



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Chandler, Arizona	Accident Number:	WPR13LA004
Date & Time:	October 5, 2012, 14:07 Local	Registration:	N8115Q
Aircraft:	Piper PA-28-161	Aircraft Damage:	Substantial
Defining Event:	Midair collision	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

During instructional flights with a flight instructor and a student pilot on board each airplane, a Piper Warrior and a Piper Arrow collided in midair during day visual meteorological conditions. The instructors reported that their students were simulating instrument conditions and were wearing view-limiting devices as they practiced instrument maneuvers. Both flight instructors reported that they saw the other airplane only moments before the collision and were not aware of other aircraft in the area.

Neither airplane was using flight following services nor did they have any radar guidance during the flight. A review of recorded radar data for the area depicted two targets on a southwesterly heading, one ahead of the other. The targets were spaced about 2 miles apart and both were at 4,000 feet mean sea level. The rear target, the Arrow, changed its southwesterly heading to a westerly heading, and shortly after, the target identified as the Warrior started a wide right turn. Both airplanes were flying toward each other when the Warrior's right wing and the Arrow's left wing collided.

After the collision, both airplanes subsequently made uneventful landings.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The failure of both flight instructors to see and avoid the other airplane while providing instrument flight training, which resulted in a midair collision.

Findings

Personnel issues	
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	Monitoring other aircraft - Instructor/check pilot
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Factual Information

History of Flight

Maneuvering	Midair collision (Defining event)
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On October 5, 2012, about 1407 mountain standard time, a Piper PA-28-161, Warrior, N8115Q, and a Piper PA-28R-201, Arrow, N4184M, collided midair approximately 12 miles south of Chandler, Arizona. Both airplanes were being operated under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as local instructional flights. The Warrior was owned and operated by Chandler Air Service Inc., and the Arrow was owned by Aircraft Guaranty Corp., and operated by CAE Oxford Aviation Academy. Both airplanes had a certified flight instructor (CFI) and student pilot on board. No injuries were reported from either airplane. The Warrior departed Chandler Municipal Airport (CHD), Chandler, Arizona about 1335. The Arrow departed Falcon Field Airport (FFZ), Mesa, Arizona about 1230. Visual meteorological conditions prevailed and no flight plan was filed for either airplane.

According to the flight instructor of the Arrow, he and the student pilot had just completed a non-directional beacon (NDB) interception exercise with the student wearing a view limiting device. Shortly after, the flight instructor noticed a very close, fast-moving blurred object approaching from almost directly ahead. The object seemed to be in a left turn and was lower than his airplane. After the impact, the airplane yawed left and wing down. The flight instructor took control and stabilized the airplane.

The flight instructor of the Warrior reported that he had given his student pilot a simulated instrument clearance. The student was wearing a view limiting device. The flight instructor then saw an airplane directly ahead and slightly higher in altitude. He further stated that the airplane appeared to be in a slight left turn. He took the controls and made an abrupt nose down left turn prior to impacting the other airplane.

After the midair collision, the Warrior landed at Gila River Memorial Airport (34AZ), in Chandler, Arizona, with substantial damage to the right wing. The Arrow landed on the Volkswagen Group of America test track in Maricopa, Arizona, with substantial damage to its left wing and horizontal stabilator.

The Warrior's right wing separated about 3-1/2 feet from the wing tip along with an outboard section of the right aileron. The aileron balance weight was not found during the examination.

The Arrow's left wing was damaged outboard and adjacent to the wing fuel tank. About 14 inches of the leading edge structure was crushed to the main spar, and a portion of the Warrior's wing remained within the structure. The Warrior's right wing tip protruded from the top and the bottom of the Arrow's wing. The leading edge of the left horizontal stabilizer

sustained impact damage.

Recorded radar data from the FAA's Phoenix Terminal Radar Approach Control (TRACON) ARTS IIIA radar system was obtained and reviewed. Neither airplane was on flight following or had any radar guidance during the accident flights. Between 1405:39 and 1406:20, two radar beacon targets proceeded on a southwesterly track, one ahead of the other, about 6 miles northeast of the University of Arizona Maricopa Ag Center Airport (3AZ2). The targets were spaced about 2 miles apart, and both indicated mode C reported altitudes of 4,000 feet mean sea level. At 1406:25 the rear target, the Arrow, changed to a westerly heading, and 40 seconds later the forward target, the Warrior, began a right turn into the path of the rear target. At 1407:06 both targets merged and then separated. One target, the Warrior, then departed to the northeast, and then changed heading to the north, disappearing near Gila River Memorial Airport (34AZ). The other target, the Arrow, departed to the southwest, and disappeared from radar 2 miles east of 3AZ2.

The Arrow was equipped with a Portable Collision Avoidance System (PCAS) unit capable of detecting and displaying range, bearing, and altitude information of transponder equipped aircraft in the vicinity of the unit. According to the flight instructor of the Arrow, the unit had alerted him twice during the flight but, did not alert him prior to the midair collision. The unit was sent to the National Transportation Safety Board Materials Laboratory for further examination. Its alert settings were set to a range of 3 nautical miles and a vertical range of 1,500 feet. The external speaker and headset interfaced audio tested properly, and no anomalies were noted with the unit. An examination report is contained in the public docket for this accident.

Neither pilot reported any preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

Flight instructor Information

Certificate:	Flight instructor	Age:	53,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 2 Without waivers/limitations	Last FAA Medical Exam:	March 26, 2012
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	September 21, 2011
Flight Time:	15986 hours (Total, all aircraft), 4700 hours (Total, this make and model), 15820 hours (Pilot In Command, all aircraft), 74 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Private	Age:	25,Female
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	June 30, 2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	June 2, 2011
Flight Time:	179 hours (Total, all aircraft), 80 hours (Total, this make and model), 75 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N8115Q
Model/Series:	PA-28-161	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:		Serial Number:	28-8016121
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	August 29, 2012 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:	2027 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3931 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	O-320 SERIES
Registered Owner:	TRIUMPH AVIATION LLC	Rated Power:	180 Horsepower
Operator:	Chandler Air Service	Operating Certificate(s) Held:	None
Operator Does Business As:	Flight Training/Rental/Sales/Aerobatics/Tailwheel	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KCHD, 1243 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	14:17 Local	Direction from Accident Site:	220°
Lowest Cloud Condition:	Clear	Visibility	30 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.9 inches Hg	Temperature/Dew Point:	32°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chander, AZ (CHD)	Type of Flight Plan Filed:	None
Destination:	Chander, AZ (CHD)	Type of Clearance:	None
Departure Time:	13:30 Local	Type of Airspace:	Class E

Airport Information

Airport:	Chandler Municipal Airport CHD	Runway Surface Type:	
Airport Elevation:	1243 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	33.103054,-112.054168(est)

Administrative Information

Investigator In Charge (IIC):	Swick, Andrew
Additional Participating Persons:	Vince Whiting; FAA-FSDO; Scottsdale, AZ Steve Meisner; FAA-FSDO; Scottsdale, AZ Charles Little; Piper Aircraft; Chino Hills, CA Kerry David; CAE Global Academy; Mesa, AZ
Original Publish Date:	September 30, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=85265

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).



Aviation Investigation Final Report

Location:	Chandler, Arizona	Accident Number:	WPR13LA004
Date & Time:	October 5, 2012, 14:07 Local	Registration:	N4184M
Aircraft:	Piper PA-28R-201	Aircraft Damage:	Substantial
Defining Event:	Midair collision	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

During instructional flights with a flight instructor and a student pilot on board each airplane, a Piper Warrior and a Piper Arrow collided in midair during day visual meteorological conditions. The instructors reported that their students were simulating instrument conditions and were wearing view-limiting devices as they practiced instrument maneuvers. Both flight instructors reported that they saw the other airplane only moments before the collision and were not aware of other aircraft in the area.

Neither airplane was using flight following services nor did they have any radar guidance during the flight. A review of recorded radar data for the area depicted two targets on a southwesterly heading, one ahead of the other. The targets were spaced about 2 miles apart and both were at 4,000 feet mean sea level. The rear target, the Arrow, changed its southwesterly heading to a westerly heading, and shortly after, the target identified as the Warrior started a wide right turn. Both airplanes were flying toward each other when the Warrior's right wing and the Arrow's left wing collided.

After the collision, both airplanes subsequently made uneventful landings.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of both flight instructors to see and avoid the other airplane while providing

instrument flight training, which resulted in a midair collision.

Findings

Personnel issues

Monitoring other aircraft - Instructor/check pilot

Factual Information

History of Flight

Maneuvering	Midair collision
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On October 5, 2012, about 1407 mountain standard time, a Piper PA-28-161, Warrior, N8115Q, and a Piper PA-28R-201, Arrow, N4184M, collided midair approximately 12 miles south of Chandler, Arizona. Both airplanes were being operated under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as local instructional flights. The Warrior was owned and operated by Chandler Air Service Inc., and the Arrow was owned by Aircraft Guaranty Corp., and operated by CAE Oxford Aviation Academy. Both airplanes had a certified flight instructor (CFI) and student pilot on board. No injuries were reported from either airplane. The Warrior departed Chandler Municipal Airport (CHD), Chandler, Arizona about 1335. The Arrow departed Falcon Field Airport (FFZ), Mesa, Arizona about 1230. Visual meteorological conditions prevailed and no flight plan was filed for either airplane.

According to the flight instructor of the Arrow, he and the student pilot had just completed a non-directional beacon (NDB) interception exercise with the student wearing a view limiting device. Shortly after, the flight instructor noticed a very close, fast-moving blurred object approaching from almost directly ahead. The object seemed to be in a left turn and was lower than his airplane. After the impact, the airplane yawed left and wing down. The flight instructor took control and stabilized the airplane.

The flight instructor of the Warrior reported that he had given his student pilot a simulated instrument clearance. The student was wearing a view limiting device. The flight instructor then saw an airplane directly ahead and slightly higher in altitude. He further stated that the airplane appeared to be in a slight left turn. He took the controls and made an abrupt nose down left turn prior to impacting the other airplane.

After the midair collision, the Warrior landed at Gila River Memorial Airport (34AZ), in Chandler, Arizona, with substantial damage to the right wing. The Arrow landed on the Volkswagen Group of America test track in Maricopa, Arizona, with substantial damage to its left wing and horizontal stabilator.

The Warrior's right wing separated about 3-1/2 feet from the wing tip along with an outboard section of the right aileron. The aileron balance weight was not found during the examination.

The Arrow's left wing was damaged outboard and adjacent to the wing fuel tank. About 14 inches of the leading edge structure was crushed to the main spar, and a portion of the Warrior's wing remained within the structure. The Warrior's right wing tip protruded from the top and the bottom of the Arrow's wing. The leading edge of the left horizontal stabilizer

sustained impact damage.

Recorded radar data from the FAA's Phoenix Terminal Radar Approach Control (TRACON) ARTS IIIA radar system was obtained and reviewed. Neither airplane was on flight following or had any radar guidance during the accident flights. Between 1405:39 and 1406:20, two radar beacon targets proceeded on a southwesterly track, one ahead of the other, about 6 miles northeast of the University of Arizona Maricopa Ag Center Airport (3AZ2). The targets were spaced about 2 miles apart, and both indicated mode C reported altitudes of 4,000 feet mean sea level. At 1406:25 the rear target, the Arrow, changed to a westerly heading, and 40 seconds later the forward target, the Warrior, began a right turn into the path of the rear target. At 1407:06 both targets merged and then separated. One target, the Warrior, then departed to the northeast, and then changed heading to the north, disappearing near Gila River Memorial Airport (34AZ). The other target, the Arrow, departed to the southwest, and disappeared from radar 2 miles east of 3AZ2.

The Arrow was equipped with a Portable Collision Avoidance System (PCAS) unit capable of detecting and displaying range, bearing, and altitude information of transponder equipped aircraft in the vicinity of the unit. According to the flight instructor of the Arrow, the unit had alerted him twice during the flight but, did not alert him prior to the midair collision. The unit was sent to the National Transportation Safety Board Materials Laboratory for further examination. Its alert settings were set to a range of 3 nautical miles and a vertical range of 1,500 feet. The external speaker and headset interfaced audio tested properly, and no anomalies were noted with the unit. An examination report is contained in the public docket for this accident.

Neither pilot reported any preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

Flight instructor Information

Certificate:	Commercial; Flight instructor	Age:	63,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	May 22, 2012
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	September 24, 2012
Flight Time:	8524 hours (Total, all aircraft), 4201 hours (Total, this make and model), 8472 hours (Pilot In Command, all aircraft), 206 hours (Last 90 days, all aircraft), 57 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	Age:	Male
Airplane Rating(s):		Seat Occupied:	Left
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):		Second Pilot Present:	No
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	122 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N4184M
Model/Series:	PA-28R-201	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	2844062
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	August 29, 2012 Continuous airworthiness	Certified Max Gross Wt.:	
Time Since Last Inspection:	2144 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	10734 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	I0360 SER A&C
Registered Owner:	AIRCRAFT GUARANTY HOLDINGS & TRUST LLC TRUSTEE	Rated Power:	200 Horsepower
Operator:	AIRCRAFT GUARANTY HOLDINGS & TRUST LLC TRUSTEE	Operating Certificate(s) Held:	None
Operator Does Business As:	Flight School	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KCHD, 1243 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	14:17 Local	Direction from Accident Site:	220°
Lowest Cloud Condition:	Clear	Visibility	30 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.9 inches Hg	Temperature/Dew Point:	32°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Mesa, AZ (FFZ)	Type of Flight Plan Filed:	None
Destination:	Mesa, AZ (FFZ)	Type of Clearance:	None
Departure Time:	12:30 Local	Type of Airspace:	Class E

Airport Information

Airport:	Chandler Municipal Airport CHD	Runway Surface Type:	
Airport Elevation:	1243 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	33.103054,-112.054168(est)

Administrative Information

Investigator In Charge (IIC): Swick, Andrew

Additional Participating Persons: Vince Whiting; FAA-FSDO; Scottsdale, AZ
Steve Meisner; FAA-FSDO; Scottsdale, AZ
Charles Little; Piper Aircraft; Chino Hills, CA
Kerry David; CAE Global Academy; Mesa, AZ

Original Publish Date: September 30, 2013

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=85265>

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