigh Valley Hospital record of treatment, the emergency medical services (EMS) treatment and witness statement record, a physician's letter/report on the hospital and Federal Aviation Administration (FAA) tests of the pilot's blood and urine, a news reporter's article including a witness's statement, and the factual report with certain paragraphs noted.

First, the petitioner claimed that the FAA inspector's investigation did not include testimony from two witnesses who were within 100 yards of the accident site and proceeded to the accident site. The petitioner noted that one of the witnesses indicated that the engine "sputtered." The petitioner further indicated that the six witnesses interviewed by the FAA inspector did not support the pilot's account of what happened during the accident.

Second, the petitioner stated that the FAA inspector's statement that the right main landing gear had collapsed was erroneous because the postaccident photographs show the right main landing gear intact and in its "design position." The petitioner indicated that "thus, the aircraft landed in a wings level configuration."

Third and fourth, respectively, the petitioner indicated that the witnesses the FAA inspector selected to include statements from in his report were in their homes at the time of the accident and that the statement from a witness who was working in a field differed from the statement that the witness gave to a local news reporter.

Fifth, the petitioner indicated that his medical expert, Dr. David Schiebel, a physician licensed in the state of New York and Board certified in psychiatry and neurology, reported that the hospital used a different metric for the blood and urine tests than the FAA laboratory used and that the hospital report, which indicates a "presumptive positive" for benzodiazepine, does not support that the pilot was impaired at the time of the accident. Specifically, the petitioner provided two statements from Dr. Schiebel. The first statement, a hand-written letter from Dr. Schiebel, indicated that he had treated the pilot for over 3 years and that "his psychiatric diagnosis, condition, and medication program do not render him medically unfit to operate aircraft [emphasis in original]." Dr. Schiebel indicated that he diagnosed the pilot with "generalized anxiety (no panic attack episodes) with some depressive features" and had prescribed "anti-anxiety...medication, plus an SSRI antidepressant." The petitioner also provided a letter from Dr. Schiebel detailing his analysis of the pilot's postaccident Lehigh Valley Hospital records. Dr. Schiebel's letter indicated that the toxicology tests performed by the hospital and by the FAA's laboratory on specimens from the pilot used "different measurements in...testing results" and that "clinical evidence rules out the possibility that Mr. Zimmer at the time of the crash was impaired by whatever level of alprazolam was present in his body."

Sixth, the petitioner indicated that the FAA inspector does not "credit the pilot for avoiding destruction or injury to livestock in the field, destruction to the 'homes' of the witnesses, and/or injury or death to persons on the ground." The petitioner included a news article and added emphasis to the statement that no cows were injured during the crash.

Seventh, the petitioner questioned the FAA inspector's decision to change the pump during the postaccident engine test and also noted that the FAA inspector did "not state that he arrived at the [accident] site the next day, Tuesday, September 22, 2015" and that he did "not vouch for the security of the aircraft overnight." The petitioner stated that after the engine would not start during a postaccident test, although there was dirt on the fuel line, the FAA inspector changed the pump instead of the fuel line, and then the engine started. Specifically, the petitioner stated the following:

Should not have this fact shown to Mr. Strauss [the FAA inspector] that the first pump was defective and not supplying fuel to the engine? Why? Because the fuel

line with ‘dirt’ on it was providing fuel to the first pump and the replacement pump. His erroneous conclusion is that the pump was not defective and that Mr. Zimmer probably imagined that he had an engine failure in flight. This is entirely ludicrous.

The petitioner also noted that “the NTSB did not visit the crash site nor participate in any of the test work conducted by Mr. Strauss on the engine and the FAA Medical Lab.”

Finally, the petitioner requested the following:

For the foregoing reasons the Factual Report and the Final Report should be reconsidered and modified to say that the pilot experienced a partial and, then, a total power loss in flight and in his attempt to return to the departure airport crashed in an open dairy farm field and suffered personal injuries. The cause of the engine failure is not determined.

NTSB’s Response

The NTSB will respond to each of the petitioner’s claims in turn, combining claims where appropriate. The petitioner’s first, third, and fourth claims deal with witness statement information in the final report. The petitioner indicated that the FAA inspector’s report did not include testimony from two witnesses who were within 100 yards of the accident site, that the FAA inspector selected statements from witnesses who were in their homes at the time of the accident, and that the statement from a witness who was working in a field differed from the statement that the witness gave to a local news reporter. However, the NTSB’s final report contains statements from numerous witnesses. Specifically, in addition to statements from two witnesses who were in their homes at the time of the accident, the final report contains information from bystanders who were interviewed by emergency medical responders, a man who was in his truck driving and had called 911 to report the accident, an employee who worked at the departure airport, a witness who was in his backyard, and a witness who was working outside on his farm. We interviewed the witness from the dairy farm who also gave an interview to a local newspaper, and we documented his statement in the public docket and in the final report. In his statement to the NTSB, the witness described the airplane flying underneath power lines, which is consistent with the information quoted in the newspaper article. While he may have made additional comments to the newspaper reporter, he did not make those additional comments to our investigator. We also included, in our analysis, the following statement: “several witnesses reported observing different sequences of events.” Thus, the final report included statements from witnesses in different locations at the time of the accident, and the NTSB considered all of these statements in its analysis and determination of probable cause.¹ Further, we note that this was a limited investigation; as such, two FAA inspectors gathered evidence at the scene of the accident, and the NTSB gathered additional information, participated in postaccident testing of the engine and components (as discussed in more detail below), analyzed the facts to determine the probable cause, and wrote the final report.

In his second claim, the petitioner asserted that the FAA inspector’s statement that the right main landing gear had collapsed was erroneous because the postaccident photographs show the right main landing gear intact. We concur with the petitioner that the right landing gear was intact

¹ Witness statements and other supporting information regarding this accident can be found in the NTSB’s public docket for case number ERA15LA366, which can be accessed from the NTSB’s website (www.ntsb.gov).

and will revise the final report to note that the nose landing gear, rather than the right landing gear, had collapsed.

Regarding the petitioner's fifth claim that his medical expert, Dr. Schiebel, reported that the hospital used a different metric for the blood and urine tests run by the FAA and that the hospital report does not support that the pilot was impaired at the time of the accident, an NTSB medical officer reviewed the information that the petitioner provided, in addition to the original case material. We have determined that there were no inconsistencies between hospital and FAA testing. The hospital laboratory tested the pilot's postaccident urine and detected benzodiazepines (which include alprazolam and lorazepam) at levels above the detectable threshold of 300 ng/ml ("presumptive positive"), which equates to 0.3 µg/ml (microgram per milliliter). The NTSB subpoenaed the blood and urine specimens collected at the time of admission, and the FAA laboratory tested the specimens and quantified the drugs found, as documented in the Toxicology Report in the public docket for this accident. FAA testing identified, among other drugs, 1.053 µg/ml of alprazolam in urine. (However, we note that urine cannot be used to determine possible impairment.) There are no inconsistencies between hospital and FAA testing; rather, the FAA testing supports the hospital's positive findings of benzodiazepines in urine. The FAA testing of hospital-collected blood specimens detected the following drugs: 0.123 µg/ml of alprazolam, 0.03 µg/ml of lorazepam, 0.065 µg/ml of sertraline, and unquantified levels of its metabolite desmethylsertraline. Concerning impairment, the sedating benzodiazepine alprazolam blood level of 0.123 µg/ml exceeded the average levels for 430 drivers arrested for driving under the influence of drugs, which averaged 0.090 µg/ml.² The information that the petitioner provided is not evidence of inconsistencies between the hospital and FAA test results, nor is it evidence to refute that the pilot had blood levels within the toxic range of a sedating benzodiazepine, alprazolam, and a low level of a second sedating benzodiazepine, lorazepam, in his system at the time of the accident. However, we will clarify, in our final report, that the specific amounts of alprazolam and lorazepam that are listed were in blood specimens.

In addition, regarding the claim that there was no clinical evidence of pilot impairment in the hospital report, we note that the report from the emergency medical responders included with the petition indicated that the pilot was unable to answer questions (specifically, that he could not provide his name) and was confused shortly after the accident. The findings of confusion in the EMS treatment record are more proximate to the accident than the hospital treatment and provide evidence of some level of impairment after the accident. However, we cannot determine if the pilot's confusion was from the trauma of the accident, the impairing levels of alprazolam combined with lorazepam, or the combined effects of trauma and drugs. Finally, there is evidence of impaired pilot decision making before the accident based on witness reports (some witness statements noted that the pilot was reckless, trying to do stunts, flying erratically, or "showing off"). While we recognize that the pilot's physician noted no evidence of impairment in the hospital reports, he has provided no new evidence to counter the reports of impaired decision-making before the accident.

Further, we note that, according to the NTSB's Medical Factual Report, the pilot received his first aviation medical certificate in 2010, without limitations. His second and most recent medical exam was dated April 7, 2015 (5 months before the accident), and he reported no medical

² Jones, A.W. et al. "Concentrations of Scheduled Prescription Drugs in Blood of Impaired Drivers: Considerations for Interpreting the Results." *Ther Drug Monit.* 29 (2), April 2007.

conditions or use of medications to the FAA and received a first-class medical certificate without limitations. The FAA medical certification examinations are a comprehensive evaluation of an individual's fitness to operate an aircraft. Pertinent to this investigation are the examination form questions 17a., which asks if the pilot currently uses any medications (prescription or nonprescription), and 18m., which asks if a pilot has a mental disorder of any sort (depression, anxiety, etc.). The information provided by the petitioner revealed that the pilot, at the time of his 2015 physical examination, had been prescribed benzodiazepines and sertraline (medications noted to be present in the postaccident toxicology reports) and had the psychiatric conditions of generalized anxiety and symptoms of depression. However, the pilot did not report the medications or psychiatric conditions on his most recent medical certification examination. The *FAA Guide for Aviation Medical Examiners* states the following:

Although they may be rare in occurrence, severe anxiety problems, especially anxiety and phobias associated with some aspect of flying, are considered significant. Organic mental disorders that cause a cognitive defect, even if the applicant is not psychotic, are considered disqualifying whether they are due to trauma, toxic exposure, or arteriosclerotic or other degenerative changes.^[3]

Additionally, the guide states, "Depressive disorders and medications used to treat depression are medically disqualifying for pilots."⁴ Finally, the FAA prohibits aviation medical examiners from issuing a medical certificate to applicants who are using certain medications, including antidepressants and antianxiety drugs.⁵ Based on the additional information not known at the time of the initial investigation, we note that the pilot had not revealed disqualifying medical conditions treated with disqualifying medications. Had the pilot revealed this information, as required by federal statutes, the aviation medical examiner conducting the 2015 examination would have been obliged to defer or deny the pilot's 2015 medical certificate. In cases like these, had the pilot revealed information about his anxiety/depression and treating medications, the FAA would have asked for additional information from the airman, and after evaluation and interaction with the airman, the FAA would decide whether or not this pilot was safe to fly. However, it is unlikely the pilot would have been approved to fly while using any benzodiazepine. The pilot's failure to report these conditions prevented an FAA safety assessment of the pilot's medical condition and medications and allowed this pilot to fly with disqualifying medical conditions and medications. In this case, the NTSB determined that his medical condition and medications contributed to the accident.

Regarding the petitioner's sixth claim that the FAA inspector does not give credit to the pilot for avoiding livestock, people, and homes on the ground, the purpose of the NTSB's report

³ *FAA Guide for Aviation Medical Examiners*, Decision Considerations, Aerospace Medical Dispositions: Item 47. Psychiatric Conditions - Anxiety Problems, last modified January 5, 2017, https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item_47/amd/table/ap/.

⁴ *FAA Guide for Aviation Medical Examiners*, Decision Considerations, Disease Protocols - Depression Treated with SSRI Medications, last modified December 12, 2018, https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/dec_cons/disease_prot/ssri/.

⁵ *FAA Guide for Aviation Medical Examiners* - Pharmaceuticals (Therapeutic Medications) Do Not Issue - Do Not Fly, last modified February 21, 2019, https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/pharm/dni_dnf/.

is to analyze the facts regarding the accident and determine the probable cause. The report does note that only the pilot incurred a minor injury.

Regarding the petitioner's seventh claim that discusses the FAA inspector not arriving at the scene until the next day and the FAA inspector's decision to change the pump during the postaccident engine test, we note that the accident occurred late in the day (about 1830). Thus, an arrival by the inspector/investigator the next day was reasonable. Two FAA inspectors were handling the on-scene portion of this accident investigation and were responsible for coordinating with local authorities to secure the scene until their arrival the next day.

Regarding the engine testing, the final report states the following: "A small amount of dirt was noted on the outside of the fuel line near the pump fitting; however, the fuel sample was consistent with 100-low-lead aviation gasoline and absent of any visible contamination." In a memorandum of record in the public docket for this accident, an NTSB investigator noted that the dirt in the tube fell into it after it was knocked loose when the line was unscrewed; thus, the fuel was clean. Further, the petitioner's statement that the FAA inspector removed the engine and placed it on a test stand was incorrect; as documented in a memorandum of record in the public docket for this accident, the engine was tested on the airframe and was not removed from the airframe. The NTSB investigator was present for this test. The final report further notes that the engine did not start on the first attempt because the electric fuel pump was damaged in the accident and could not supply fuel to prime the engine. For this type of airplane, the electric pump is used to start the engine and for engine failure during cruise flight but is not needed for continuous engine operation. During postaccident testing, the engine ran continuously after starting using ether as primer. While we noted that one of the witnesses interviewed by the emergency medical responders mentioned an engine "sputter," this noise could have been due to the pilot pulling the throttle back to go into a dive as opposed to an engine failure. Further, the petitioner did not indicate in his statement (or in the petition) that he tried to restart the engine; he said that, on climb, the engine sputtered and did not read more than 1,500 rpm, at which point he looked for somewhere to land. Because he did not attempt to use the pump to restart the engine, the functioning of the pump during the accident sequence is not relevant. Finally, a witness that the NTSB investigator interviewed on February 21, 2017, as documented in the public docket for this accident, indicated that the airplane passed about 20 ft above his truck and that he could hear the engine operating but could not determine the power setting (with his windows rolled down). Based on the postaccident testing of the engine and on the pilot and witness statements, we determined that the engine was operational at the time of the accident, the functionality of the pump is not relevant, and the petitioner has not provided any new evidence to contradict that conclusion.

Finally, regarding the petitioner's request that the report be modified to indicate that the pilot experienced a partial and, then, a total power loss in flight and in his attempt to return to the departure airport crashed in an open dairy farm field and suffered personal injuries, the petitioner has not provided any new evidence to show that the pilot experienced a loss of power in flight.

Disposition

After review of the evidence, the petition for reconsideration and modification of the NTSB's final report in connection with the aviation accident involving a Cessna 172S, N347SP, in Bally, Pennsylvania (ERA15LA366), is granted, in part.

The following changes will be made to the factual report (additions underlined):

Page 4, paragraph 4, first sentence, will be revised as follows:

Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the right wing, consistent with a right wing low impact, and that the ~~right main~~ nose landing gear had collapsed during impact; ~~consistent with a right wing low impact~~.

Page 5, paragraph 1, first two sentences, will be revised as follows:

Toxicology testing performed by the FAA's Bioaeronautical Research Laboratory on blood and urine specimen obtained during the pilot's initial postaccident medical care identified alprazolam in ~~urine and blood~~ (0.123 µg/ml) and urine as well as its metabolite, alphahydroxyalprazolam in urine. Lorazepam was identified in ~~urine and blood~~ (0.03 µg/ml) and urine. In addition, sertraline and its metabolite desmethylsertraline were identified in urine and blood and ondansetron was found in urine.

Chairman SUMWALT, Vice Chairman LANDSBERG, and Members HOMENDY and CHAPMAN concurred in the disposition of this petition for reconsideration. Member GRAHAM did not participate.

Enclosures

1. Original Final Report
2. Revised Final Report



National Transportation Safety Board Aviation Accident Final Report

Location:	Bally, PA	Accident Number:	ERA15LA366
Date & Time:	09/21/2015, 1830 EDT	Registration:	N347SP
Aircraft:	CESSNA 172	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The commercial pilot was conducting a personal cross-country flight. Several witnesses reported observing different sequences of events. One witness reported seeing the airplane fly in a 90° right bank turn for about 10 seconds as it maneuvered underneath power lines and between two utility towers. After passing under the power lines, the airplane leveled and then impacted the ground. Another witness reported that the airplane was at a lower-than-normal altitude and seemed to be flying "erratically" and "aggressively," and that, at one point, it was "flying on its side." Another witness reported seeing the airplane flying with one wing pointing toward the ground. The witness statements are consistent with low-altitude aerobatic maneuvers. Although some bystanders reported that the engine sputtered and lost power and the pilot reported that a loss of engine power occurred, postaccident examination of the airframe and engine, which included a successful engine test run, revealed no preimpact mechanical malfunctions or failures that would have precluded normal operation.

Toxicological testing of the pilot's specimens revealed that he had high levels of a sedating benzodiazepine, alprazolam, within the toxic range. Additionally, he had a low level of a second sedating benzodiazepine, lorazepam. Both these medications are used to treat significant anxiety disorders, which are associated with performance deficits, particularly in high-workload spatial tasks. It is likely that the pilot's underlying psychiatric disorders and the medications he was using to treat them impaired his judgement, executive functioning, and psychomotor skills and contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain altitude during low-level aerobatic maneuvers. Contributing to the accident were the pilot's improper decision to attempt the low-level aerobatic maneuvers and his impairment due to psychiatric conditions and the medications he was using to treat them.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)
	Mental/emotional state - Pilot (Factor)
	Prescription medication - Pilot (Factor)
	Decision making/judgment - Pilot (Factor)
Environmental issues	Fence/fence post - Contributed to outcome

Factual Information

****This report was modified on February 28, 2017. Please see the docket for this accident to view the original report.****

****This report was modified on July 10, 2020. Please see the docket for this accident to view the original report.****

On September 21, 2015, about 1830 eastern daylight time, a Cessna 172S, N347SP, operated by Certified Flyers, was substantially damaged during a collision with terrain, while maneuvering after takeoff from Butter Valley Golf Port (7N8), Bally, Pennsylvania. The commercial pilot incurred minor injuries. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the planned flight to Morristown Municipal Airport (MMU), Morristown, New Jersey.

According to the pilot's written statement, he flew from MMU to 7N8 uneventfully. He then departed 7N8 for a return trip to MMU. During initial climb, about 800 feet above ground level, the airplane experienced a partial loss of engine power, with the tachometer indicating about 1,500 rpm. The pilot attempted to land straight ahead, but due to powerlines, he made a left descending turn. He did not think he would be able to glide the airplane back to the airport and elected to land in a nearby field. During the landing, the landing gear struck a fence and the airplane came to rest inverted in the field.

Review of an emergency medical service (EMS) report revealed: "...bystanders say they heard...[the] engine sputter. From bystanders, the [pilot] flew over the high tension power lines and as the engine cut out tried to turn back towards the direction of Butter Valley. Per bystanders the plane was losing altitude quickly and dropped under the high tension lines. Once just barely clearing them, bystanders say he then had to make it through the high tension towers and did. Then the plane came down in a hard landing..."

The EMS report did not identify the bystanders, but noted who a 911-caller was. During a telephone interview, the 911-caller stated that he was driving a dump truck near a farm with the windows three-fourths down. The accident airplane passed about 20 feet above his truck as it proceeded underneath powerlines and banked right on its side. Shortly thereafter, it impacted the crest of a hill. The caller added that it appeared the pilot was "having fun or showing off." The caller further stated that he could hear the engine operating, but could not make a determination of the power setting. He drove to the accident site, called 911, and attempted to assist the pilot.

Another witness stated she was at her residence when she noticed a white single-engine airplane circling near her home. It was executing sharp turns, diving and then pulling up. She added that the engine sputtered and stalled at least once, but then started again, which she believed occurred when the airplane was pulling up. She further stated that she was concerned that the airplane might hit her house because it was flying low. The witness did not see the impact, but noted that it looked like the pilot was reckless or trying to do stunts.

According to a third witness, who worked at 7N8, he saw a white airplane with a blue and yellow stripe land between 1800 and 1830. The airplane approached faster and in a tighter traffic pattern than other airplanes that he typically observed land at the airport. The airplane made a sharp turn over parked airplanes on its approach to the runway. The airplane's right wing then dipped low over the runway, but did not contact it. The wings subsequently leveled as the engine noise increased. The witness added that the airplane must have touched down further down the runway as he did not see it land, but saw it taxiing back on the runway for another takeoff. He did not see the subsequent takeoff.

A fourth witness, who lived near the accident site, stated that he was in his backyard between 1815 and 1830, when he heard a small airplane, which he observed was white and yellow flying toward his property at a lower altitude than normal. The witness added that the airplane seemed to be flying erratically and at one point was "flying on its side." The witness further stated that he was concerned for the safety of the airplane and his house as he watched the abnormal flight, during which the pilot seemed to be flying aggressively for several minutes. He did not witness the impact, but added that he did not hear any abnormal engine sounds.

A fifth witness, who also lived near the accident site, reported that he was sitting in his living room and noticed an airplane that was not flying normally. Specifically, one wing was pointed toward the ground and the other pointed toward the sky. The airplane then disappeared behind a fence row and dust rose in the air. The witness assumed the airplane had crashed and attempted to drive to the site and offer assistance; however, he soon saw emergency responders and concluded that they would assist.

A sixth witness stated that he was working on a farm near the accident site at the time of the accident. He was operating a skid-loader at the time, and could not hear the airplane's engine noise or the lack of it. He watched the airplane fly in a 90-degree right bank turn for about 10 seconds, "wingtip to wingtip," as it maneuvered underneath powerlines and in between two utility towers. After passing under the powerlines, the airplane leveled and impacted the ground.

Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the right wing, consistent with a right wing low impact, and that the nose landing gear had collapsed during impact. He observed impact marks in the soybean field, consistent with a high-angle right bank turn toward and under the powerlines. The inspector also noted a strong odor of fuel at the accident site. When the airplane was subsequently up-righted and recovered, the inspector observed that both fuel tanks were almost full.

A fuel sample was recovered from the engine driven fuel pump after the wreckage was recovered to a storage facility. A small amount of dirt was noted on the outside of the fuel line near the pump fitting; however, the fuel sample was consistent with 100-low-lead aviation gasoline and absent of any visible contamination. A successful test-run of the engine was subsequently performed. A fuel supply was plumbed from a container to the engine driven fuel pump due to a damaged lower fuel sump. The engine did not start on the first attempt as the electric fuel pump was damaged in the accident and could not supply fuel to prime the engine. Ether was then used as primer for the engine on the second attempt. During the second attempt, the engine started immediately and ran continuously without hesitation at multiple

power settings, including full power. The engine was run for several minutes and then shut down.

Toxicology testing performed by the FAA's Bioaeronautical Research Laboratory on blood and urine specimen obtained during the pilot's initial postaccident medical care identified alprazolam in blood (0.123 µg/ml) and urine as well as its metabolite, alpha-hydroxyalprazolam in urine. Lorazepam was identified in blood (0.03 µg/ml) and urine. In addition, sertraline and its metabolite desmethylsertraline were identified in urine and blood and ondansetron was found in urine.

The pilot's most recent first-class medical certificate was issued on April 7, 2015. On the application for that certificate, he reported no medical conditions or medications to the FAA.

Alprazolam is a benzodiazepine medication available as a Schedule IV controlled substance used to treat anxiety disorder and panic disorder. It is commonly marketed with the name Xanax. The drug information includes this instruction to providers: "Because of its CNS depressant effects, patients receiving alprazolam tablets should be cautioned against engaging in hazardous occupations or activities requiring complete mental alertness such as operating machinery or driving a motor vehicle." The usual therapeutic dose range is between 0.0060 and 0.0200 µg/ml; levels above 0.100 are considered toxic.

Lorazepam is another benzodiazepine medication available as a Schedule IV controlled substance, indicated for the treatment of anxiety disorders or for the short-term relief of the symptoms of anxiety or anxiety associated with depressive symptoms. It is commonly marketed with the name Ativan. Lorazepam carries specific warnings including, "Use of benzodiazepines, including lorazepam, both used alone and in combination with other CNS depressants, may lead to potentially fatal respiratory depression. Use of benzodiazepines, including lorazepam, may lead to physical and psychological dependence. As with all patients on CNS-depressant drugs, patients receiving lorazepam should be warned not to operate dangerous machinery or motor vehicles and that their tolerance for alcohol and other CNS depressants will be diminished. The usual therapeutic range is between 0.1600 and 0.2700 µg/ml. Sertraline is an antidepressant marketed with the name Zoloft.

History of Flight

Maneuvering-aerobatics	Miscellaneous/other
Maneuvering-low-alt flying	Loss of control in flight (Defining event)
	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	23, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Without Waivers/Limitations	Last FAA Medical Exam:	04/07/2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	01/29/2015
Flight Time:	1550 hours (Total, all aircraft), 1300 hours (Total, this make and model), 1250 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 75 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N347SP
Model/Series:	172 S	Aircraft Category:	Airplane
Year of Manufacture:	1999	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	172S8271
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	09/18/2015, 100 Hour	Certified Max Gross Wt.:	2550 lbs
Time Since Last Inspection:	7 Hours	Engines:	1 Reciprocating
Airframe Total Time:	5542 Hours at time of accident	Engine Manufacturer:	LYCOMING
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360
Registered Owner:	CERTIFIED AVIATION LLC	Rated Power:	180 hp
Operator:	CERTIFIED AVIATION LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PTW, 308 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	1854 EDT	Direction from Accident Site:	190°
Lowest Cloud Condition:		Visibility	10 Miles
Lowest Ceiling:	Broken / 11000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:		Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.21 inches Hg	Temperature/Dew Point:	18° C / 9° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bally, PA (7N8)	Type of Flight Plan Filed:	None
Destination:	Morristown, NJ (MMU)	Type of Clearance:	None
Departure Time:	1830 EDT	Type of Airspace:	

Airport Information

Airport:	Butter Valley Golf Port (7N8)	Runway Surface Type:	Asphalt; Grass/turf
Airport Elevation:	500 ft	Runway Surface Condition:	Dry
Runway Used:	34	IFR Approach:	None
Runway Length/Width:	2420 ft / 85 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	40.403889, -75.574444 (est)

Administrative Information

Investigator In Charge (IIC):	Robert J Gretz	Report Date:	05/01/2017
Additional Participating Persons:	Arthur Strauss; FAA/FSDO; Allentown, PA		
Publish Date:			
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92013		



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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).

REVISED



National Transportation Safety Board Aviation Accident Final Report

Location:	Bally, PA	Accident Number:	ERA15LA366
Date & Time:	09/21/2015, 1830 EDT	Registration:	N347SP
Aircraft:	CESSNA 172	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The commercial pilot was conducting a personal cross-country flight. Several witnesses reported observing different sequences of events. One witness reported seeing the airplane fly in a 90° right bank turn for about 10 seconds as it maneuvered underneath power lines and between two utility towers. After passing under the power lines, the airplane leveled and then impacted the ground. Another witness reported that the airplane was at a lower-than-normal altitude and seemed to be flying "erratically" and "aggressively," and that, at one point, it was "flying on its side." Another witness reported seeing the airplane flying with one wing pointing toward the ground. The witness statements are consistent with low-altitude aerobatic maneuvers. Although some bystanders reported that the engine sputtered and lost power and the pilot reported that a loss of engine power occurred, postaccident examination of the airframe and engine, which included a successful engine test run, revealed no preimpact mechanical malfunctions or failures that would have precluded normal operation.

Toxicological testing of the pilot's specimens revealed that he had high levels of a sedating benzodiazepine, alprazolam, within the toxic range. Additionally, he had a low level of a second sedating benzodiazepine, lorazepam. Both these medications are used to treat significant anxiety disorders, which are associated with performance deficits, particularly in high-workload spatial tasks. It is likely that the pilot's underlying psychiatric disorders and the medications he was using to treat them impaired his judgement, executive functioning, and psychomotor skills and contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain altitude during low-level aerobatic maneuvers. Contributing to the accident were the pilot's improper decision to attempt the low-level aerobatic maneuvers and his impairment due to psychiatric conditions and the medications he was using to treat them.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)
	Mental/emotional state - Pilot (Factor)
	Prescription medication - Pilot (Factor)
	Decision making/judgment - Pilot (Factor)
Environmental issues	Fence/fence post - Contributed to outcome

Factual Information

****This report was modified on February 28, 2017. Please see the docket for this accident to view the original report.****

On September 21, 2015, about 1830 eastern daylight time, a Cessna 172S, N347SP, operated by Certified Flyers, was substantially damaged during a collision with terrain, while maneuvering after takeoff from Butter Valley Golf Port (7N8), Bally, Pennsylvania. The commercial pilot incurred minor injuries. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the planned flight to Morristown Municipal Airport (MMU), Morristown, New Jersey.

According to the pilot's written statement, he flew from MMU to 7N8 uneventfully. He then departed 7N8 for a return trip to MMU. During initial climb, about 800 feet above ground level, the airplane experienced a partial loss of engine power, with the tachometer indicating about 1,500 rpm. The pilot attempted to land straight ahead, but due to powerlines, he made a left descending turn. He did not think he would be able to glide the airplane back to the airport and elected to land in a nearby field. During the landing, the landing gear struck a fence and the airplane came to rest inverted in the field.

Review of an emergency medical service (EMS) report revealed: "...bystanders say they heard...[the] engine sputter. From bystanders, the [pilot] flew over the high tension power lines and as the engine cut out tried to turn back towards the direction of Butter Valley. Per bystanders the plane was losing altitude quickly and dropped under the high tension lines. Once just barely clearing them, bystanders say he then had to make it through the high tension towers and did. Then the plane came down in a hard landing..."

The EMS report did not identify the bystanders, but noted who a 911-caller was. During a telephone interview, the 911-caller stated that he was driving a dump truck near a farm with the windows three-fourths down. The accident airplane passed about 20 feet above his truck as it proceeded underneath powerlines and banked right on its side. Shortly thereafter, it impacted the crest of a hill. The caller added that it appeared the pilot was "having fun or showing off." The caller further stated that he could hear the engine operating, but could not make a determination of the power setting. He drove to the accident site, called 911, and attempted to assist the pilot.

Another witness stated she was at her residence when she noticed a white single-engine airplane circling near her home. It was executing sharp turns, diving and then pulling up. She added that the engine sputtered and stalled at least once, but then started again, which she believed occurred when the airplane was pulling up. She further stated that she was concerned that the airplane might hit her house because it was flying low. The witness did not see the impact, but noted that it looked like the pilot was reckless or trying to do stunts.

According to a third witness, who worked at 7N8, he saw a white airplane with a blue and yellow stripe land between 1800 and 1830. The airplane approached faster and in a tighter traffic pattern than other airplanes that he typically observed land at the airport. The airplane

made a sharp turn over parked airplanes on its approach to the runway. The airplane's right wing then dipped low over the runway, but did not contact it. The wings subsequently leveled as the engine noise increased. The witness added that the airplane must have touched down further down the runway as he did not see it land, but saw it taxiing back on the runway for another takeoff. He did not see the subsequent takeoff.

A fourth witness, who lived near the accident site, stated that he was in his backyard between 1815 and 1830, when he heard a small airplane, which he observed was white and yellow flying toward his property at a lower altitude than normal. The witness added that the airplane seemed to be flying erratically and at one point was "flying on its side." The witness further stated that he was concerned for the safety of the airplane and his house as he watched the abnormal flight, during which the pilot seemed to be flying aggressively for several minutes. He did not witness the impact, but added that he did not hear any abnormal engine sounds.

A fifth witness, who also lived near the accident site, reported that he was sitting in his living room and noticed an airplane that was not flying normally. Specifically, one wing was pointed toward the ground and the other pointed toward the sky. The airplane then disappeared behind a fence row and dust rose in the air. The witness assumed the airplane had crashed and attempted to drive to the site and offer assistance; however, he soon saw emergency responders and concluded that they would assist.

A sixth witness stated that he was working on a farm near the accident site at the time of the accident. He was operating a skid-loader at the time, and could not hear the airplane's engine noise or the lack of it. He watched the airplane fly in a 90-degree right bank turn for about 10 seconds, "wingtip to wingtip," as it maneuvered underneath powerlines and in between two utility towers. After passing under the powerlines, the airplane leveled and impacted the ground.

Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the right wing and that the right main landing gear had collapsed, consistent with a right wing low impact. He observed impact marks in the soybean field, consistent with a high-angle right bank turn toward and under the powerlines. The inspector also noted a strong odor of fuel at the accident site. When the airplane was subsequently up-righted and recovered, the inspector observed that both fuel tanks were almost full.

A fuel sample was recovered from the engine driven fuel pump after the wreckage was recovered to a storage facility. A small amount of dirt was noted on the outside of the fuel line near the pump fitting; however, the fuel sample was consistent with 100-low-lead aviation gasoline and absent of any visible contamination. A successful test-run of the engine was subsequently performed. A fuel supply was plumbed from a container to the engine driven fuel pump due to a damaged lower fuel sump. The engine did not start on the first attempt as the electric fuel pump was damaged in the accident and could not supply fuel to prime the engine. Ether was then used as primer for the engine on the second attempt. During the second attempt, the engine started immediately and ran continuously without hesitation at multiple power settings, including full power. The engine was run for several minutes and then shut down.

Toxicology testing performed by the FAA's Bioaeronautical Research Laboratory on blood and urine specimen obtained during the pilot's initial postaccident medical care identified alprazolam in urine and blood (0.123 ug/ml) as well as its metabolite, alpha-hydroxyalprazolam in urine. Lorazepam was identified in urine and blood (0.03 ug/ml). In addition, sertraline and its metabolite desmethylsertraline were identified in urine and blood and ondansetron was found in urine.

The pilot's most recent first-class medical certificate was issued on April 7, 2015. On the application for that certificate, he reported no medical conditions or medications to the FAA.

Alprazolam is a benzodiazepine medication available as a Schedule IV controlled substance used to treat anxiety disorder and panic disorder. It is commonly marketed with the name Xanax. The drug information includes this instruction to providers: "Because of its CNS depressant effects, patients receiving alprazolam tablets should be cautioned against engaging in hazardous occupations or activities requiring complete mental alertness such as operating machinery or driving a motor vehicle." The usual therapeutic dose range is between 0.0060 and 0.0200 ug/ml; levels above 0.100 are considered toxic.

Lorazepam is another benzodiazepine medication available as a Schedule IV controlled substance, indicated for the treatment of anxiety disorders or for the short-term relief of the symptoms of anxiety or anxiety associated with depressive symptoms. It is commonly marketed with the name Ativan. Lorazepam carries specific warnings including, "Use of benzodiazepines, including lorazepam, both used alone and in combination with other CNS depressants, may lead to potentially fatal respiratory depression. Use of benzodiazepines, including lorazepam, may lead to physical and psychological dependence. As with all patients on CNS-depressant drugs, patients receiving lorazepam should be warned not to operate dangerous machinery or motor vehicles and that their tolerance for alcohol and other CNS depressants will be diminished. The usual therapeutic range is between 0.1600 and 0.2700 ug/ml. Sertraline is an antidepressant marketed with the name Zoloft.

History of Flight

Maneuvering-aerobatics	Miscellaneous/other
Maneuvering-low-alt flying	Loss of control in flight (Defining event) Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	23, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Without Waivers/Limitations	Last FAA Medical Exam:	04/07/2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	01/29/2015
Flight Time:	1550 hours (Total, all aircraft), 1300 hours (Total, this make and model), 1250 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 75 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N347SP
Model/Series:	172 S	Aircraft Category:	Airplane
Year of Manufacture:	1999	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	172S8271
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	09/18/2015, 100 Hour	Certified Max Gross Wt.:	2550 lbs
Time Since Last Inspection:	7 Hours	Engines:	1 Reciprocating
Airframe Total Time:	5542 Hours at time of accident	Engine Manufacturer:	LYCOMING
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360
Registered Owner:	CERTIFIED AVIATION LLC	Rated Power:	180 hp
Operator:	CERTIFIED AVIATION LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PTW, 308 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	1854 EDT	Direction from Accident Site:	190°
Lowest Cloud Condition:		Visibility	10 Miles
Lowest Ceiling:	Broken / 11000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:		Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.21 inches Hg	Temperature/Dew Point:	18° C / 9° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bally, PA (7N8)	Type of Flight Plan Filed:	None
Destination:	Morristown, NJ (MMU)	Type of Clearance:	None
Departure Time:	1830 EDT	Type of Airspace:	

Airport Information

Airport:	Butter Valley Golf Port (7N8)	Runway Surface Type:	Asphalt; Grass/turf
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Runway Used:	34	IFR Approach:	None
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Investigator In Charge (IIC):	Robert J Gretz	Report Date:	05/01/2017
Additional Participating Persons:	Arthur Strauss; FAA/FSDO; Allentown, PA		
Publish Date:	05/01/2017		
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Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92013		

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