



National Transportation Safety Board Aviation Accident Final Report

Location:	Placerville, CA	Accident Number:	WPR14FA348
Date & Time:	08/16/2014, 1840 PDT	Registration:	N411TM
Aircraft:	CLIFF STARDUSTER II SA300	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (partial)	Injuries:	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

While on approach for landing, the private pilot initiated a go-around on short final due to gusty crosswind conditions. During the climbout, the pilot reported that the airplane experienced a partial loss of engine power. The airplane subsequently collided with terrain, seriously injuring the pilot and fatally injuring the passenger. Postaccident examination of the engine and airframe revealed no evidence of any preexisting mechanical anomalies that would have precluded normal operation.

Blood samples from the pilot tested positive for methamphetamine and its active metabolite, amphetamine. The methamphetamine was found at high levels, indicative of abuse. It is likely that the pilot was impaired by the psychoactive effects of illicit methamphetamine use at the time of the accident, which impaired his ability to maintain control of the airplane during the go-around attempt.

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 control of the airplane during a go-around in gusting wind conditions following a partial loss of engine power for reasons that could not be determined, because postaccident examination of the airframe and engine did not reveal any anomalies that would have precluded normal operation. Contributing to the accident was the pilot's impairment due to his recent use of methamphetamine.

Findings

Personnel issues	Illicit drug - Pilot (Factor)
Environmental issues	Gusts - Effect on equipment (Factor)
Not determined	Not determined - Unknown/Not determined (Cause)

Factual Information

History of Flight

Maneuvering	Loss of engine power (partial) (Defining event) Controlled flight into terr/obj (CFIT)
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On August 16, 2014, about 1840 Pacific daylight time, a Starduster Too SA300, N411TM, an experimental biplane, collided with terrain while maneuvering near the Swansboro Country Airport (O1CL), Placerville, California. The private pilot was seriously injured and the passenger was fatally injured. The airplane sustained substantial damage. The airplane was registered and operated by the pilot under provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed and a flight plan was not filed. The cross-country flight originated from Reid-Hillview Airport of Santa Clara County (RHV), San Jose, California at an unknown time.

According to the pilot, he was inbound for landing at the O1CL, where he was planning to be involved in a fly-in. He reported that he initiated a go-around on short final for runway 9 due to gusty crosswind conditions. On climbout, about a 1/4 mile from the departure end of runway 9, the pilot experienced a partial loss of engine power. He further reported that he verified all engine control positions and the fuel selector was on the main tank. Despite his actions to regain engine power, he was unable to maintain airspeed and collided with wooded terrain about a mile from O1CL.

A witness that has flown out of O1CL for the last 22 years reported that she had invited the pilot of the accident airplane to a fly-in that weekend at the private airport. She spoke with the pilot the day prior to the accident and reviewed airport information with him. She said this was his first time visiting O1CL, and that runway 9 is the normal landing runway, and usually has a right quartering tailwind near the ponds adjacent to the runway. She explained that the wind socks at either end of the runway will often show opposite wind directions. She further reported that the winds on the day of the accident were inconsistent in direction, intermittent and gusty; several arriving aircraft had to do go-arounds. She stated that she observed the accident airplane shortly after the go-around, depart at a normal climb rate and experience gusty winds as the airplane passed over midfield.

Another witness located near midfield, on the north side of the runway, saw the accident airplane on final. He stated that the wind was erratic and coming from the southwest. As the accident airplane came in on final the winds increased to about 10 knots and subsequently the airplane initiated the go-around. The airplane continued above the runway at about 60 feet agl before he lost sight of it behind trees.

Pilot Information

Certificate:	Private	Age:	55, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Rear
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without Waivers/Limitations	Last FAA Medical Exam:	10/31/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	08/07/2013
Flight Time:	432 hours (Total, all aircraft), 172 hours (Total, this make and model), 342 hours (Pilot In Command, all aircraft), 62 hours (Last 90 days, all aircraft)		

A review of Federal Aviation Administration (FAA) airman records revealed that the 55-year-old pilot held a private pilot certificate with an airplane single engine land rating. His most recent FAA third-class medical certificate was issued in October, 23, 2013, with limitations that he must have available glasses for near vision. His most recent flight review was conducted on August 7, 2013.

The pilot reported that he had accumulated 342 flight hours in the accident airplane model, and 62 of those hours in the previous 90 days. He reported a total flight experience of 432 flight hours.

Aircraft and Owner/Operator Information

Aircraft Make:	CLIFF	Registration:	N411TM
Model/Series:	STARDUSTER II SA300 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	1976	Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	1
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	07/15/2014, Annual	Certified Max Gross Wt.:	1991 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	726 Hours as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360-A1B
Registered Owner:	On file	Rated Power:	200 hp
Operator:	On file	Operating Certificate(s) Held:	None

The accident airplane, a 1974 Starduster Too SA300, serial number 1, was a bi-wing, conventional fixed gear, tandem seat, experimental amateur-built airplane, made primarily of wood construction. The airplane was powered by a 200 horsepower Lycoming IO-360-A1B engine, serial number L-12357-51A, and equipped with a Hartzell, 2-bladed propeller.

According to the pilot, the date of the last annual inspection was completed on July 15, 2014, with an airframe total time of 726 hours.

The airplane logbooks were not available during the investigation.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KAUN, 1531 ft msl	Distance from Accident Site:	19 Nautical Miles
Observation Time:	0135 UTC	Direction from Accident Site:	299°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:		Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	29.98 inches Hg	Temperature/Dew Point:	32° C / 6° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SAN JOSE, CA (RHV)	Type of Flight Plan Filed:	None
Destination:	Placerville, CA (01CL)	Type of Clearance:	None
Departure Time:	PDT	Type of Airspace:	Class E

A review of recorded data from the Placerville Airport (PVF), Placerville, California, automated weather observation station, located 6 miles southwest of the accident site, revealed at 1835, wind was from 280 degrees at 7 knots, visibility 10 statute miles, clear skies, temperature 30 degrees Celsius, dew point 2 degrees Celsius, and an altimeter setting of 30.07 inches of mercury.

Using the reported weather conditions at PVF and the elevation of the accident site, which is 2,870 feet mean sea level (msl), the calculated density altitude was about 5,149 feet.

Airport Information

Airport:	SWANSBORO COUNTRY (01CL)	Runway Surface Type:	Asphalt
Airport Elevation:	2594 ft	Runway Surface Condition:	Dry
Runway Used:	09	IFR Approach:	None
Runway Length/Width:	3100 ft / 50 ft	VFR Approach/Landing:	Full Stop; Go Around; Traffic Pattern

The Swansboro Country Airport (01CL), Placerville, California, is a privately owned, non-towered airport and it has one runway; designated 9/27, with a left traffic pattern. The runway is measured about 3,100 feet by 50 feet and the airport is at an elevation of 2,594 feet msl.

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 1 Serious	Latitude, Longitude:	38.800000, -120.716111 (est)

Initial examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the airplane came to rest upright on a road in hilly wooded terrain. The main wreckage was positioned near a small embankment adjacent to the road. Surrounding the site are 20-foot tall trees of which none made contact with the airplane. The first responders removed the upper wing for the extraction of the forward seated passenger. The first responders cut fuel lines and control cables while removing the upper wing. The smell of fuel was evident during the first responder's actions.

Medical And Pathological Information

According to the FAA files, the pilot received his first aviation medical certificate in 1989 (records from this exam are not available) and then applied for a medical certificate again in 2009. At that time, he reported an appendectomy and a driving under the influence (DUI) conviction in 1988; he continued to report these events and surgery for a thumb injury thereafter but never reported any chronic medical conditions or medication use to the FAA. The pilot was transported to Sutter Roseville Medical Center for treatment of his injuries. Records from the pilot's hospitalization following the accident were reviewed. The pilot reported hypertension and regular use of a beta blocker to treat it to his treating physicians. He denied using illicit drugs. Although urine testing for drugs of abuse was ordered, no specimen was received in the hospital laboratory and the order was therefore canceled. A blood sample from the pilot while undergoing treatment was obtained by the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) and subsequently sent to the FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma.

CAMI performed toxicology tests on the sample provided. According to CAMI's report, carbon monoxide and cyanide were not tested due to insufficient sample for analysis. Volatiles and drugs were tested, and had positive results for 0.027 (ug/ml, ug/g) amphetamine, 0.233 (ug/ml, ug/g) methamphetamine, and unspecified level of Atenolol was also detected.

The NTSB Chief Medical Officer reported that Methamphetamine is a Schedule II controlled substance and is available in low doses by prescription to treat ADHD, ADD, obesity, and narcolepsy. Oral doses typically produce blood levels in the range of 0.02-0.05 ug/ml. Levels

above 0.20 ug/ml indicate abuse. Users seeking the intense euphoria produced by higher levels typically snort, smoke, or inject the drug and may reach levels above 2.00 ug/ml.

Methamphetamine levels reach peak blood concentration differently depending on mode of administration. Peak blood methamphetamine concentrations occur shortly after injection, a few minutes after smoking, and around 3 hours after oral dosing. Peak plasma amphetamine concentrations occur around 10 hours after methamphetamine use. The half-life of methamphetamine is about 10 and 12 hours and the half-life of amphetamine is between about 8 and 14 hours.

Symptoms of recreational methamphetamine use follow a typical pattern. In the early phase users experience euphoria, excitation, exhilaration, rapid flight of ideas, increased libido, rapid speech, motor restlessness, hallucinations, delusions, psychosis, insomnia, reduced fatigue or drowsiness, increased alertness, a heightened sense of well-being, stereotypical behavior, feelings of increased physical strength, and poor impulse control. In addition, the heart rate, blood pressure, and respiratory rate increase and they may have palpitations, dry mouth, abdominal cramps, twitching, dilated pupils, faster reaction times, and increased strength. As the initial effects wear off users commonly experience dysphoria, restlessness, agitation, and nervousness; they may experience paranoia, violence, aggression, a lack of coordination, delusions, psychosis, and drug craving. Blood levels cannot be used to distinguish among phases of methamphetamine use.

Methamphetamine and amphetamine are central nervous system stimulants and schedule II controlled substances used in prescription medications that treat narcolepsy, attention deficit disorder, and for weight control. Methamphetamine has high abuse potential due to its early euphoric effects; amphetamine is one of its metabolites. Following methamphetamine use, a greater proportion of the drug is excreted unchanged in urine than is excreted as amphetamine.

Symptoms following use occur in phases:

"Early phase –

Psychological: Euphoria, excitation, exhilaration, rapid flight of ideas, increased libido, rapid speech, motor restlessness, hallucinations, delusions, psychosis, insomnia, reduced fatigue or drowsiness, increased alertness, heightened sense of well-being, stereotypical behavior, feelings of increased physical strength, and poor impulse control.

Physiological: Increased heart rate, increased blood pressure, increased respiration rate, elevated temperature, palpitations, irregular heartbeat, dry mouth, abdominal cramps, appetite suppressed, twitching, pallor, dilated pupils, horizontal gaze nystagmus at high doses, faster reaction time, increased strength, and more efficient glucose utilization.

Late phase –

Psychological: Dysphoria, residual stimulation, restlessness, agitation, nervousness, paranoia, violence, aggression, lack of coordination, pseudo-hallucinations, delusions, psychosis, and drug craving.

Physiological: Fatigue, sleepiness with sudden starts, itching/picking/scratching, normal heart rate, and normal to small pupils which are reactive to light."

The time to onset of symptoms and to their end depends on the method of use; oral ingestion is slower and has lower peak blood levels but longer period of action than snorting, smoking, or injecting the drug. Withdrawal in chronic users or after a binge is associated with depression, fatigue, and strong cravings. Long term use can result in insomnia that may persist through at least month(s) long periods without the drug.

Tests And Research

The postaccident examination of the recovered wreckage was conducted on September 3, 2014, at the facilities of Plain Parts Enterprises, Pleasant Grove, California, by the NTSB IIC, and the FAA. The postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Airframe Examination

Examination of the recovered airframe revealed that the forward fuselage was crushed and buckled. The engine and propeller assembly remained intact and was removed from the airframe prior to the examination by the recovery crew. The firewall was crushed rearward into the forward seat area. The engine support structure was bent and buckled. Numerous cuts were noted to the wing interplane struts and tension members. Both sides of the upper wing from outboard of the inboard interplane struts to the tip were bent downward. The lower wings were bent downward from the wing root to the tip. The main landing gear assembly was bent rearward along the fuselage.

The main fuel tank located forward of the passenger seat separated from the main wreckage. The main tank was deformed with separations at the welds. Internal surface areas were visible. The main tank fuel cap was removed and the seal was undamaged. The auxiliary tank remained attached to the upper wing. The fuel cap was removed and the cap seal was undamaged. The auxiliary tank vent line was unobstructed. The lower side of the wing structure below the auxiliary tank was broken and detached on the right side. The tank was removed and crush damage was noted to the forward corners. Fuel staining was visible near the sending unit area. The fuel selector valve remained attached to the firewall and the control rod separated from the valve. The position of the valve was obtained by applying compressed air and was found in the "Main" position. The gasculator remained attached to the firewall and was undamaged. The gasculator bowl was found safety wired backwards. The gasculator bowl was removed and a small amount of fuel was noted. Water detection paste revealed no water. The gasculator screen was clear of debris.

The rear seat instrument panel was crushed forward and all instruments remained intact. The tachometer displayed 0 rpm and 790.32 hours. The manifold pressure read at 30 in-hg and fuel flow at 0. The altimeter read 680 feet and the Kollsman window was set to 30.12.

Control cable continuity was established from the cabin area to the engine control levers through several cuts by first responders and by recovery efforts. All cables had impact damage between the firewall and engine. The throttle, mixture and propeller control levers were found in the full forward position.

The tail section was removed from the fuselage during the recovery efforts at the accident site. The tail section was undamaged.

Engine Examination

The engine was fracture-separated from the engine mount assembly. During recovery efforts the engine was separated from the main wreckage by cutting various tubes, lines and cables.

The propeller governor separated from the accessory section and remained attached to the engine by oil lines. The propeller governor mounting flange and a portion of the drive coupling remained attached to the engine. The magnetos were undamaged and remained attached to the engine. The ignition leads had impact damage and several separations. The upper spark plug attachments at both number three and four cylinders separated from the sparkplugs. The shell section of the number three and four spark plugs was missing. The engine driven fuel pump had impact damage and remained attached to fuel lines. The fuel pump lever arm and mounting flange remained attached to the engine. The fuel pump was disassembled and no anomalies were noted. The alternator and mounting assembly had impact damage. The oil cooler and starter had impact damage and was removed from the engine to facilitate the rotation of the crankshaft. The upper sparkplugs were removed and had (Worn Out-Normal) wear conditions when compared to the Champion AV-27 chart. The upper sparkplug electrode areas had light grey deposits.

The crankshaft was rotated by hand and all cylinder compression and valve continuity was obtained. The number four cylinder exhaust and the number one inlet pushrods and housings had impact damage and the associated rocker arms did not move during the crankshaft rotation. Gear continuity was established from the crankshaft to the accessory section. The magneto impulse coupling engaged during crankshaft rotation but no spark from the leads was noted. The magnetos were removed and the drive shafts were rotated with the use of an electric drill and spark was obtained from the damaged ignition leads. The fuel injection servo inlet screen was removed and fuel was present during its removal. The injector brass plug was tight and safetied and the diaphragm stem was intact. The flow divider was undamaged and disassembled. The diaphragm, spring and valve were undamaged and showed normal operating signatures. No fuel was noted in the fuel inlet line to the flow divider or in the valve assembly.

The propeller assembly remained attached to the engine and had impact damage to both blades. The blade marked "A" had a slight aft bend from near the hub to the tip. The blade had leading edge gouging near the tip and the cambered side had cord-wise scratches. The blade marked "B" had aft bending and a decreased pitch twist at its mid-section to the tip and chord-wise scratches near the tip. The spinner dome was crushed and was torn near both blade hubs.

Additional Information

The pilot reported that 7 flight hours prior to the accident, during climbout at full throttle, he experienced a sudden loss of power for about two seconds. After he had the airplane examined, there was no cause found that would have resulted in the power loss.

Following the accident, the FAA asked the pilot to report on his injuries and then initiated an enforcement action against him. The pilot surrendered his medical certificate and his airman certificate to the FAA in December, 2014, announcing his intention never to fly again.

Administrative Information

Investigator In Charge (IIC):	Andrew L Swick	Report Date:	01/26/2017
Additional Participating Persons:	Brook B Stewart; FAA FSDO; Sacramento, CA		
Publish Date:	02/21/2017		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89891		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).