National Transportation Safety Board
Aviation Accident Final Report

Location:	FITIUTA, Australia	**Accident Number:**	LAX99LA163
Date & Time:	04/23/1999, 0645	**Registration:**	N719AS
Aircraft:	de Havilland DHC-6-200	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	14 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The captain overflew the field to assess winds conditions and the windsock indicated a quartering headwind for runway 12. During rollout the airplane veered immediately right when the power levers were brought into beta. The captain corrected with rudder and braking but was unable to maintain directional control. The aircraft ran off the right side of the runway and collided with a ditch and an embankment. After deplaning, the crew found that the winds were a 60-degree tailwind on runway 12. The windsock's pivot point on the pole was rusted and would not rotate. The aircraft with the same landing weight and a 60-degree 10-knot tailwind would require a 1,600-foot landing roll on the 2,350-foot runway without the assistance of both props in beta. The beta pin had backed out of position on the left engine's beta control linkage. The beta pin, cotter pin, and washer were found in the bottom of the engine cowling. The left engine had been changed 2 days prior to the accident. As the mechanics finished the beta pin area during engine installation, the inspector checked the area and found that the pin was in place and properly safety wired. Following the inspector's signoff of the area, the mechanics discovered that the teleflex cable was too short for the beta valve to be flushed and subsequently had to be adjusted. The director of maintenance readjusted the cable, which required disturbing the safety wire on the beta pin. One of the two mechanics that had been instructed to re-safety the connections after the adjustment thought that the rear portion had already been safetied and did not recheck the area. The inspector believed the area had already been checked and did not re-examine the beta pin.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the mechanical separation of the left engine beta control linkage during landing rollout, which resulted in asymmetrical decelerative action and the pilot's subsequent inability to maintain directional control. The separation of the linkage was due to the airline's inadequate inspection and quality assurance procedures. An inoperative windsock pivot point, which resulted in faulty wind direction information to the flight crew was a factor in this accident.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: LANDING - ROLL

Findings
1. (F) AIRPORT FACILITIES,WIND DIRECTION INDICATOR - INOPERATIVE
2. (F) OTHER AIRPORT/RUNWAY MAINTENANCE - INADEQUATE - AIRPORT PERSONNEL
3. WEATHER CONDITION - TAILWIND
4. (F) WRONG RUNWAY - SELECTED - PILOT IN COMMAND
5. (C) THROTTLE/POWER LEVER,BETA CONTROL - DISCONNECTED
6. (C) MAINTENANCE,INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
7. (C) INSUFF STANDARDS/REQUIREMENTS,OPERATION/OPERATOR - COMPANY/OPERATOR MGMT
8. (C) PROPELLER SYSTEM/ACCESSORIES,REVERSING SYSTEM - ASYMMETRICAL
9. DIRECTIONAL CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Findings
10. TERRAIN CONDITION - DITCH
11. TERRAIN CONDITION - BERM

Factual Information

On April 23, 1999, at 0645 hours local time, Samoa Air flight 906, a Dehavilland DHC-6-200, N719AS, veered off the runway and collided with a ditch and an embankment while landing at Fitiuta, Tu'a, American Samoa. The aircraft sustained substantial damage; however, neither of the 2 flight crewmembers nor any of their 12 passengers were injured. The aircraft was being operated under 14 CFR Part 121 by Samoa Aviation, Inc., when the accident occurred. The flight originated from Pago Pago, American Samoa, at 0609 as a regularly scheduled non-stop domestic passenger flight to Fitiuta. Visual meteorological conditions prevailed at the time and a composite IFR/VFR flight plan was filed.

Upon arrival at Fitiuta airport, the captain overflew the uncontrolled airport to assess the current wind conditions. The windsock indicated winds of about 10 knots from 150 to 160 degrees. Based on those indications and past experience, the captain selected his landing direction and entered the downwind portion of the traffic pattern for runway 12 at an altitude of 1,000 feet agl, expecting a quartering crosswind from the right. On final approach, the flaps were lowered to 30 degrees and the before landing checklist was completed. At this point, the first officer reported a slight tailwind. The captain acknowledged the report, and continued the approach at "blue line" until touchdown abeam the taxiway.

As the aircraft began its rollout on the runway, the captain pulled both power levers into beta and the aircraft began drifting to the right almost immediately. He corrected with rudder and braking but was unable to maintain directional control. The aircraft subsequently ran off the right side of the runway, across a ditch, and into an embankment. During the crash sequence, the nose section separated from the aircraft.

The aircraft came to rest abeam the windsock. The captain shut down the aircraft and verified that none of his passengers had been injured. During the shutdown, the first officer noticed that the left beta light was not illuminated while the right beta light was illuminated. The passengers were deplaned and escorted away from the aircraft, then transported to the terminal.

After deplaning, the first officer noticed that the surface winds were not blowing as indicated by the windsock, and were in fact a 60-degree tailwind for runway 12. Upon a closer inspection of the windsock, they noted that the pivot point at which the windsock was attached to the pole was rusted and the windsock would not rotate.

According to the aircraft manufacturer, the landing roll distance for the aircraft's landing weight and a 10-knot tailwind would be 1,600 feet without the propellers in beta.

A Federal Aviation Administration airworthiness inspector examined the aircraft after the accident. He reported that the beta pin at the cam cluster had backed out of position on the left engine. The beta pin, cotter pin, and washer were found in the bottom of the left engine cowling. The cotter pin had been cut but the severed piece was not recovered.

The beta pin, washer, and cotter pin were transported to the Safety Board's Materials Laboratory for further examination. According the Materials Laboratory Factual Report, a scanning electron microscopic (SEM) examination revealed that the undamaged portion of the cotter pin's fracture surface exhibited elongated dimples, typical of overstress separations under direct shear loading conditions.

Review of the maintenance records disclosed that the left engine had been changed 2 days prior to the accident. Interviews and written statements were obtained from the mechanics and the inspector involved in the engine change procedure. The lead mechanic and RII inspector reported that on the evening of April 21, 1999, he had inspected the beta pin during the No. 1 engine reinstallation and found that the pin was in place, and properly safetied and cotter pinned. Following the inspector's signoff of this area of the engine change, the two mechanics performing the work discovered that the teleflex cable was too short for the beta valve to be flushed. Together they informed the director of maintenance of the discrepancy they had found. He walked out to the aircraft and performed the required adjustments on the teleflex cable at the back and front himself, which required removing the beta pin installation safety wire. When he had finished re-rigging the teleflex cable he instructed both of the mechanics to complete the safety wiring of the engine installation.

According to statements from the mechanics, one started at the front of the engine and the second at the back. The second mechanic, who had previously safetied the beta pin portion of the installation, believed that the back of the engine was completed and signed off by the inspector, and he did not look at the beta pin. Following completion of the work, the inspector was notified and he inspected the remainder of the installation, believing that he had already inspected and signed off on the beta pin portion of the work. After the inspector finished the inspection, the mechanics replaced the panels and prepared the aircraft for a leak check and ground run. Both checks were completed successfully and the aircraft was parked for the night.

Pilot Information

Certificate:	Airline Transport	**Age:**	42, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	**Last Medical Exam:**	12/30/1998
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	6449 hours (Total, all aircraft), 6186 hours (Total, this make and model), 4095 hours (Pilot In Command, all aircraft), 278 hours (Last 90 days, all aircraft), 89 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	de Havilland	**Registration:**	N719AS
Model/Series:	DHC-6-200 DHC-6-200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	139
Landing Gear Type:	Tricycle	**Seats:**	18
Date/Type of Last Inspection:	04/16/1999, Continuous Airworthiness	**Certified Max Gross Wt.:**	11579 lbs
Time Since Last Inspection:	31 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	33559 Hours	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-27
Registered Owner:	SAMOA AVIATION, INC.	**Rated Power:**	680 hp
Operator:	SAMOA AVIATION, INC.	**Air Carrier Operating Certificate:**	Commuter Air Carrier (135); Flag carrier (121); On-demand Air Taxi (135)
Operator Does Business As:	SAMOA AIR	**Operator Designator Code:**	SMPA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	FAQ, 110 ft msl	**Observation Time:**	0558
Distance from Accident Site:	0 Nautical Miles	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Scattered / 2000 ft agl	**Temperature/Dew Point:**	25°C
Lowest Ceiling:	Overcast / 25000 ft agl	**Visibility**	12 Miles
Wind Speed/Gusts, Direction:	4 knots, 290°	**Visibility (RVR):**	0 ft
Altimeter Setting:	29 inches Hg	**Visibility (RVV):**	0 Miles
Precipitation and Obscuration:			
Departure Point:	PAGO PAGO, AS (PPG)	**Type of Flight Plan Filed:**	VFR/IFR
Destination:	FITIUTA, TA'U, AS (FAQ)	**Type of Clearance:**	None
Departure Time:	0609 AST	**Type of Airspace:**	Class E

Airport Information

Airport:	FITIUTA AIRPORT (FAQ)	**Runway Surface Type:**	Concrete
Airport Elevation:	110 ft	**Runway Surface Condition:**	Dry
Runway Used:	12	**IFR Approach:**	None
Runway Length/Width:	2350 ft / 75 ft	**VFR Approach/Landing:**	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	12 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	14 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	ROBERT R CRISPIN	**Adopted Date:**	03/02/2001
Additional Participating Persons:	CURTIS J WHALEY; HONOLULU, HI		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		