Aviation Investigation Final Report

Location:	SCOTTSDALE, Arizona	**Accident Number:**	LAX99FA036
Date & Time:	November 21, 1998, 12:53 Local	**Registration:**	N99064
Aircraft:	Cessna 172P	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

N99064, a Cessna 172P reported inbound for landing 3 miles west of a shopping mall reporting point. The local controller told him to enter a right downwind for runway 21 and to 'report the mall inbound for downwind.' About this time, two aircraft (a Cessna 152 and the other airplane involved in the collision, N6342T, a Cessna TR182) were sequentially cleared for takeoff on runway 21 for right crosswind departures. The local controller then informed the 172 that there would be two aircraft making right downwind departures. The 172 pilot asked the controller if he would like him to make 360-degree turns, and the controller told the pilot to continue inbound and to 'maintain visual from the traffic.' The controller issued the inbound traffic to the 182, and the pilot and CFI responded 'negative contact.' The controller informed the 172 that the first of the departures was now in a right crosswind turn. The 172 pilot replied that 'I'm looking.' The controller told the 182 pilot that as he made his right turn, traffic would be at his 11 o'clock position, about 2 miles, northeast bound, and in the pattern. The 182 pilot said he was still looking for the traffic. The 172 pilot reported to the controller that he had a Cessna in front of him. The controller acknowledged and told him that he had additional traffic off his right wing that was currently in a right crosswind turn. The 182 pilot reported that he had 'traffic in sight.' The controller advised him to 'maintain visual from the traffic,' then advised the 172 that 'traffic has you in sight.' The 172 pilot replied that he did not have the traffic. Reconstruction found that the spinner and cowling of the 182 had struck the right side empennage of the 172. Scottsdale Airport, a visual flight rules Air Traffic Control Tower, is equipped with D-BRITE which obtains data from the Phoenix ASR-9. Terrain restrictions prevent the radar from painting targets below 3,000 feet Mean Sea Level (MSL) in the Scottsdale area. The traffic pattern altitude at Scottsdale is 2,500 feet MSL. The D-BRITE has an automated conflict alert.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the failure of the solo student pilot to acquire and maintain separation from a departing aircraft in the airport traffic pattern, which had been issued as traffic by the local controller. Also causal was the failure of the pilot and instructor in the other aircraft to maintain separation from this aircraft, which they had previously acknowledged as in sight. The inadequate D-BRITE radar repeater in the tower cab was a factor in this accident.

Findings

Occurrence #1: MIDAIR COLLISION
Phase of Operation: APPROACH

Findings
1. (F) RADAR,BRITE - INADEQUATE
2. (C) VISUAL LOOKOUT - INADEQUATE - PILOT IN COMMAND
3. (C) VISUAL LOOKOUT - NOT MAINTAINED - PILOT OF OTHER AIRCRAFT

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. EMPENNAGE - SEPARATION

Factual Information

HISTORY OF FLIGHT

On November 21, 1998, at 1253 hours mountain standard time, a Cessna 172P, N99064, collided with a Cessna TR182, N6342T, while entering the traffic pattern at Scottsdale airport, Scottsdale, Arizona. Both aircraft were destroyed. The solo student pilot in N99064 and a private pilot receiving dual instruction in N6342T sustained fatal injuries. The flight instructor in N6342T received serious injuries. N99064 was operated by Scottsdale Flyers, LLC, as an instructional flight and was returning to the airport for landing when the accident occurred. N6342T was operated by the private pilot/owner on an instructional flight and was departing the airport traffic pattern at the time of the accident. Both aircraft were operated under 14 CFR Part 91. N6342T was originating from the Scottsdale airport and N99064 had originated earlier from the same airport about 1150. Visual meteorological conditions prevailed at the time and no flight plans were filed for either flight.

During the investigation, the air-ground communications tapes at the Scottsdale Air Traffic Control Tower were reviewed. A full transcript of the communications is appended to this report. In addition, interviews were conducted with the local and ground controllers on duty in the tower cab. A summary of communications and events derived from these sources and leading to the collision is presented below, beginning with the local time.

--1248:47: N99064 reported his position to the Scottsdale ATCT local controller as 3 miles west of the Paradise Valley Mall, inbound for a full-stop landing, with information Whiskey. The controller cleared him into the Class D airspace (Paradise Valley Mall is about 4.5 miles from the center of the airport) and told him to enter a right downwind for runway 21. He was also told to "report the mall inbound for downwind."

--1249:21: N99064 reported his position as 2 miles west of the mall. The controller repeated his request for him to report over the mall. N99064 acknowledged the request.

--1249:35: N7140B (a Cessna A152) reported that he was holding short of runway 21. He requested a right crosswind departure to the north. The controller cleared him "into position and hold." The pilot repeated the clearance.

--1250:04: N6342T reported that he was holding short of runway 21, and that he was also requesting a right crosswind departure to the north. The controller instructed him to hold short. N6342T acknowledged his instructions.

--1250:16: N7140B was cleared for takeoff and at 1250:21, N6342T was instructed to taxi into position and hold.

--1250:29: The controller asked N7140B if he could "move up past the 45" and the pilot replied in the affirmative.

--1250:43: The controller informed N99064 that there would be two aircraft making right downwind departures momentarily. N99064 asked the controller if he would like him to make 360-degree turns. The controller replied in the negative and instructed the pilot to enter the downwind and to "maintain visual from the traffic." N99064 acknowledged his instructions.

--1250:00: The controller cleared N6342T to takeoff and told him that a Cessna was over the mall, inbound to downwind. N6342T acknowledged the transmission but stated that he had "negative contact."

--1250:13: N6342T reported that he was rolling on takeoff.

--1251:49: The controller informed N99064 that the first of the previously advised departures was now in a right crosswind turn. N99064 replied that "I'm looking."

--1251:54: The controller informed N7140B that his traffic was off his left wing, north of the mall and inbound for a right downwind. N7140B replied that he still had negative contact.

--1252:06: The controller told N6342T that as he made his right turn, his traffic would be at his 11 o'clock position, about 2 miles, northeast bound and in the pattern. N6342T replied that he was still looking for the traffic.

--1252:20: N99064 reported to the controller that he had a Cessna in front of him. The controller acknowledged and told him that he had additional traffic off his right wing that was currently in a right crosswind turn. There was no discernable reply from N99064.

--1252:32: N6342T reported that he had "traffic in sight." The controller replied by advising him to "maintain visual from the traffic." N6342T acknowledged his instructions.

--1252:40: The controller advised N99064 that "traffic has you in sight." N99064 acknowledged the call.

--1252:55: The controller asked N99064 if he was "sure you got that traffic in sight off your right wing now?" N99064 replied that he did not have the traffic in sight. The controller responded by saying that the traffic was now off his right wing.

--1253:19: The controller cleared N99064 to land, telling him to "fly it right to the numbers" if he could and asking him if he was "alright."

There were no further communications from either N99064 or N6342T. The on-duty controller was relieved about 1255:03 and left the tower cab.

During his interview, the local controller said he thought that N6342T would pass behind N99064.

Witnesses on the ground reported hearing a "pop" and seeing a puff of smoke followed by the "tail" separating from one aircraft. The aircraft without the "tail" then spiraled downward until striking the ground accompanied by another loud sound. At the point that the collision occurred, small debris was seen fluttering to earth. The other aircraft continued northbound, descending until colliding with terrain. Several witnesses estimated the altitude of both aircraft about 500 feet agl at the time the collision occurred.

PERSONNEL INFORMATION

The pilot of N99064 was a student pilot whose training had commenced on July 18, 1998. All of his training had been conducted at or around the Scottsdale airport. He had first soloed on October 11, 1998, with 22.3 hours of instruction. He was returning from a local area flight. His student pilot certificate had an endorsement for a Cessna 172. His pilot logbook contained a solo endorsement authorizing flight in the northeast practice area, as well as to and from Phoenix-Deer Valley Municipal and Glendale Municipal airports. His third-class medical certificate required that he have glasses available for near vision.

The flight instructor in N6342T had received his commercial certificate on June 7, 1998. His flight instructor certificate was issued on October 22, 1998. He had given a total of 13.8 hours of dual instruction at the time of the accident. He had a total of 2.9 hours in the same make and model as the accident aircraft. There were no restrictions or limitations on his first-class medical certificate.

The dual student received his private pilot, single engine land, certificate on November 10, 1993. His flight training commenced on September 3, 1992, and he had accumulated 90.1 flight hours by the time of his flight check. He obtained a complex aircraft endorsement on October 20, 1995. He failed in his first flight test for an instrument rating on October 27, 1995. The flight check was not reflected in his pilot logbook. There was no record of a retest for the rating. Following the unsuccessful flight check, there was a period of inactivity from October 26, 1995, until he resumed receiving dual instruction on October 9, 1998. He had accumulated 204.9 hours of flight time, with 27.8 hours in the same make and model as the accident aircraft. According to his flight instructor, he was attempting to attain recurrency for a biennial flight review (BFR). His third-class medical certificate required that he have glasses available for near vision.

The Air Traffic Control Specialist who was working the local control position at the time of the accident entered on duty with the Federal Aviation Administration (FAA) on September 2, 1997, in the Scottsdale ATCT. He possessed an FAA Control Tower Operator certificate, which was issued on April 29, 1988. He completed local control position certification on October 13, 1997, and received a facility rating for Scottsdale on November 29, 1997. The specialist's

DBRITE certification was dated November 3, 1998. The last tape talk session was conducted on June 5, 1998, and the most recent technical training discussion occurred on September 30, 1998, with no issues identified.

AIRCRAFT INFORMATION

The maintenance records of N99064 and N6342T were examined by FAA airworthiness inspectors and Safety Board investigators with no deficiencies noted. Both aircraft were equipped for VFR flight in controlled airspace.

COMMUNICATIONS

Review of the communications tapes disclosed that the ATCT local controller communicated with 28 aircraft between 1230 and 1310. There were four instances of unintelligible or partially unintelligible transmissions during that time.

AIRPORT INFORMATION

Scottsdale airport is a VFR ATCT that is equipped with digital-bright radar indicating terminal equipment (D-BRITE), which obtains data from the Phoenix airport surveillance radar (ASR)-9. According to quality assurance personnel in the Western Pacific Region (AWP), due to terrain restrictions, radar target returns in the Scottsdale area cannot be seen below 3,000 feet msl, and are intermittently seen between 3,000 and 4,500 feet msl. The traffic pattern altitude at Scottsdale is 2,500 feet msl. The D-BRITE has an automated conflict alert that advises controllers when two aircraft begin to lose separation. The altitude limitations of the radar system have existed for several years.

Continuous data recording (CDR) data from the Phoenix terminal radar approach control (PHX/P50) was not being recorded at the time of the accident. According to Phoenix terminal radar approach control (TRACON) personnel, both disks that record the data were full. The appropriate keyboard command to cause the CDR to overwrite the older of the two disks had not been entered. The optical drive system (ODS) had stopped and did not record any data for a period of 4 hours.

The noise abatement procedures at the Scottsdale airport funnel traffic to the northwest side of the airport.

WRECKAGE AND IMPACT INFORMATION

Safety Board investigators arrived at the accident site about 1600 on the day of the accident. N99064 was located in an undeveloped desert area adjacent and west of a fairway near the northeast corner of the Kierland golf course. The aircraft was found oriented on a magnetic heading of 352 degrees. The geographic coordinates were 33 degrees 37.487 minutes north latitude and 111 degrees 56.052 minutes west longitude.

There was a circular impact scar about 1 foot in depth and 5 feet in diameter. The propeller was separated from the crankshaft flange and was found midway along the 36-foot distance between the impact scar and the main wreckage. The magnetic bearing from the impact scar to the main wreckage was 352 degrees. There was extensive leading edge crushing visible on both main wings. The forward fuselage was crushed aft to the leading edge of the main wings.

The empennage of N99064 was located on the south side of the 6600 block of Greenway Parkway, adjacent to a public sidewalk. In addition to the separation from the fuselage, there was also jagged tearing and aft bending visible on the outboard tip of the right horizontal stabilizer. The empennage was approximately 1,000 feet south of the main wreckage. The geographic coordinates were 33 degrees 37.383 minutes north latitude and 111 degrees 56.195 minutes west longitude.

N6342T was located on a fairway of the Kierland golf course, south of the fourth green. The aircraft was found lying on its back and oriented on a magnetic heading of 197 degrees. A fuel spill from the right wing had discolored the grass where the green sloped downward and away from the aircraft. The left main landing gear had separated from the aircraft but was found near the main wreckage. In addition to the gear leg separating from the aircraft, the wheel and tire had also separated from the gear leg. The geographic coordinates were 33 degrees 37.876 minutes north latitude and 111 degrees 55.750 minutes west longitude.

There were gouges in the dirt and disturbed vegetation along the fairway leading up to the wreckage. Debris was also found strewn along the gouges. Two broken fiberglass antennas were found impaled in the ground at the aircraft's 12 o'clock position. Both antennas are normally mounted on the cabin roof.

The propeller spinner and left side of the engine cowling exhibited light blue paint transfers.

The wreckage of both aircraft was recovered and transported by Air Transport, Phoenix, Arizona, to their storage facility.

On November 23, 1998, a Safety Board investigator, with technical assistance from manufacturer's representatives for the airframe and engine, reconstructed two-dimensional layouts of both aircraft. N6342T was positioned with the nose directed toward the registration number on the right side of N99063. Paint transfers and imploded deformations from both aircraft were dimensionally and geometrically consistent with contact between the forward left cowling from the propeller spinner aft to the engine firewall of N6342T and the point of separation on the right side of the empennage of N99604. Moving the areas of paint transfer toward each other created relative points of contact that was 4 to 5 o'clock for N99604 and 10 to 11 o'clock for N6342T.

EXAMINATION OF N99604

Blue paint transfers were noted on the right side of the separated empennage near the registration number of N99064. The right main landing gear was separated from the strut.

Chordwise scratches were visible on the face of both propeller blades, which exhibited slight bending.

All flight control surfaces were accounted for; however, the counterweights from the left and right elevators, as well as the rudder, were detached from their respective locations. The right elevator counterweight was not recovered. The elevator halves were separated from one another at the left elevator torque tube adapter.

Both ailerons and flaps remained attached to the main wings. The flaps were visually extended to some degree. The cockpit flap selector and indicator were in agreement at 10 degrees. The flap jackscrew was not recovered.

Control continuity could not be fully established due to impact damage.

Both front seat tracks were fractured with both seats separated. Both seat frames were deformed. The left seat belt had been cleanly severed.

Both main fuel tanks were crushed and no evidence of fuel remained. The fuel lines to the engine exhibited multiple separations. The fuel sector was found in the "both" position.

The engine had separated from the airframe. The engine data plate was missing. When the rocker box covers were removed, evidence of lubrication was visible on all four assemblies. The crankshaft was rotated by means of the vacuum pump drive gear and some valve action was noted at the Nos. 2, 3, and 4 cylinders. The pushrods to the No. 1 cylinder were crushed and no valve action was visible.

The muffler was crushed.

Both magnetos sparked at all four posts when rotated by hand. The ignition harness was destroyed. The Nos. 1B, 2B, 3B, and 4T spark plugs were removed and examined. According to Champion Spark Plugs Check-A-Plug chart, all showed wear and coloration consistent with normal operation.

The vacuum pump was removed and examined. The drive coupling was in place and the shaft was rotated by hand.

EXAMINATION OF N6342T

An examination of N6342T revealed that the strobe light switch was in the "on" position. All other light switches were in the "off" position.

Each of the three propeller blades was bent and exhibited chordwise scoring and scratches. One blade was curled along its entire span, with virtually no paint remaining on the forward face. A second blade exhibited scratching on the forward and aft sides of the blade, which appeared wavy with the tip bent forward. The scratches were deeper than on the first blade. The third blade was bent slightly and exhibited some leading edge gouges. The first and second blades were loose in the hub.

The left seat was separated from the seat rails. The seat feet showed little distortion and the seat back remained in place. The right seat also separated from the seat rails. The seat feet showed little distortion and the seat back remained in place. Both seat pedestals exhibited fractures.

The left front integral seat and shoulder harness remained clasped; however, the belt was cleanly severed. The left seat belt outboard fitting was distorted laterally in an outboard direction. The right seat belt was not clasped.

Fuel was observed leaking from the right wing. It was blue in color and had an odor consistent with aviation 100 octane low lead (LL). The fuel selector was positioned midway between the "left" and "both" position. Both fuel caps were in place but it was noted that each had a cracked gasket.

All control surfaces were accounted for and control continuity was established to all surfaces. The flaps were extended less than 10 degrees and the flap selector was in the 20-degree position. The elevator trim tab was 5 degrees tab up position.

The gear selector was in the "down" position. The right main gear was down and the nose gear was in the up position.

The engine remained in the engine mounts with the propeller attached. The starter ring gear was separated from the starter ring gear housing. The turbocharger was separated from the engine.

The exhaust was crushed.

The dual magneto was in place. The left side was crushed and the condenser was destroyed. The ignition harness was destroyed.

The carburetor had separated at its throat. The mixture control handle was separated.

The top spark plugs were removed and examined. According to the Champion Spark Plugs Check-A-Plug chart, the wear and coloration was consistent with normal operation.

The rocker box covers were removed and the crankshaft was hand rotated. Evidence of

lubrication, thumb compression, continuity through the accessory gears and valve action was established.

MEDICAL AND PATHOLOGICAL INFORMATION

On November 23, 1998, autopsies were conducted by the Maricopa County Coroner's Office, with specimens retained for toxicological examination. The toxicological test results of the dual student in N6342T were negative for alcohol and all screened drug substances. The toxicological test results for the solo student in N99064 were negative for alcohol but positive for chlorpheniramine, phenylpropanolamine, and quinine.

ADDITIONAL INFORMATION

The wreckage of N99064 was released to Rob Cheek of Universal Loss Management, Van Nuys, California, a representative of the registered owner, on July 12, 2000. The wreckage of N6342T was released to Rex Thompson of CLAIMTX, Scottsdale, a representative of the registered owner, on July 12, 2000.

The ATCT is located 1.1 miles from the accident site and continuously monitors the emergency very high frequency (VHF) of 121.5. There were no reports from the tower of an emergency locator transmitter (ELT) signal at the time of the accident or within several hours following the event.

The ELT from N6342T was found in the "off" position. The ELT from N99064 was not recovered.

Pilot Information

Certificate:	Student	**Age:**	49,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	March 5, 1997
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	32 hours (Total, all aircraft), 29 hours (Total, this make and model), 7 hours (Pilot In Command, all aircraft), 29 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N99064
Model/Series:	172P 172P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	17276399
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 3, 1998 100 hour	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	54 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6792 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320-D2G
Registered Owner:	WILLIAM J. PETERSON	**Rated Power:**	150 Horsepower
Operator:	KARL G. GIMBEL	**Operating Certificate(s) Held:**	None
Operator Does Business As:	SCOTTSDALE FLYERS, LLC	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SDL ,1510 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	11:55 Local	**Direction from Accident Site:**	106°
Lowest Cloud Condition:	Scattered / 25000 ft AGL	**Visibility**	40 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	22°C / -4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(SDL)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	11:50 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	SCOTTSDALE SDL	**Runway Surface Type:**	Asphalt
Airport Elevation:	1510 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21	**IFR Approach:**	None
Runway Length/Width:	8249 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	33.609962,-111.89067(est)

Administrative Information

Investigator In Charge (IIC):	CRISPIN, ROBERT
Additional Participating Persons:	CHARLES L PRINCE; SCOTTSDALE , AZ GERALD R JAMES; DALLAS , TX ROBERT S AUGUST; WICHITA , KS CHARLES R MOTE, JR.; TUCSON , AZ
Original Publish Date:	August 3, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45384

Aviation Investigation Final Report

Location:	SCOTTSDALE, Arizona	**Accident Number:**	LAX99FA036
Date & Time:	November 21, 1998, 12:53 Local	**Registration:**	N6342T
Aircraft:	Cessna TR182	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

N99064, a Cessna 172P reported inbound for landing 3 miles west of a shopping mall reporting point. The local controller told him to enter a right downwind for runway 21 and to 'report the mall inbound for downwind.' About this time, two aircraft (a Cessna 152 and the other airplane involved in the collision, N6342T, a Cessna TR182) were sequentially cleared for takeoff on runway 21 for right crosswind departures. The local controller then informed the 172 that there would be two aircraft making right downwind departures. The 172 pilot asked the controller if he would like him to make 360-degree turns, and the controller told the pilot to continue inbound and to 'maintain visual from the traffic.' The controller issued the inbound traffic to the 182, and the pilot and CFI responded 'negative contact.' The controller informed the 172 that the first of the departures was now in a right crosswind turn. The 172 pilot replied that 'I'm looking.' The controller told the 182 pilot that as he made his right turn, traffic would be at his 11 o'clock position, about 2 miles, northeast bound, and in the pattern. The 182 pilot said he was still looking for the traffic. The 172 pilot reported to the controller that he had a Cessna in front of him. The controller acknowledged and told him that he had additional traffic off his right wing that was currently in a right crosswind turn. The 182 pilot reported that he had 'traffic in sight.' The controller advised him to 'maintain visual from the traffic,' then advised the 172 that 'traffic has you in sight.' The 172 pilot replied that he did not have the traffic. Reconstruction found that the spinner and cowling of the 182 had struck the right side empennage of the 172. Scottsdale Airport, a visual flight rules Air Traffic Control Tower, is equipped with D-BRITE which obtains data from the Phoenix ASR-9. Terrain restrictions prevent the radar from painting targets below 3,000 feet Mean Sea Level (MSL) in the Scottsdale area. The traffic pattern altitude at Scottsdale is 2,500 feet MSL. The D-BRITE has an automated conflict alert.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the failure of the solo student pilot in the other aircraft to acquire and maintain separation from this aircraft, which was departing the airport traffic pattern and had been issued as traffic by the local controller. Also causal was the failure of the pilot and instructor in this aircraft to maintain separation from the other aircraft, which they had previously acknowledged as in sight. The inadequate D-BRITE radar repeater in the tower cab was a factor in this accident.

Findings

Occurrence #1: MIDAIR COLLISION
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) RADAR,BRITE - INADEQUATE
2. (C) VISUAL LOOKOUT - NOT MAINTAINED - DUAL STUDENT
3. (C) VISUAL LOOKOUT - NOT MAINTAINED - PILOT IN COMMAND(CFI)
4. (C) VISUAL LOOKOUT - INADEQUATE - PILOT OF OTHER AIRCRAFT

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Factual Information

SEE NARRATIVE FOR LAX99FA036A

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	22,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	June 15, 1998
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	265 hours (Total, all aircraft), 3 hours (Total, this make and model), 175 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6342T
Model/Series:	TR182 TR182	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	R18201987
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 12, 1998 Annual	**Certified Max Gross Wt.:**	3300 lbs
Time Since Last Inspection:	37 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2483 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-540-L3C5D
Registered Owner:	ANDREW CHARLES MATHESON	**Rated Power:**	235 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SDL ,1510 ft msl	**Distance from Accident Site:**	1 Nautical Miles
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Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	22°C / -4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(SDL)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	12:50 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	SCOTTSDALE SDL	**Runway Surface Type:**	Asphalt
Airport Elevation:	1510 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21	**IFR Approach:**	None
Runway Length/Width:	8249 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	33.609962,-111.89067(est)

Administrative Information

Investigator In Charge (IIC):	CRISPIN, ROBERT
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Original Publish Date:	August 3, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45384