National Transportation Safety Board
Aviation Accident Final Report

Location:	FARGO, ND	**Accident Number:**	CHI96LA162
Date & Time:	05/17/1996, 0815 CDT	**Registration:**	N229AM
Aircraft:	Swearingen SA226TC	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

While on short final to land, the pilot-in-command landed with the nose landing gear still in the uplocked position. The maintenance logbook indicates several undetermined nose gear uplock conditions that the flight crews had to lower the nose gear by free falling it. All flights were uneventful up until this flight. A transcript of the cockpit voice recorder (CVR), indicated that the before landing checklist was not completed correctly. The landing gear challenge and reply checklist was recorded as saying landing gear coming down, with a horn beeping in the background. The Pilot's Operating Handbook (POH) says, landing gear--down, with no report of three green down and locked lights.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the flight crew did not comply with the gear down and lock checklist. The factors were a jammed nose gear and inattentive preflight planning/preparations by the pilot-in-command.

Findings

Occurrence #1: NOSE GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Findings
1. (F) LANDING GEAR,NOSE GEAR - JAMMED
2. (C) GEAR DOWN AND LOCKED - NOT COMPLIED WITH - FLIGHTCREW
3. (F) PREFLIGHT PLANNING/PREPARATION - INATTENTIVE - PILOT IN COMMAND

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

Factual Information

On May 17, 1996, at 0815 central daylight time (cdt), a Swearingen SA-226TC, N229AM, operated by Airvantage, Inc., of Minneapolis, Minnesota, received substantial damage when its nose gear did not retract into the down and locked position on landing roll on runway 17 (9546' X 150' dry/asphalt) at the Fargo Municipal Airport, Fargo, North Dakota. The pilot-in-command reported that he had 3 down and locked indications on the landing gear prior to landing. The 14 CFR Part 135 flight had been on an IFR flight plan. Visual meteorological conditions prevailed at the time of the accident. The pilot-in-command and copilot reported no injuries. The flight departed Minneapolis, Minnesota, at 0649 cdt.

According to the pilot-in-command's written statement, he said they were on base leg for landing on runway 17 at Fargo Municipal, with half flaps selected and three green down and locked gear indications verified by the copilot. On final approach, after being cleared for landing, the pilot-in-command selected full land flaps with no unsafe gear horn indications. After landing rollout the nose dropped to the ground and the engines were secured after they struck the runway.

A Federal Aviation Administration (FAA) Principal Maintenance Inspector (PMI) represented the NTSB during the on-scene investigation. The PMI reported that during a gear retraction test conducted on May 17, 1996, the gear was selected up with all three landing in the up and locked position. The landing gear selector was placed in the down position, and only the two main gear came out of the wheelwell and went to the down and locked position. The nose gear stayed up and locked in the nose wheelwell. The two main gear transit lights came on while the mains were in transit light and the two green down lights came on when the main gear were down and locked. The nose gear transit light did not come on. When the emergency gear extension handle was pulled, the nose gear up lock released and the nose gear extended to the down and locked position. The nose gear transit light worked properly and the green down and locked light came on. The landing gear was cycled three more times, and the landing gear operated normally. The PMI could not find what caused the nose gear to remain up and locked when he tried to extend the gear the first time. All retractions were normal after the PMI used the emergency gear extension to lower the nose gear.

According to the maintenance log book that the pilot-in-command signed, on May 10, 1996 on a flight to Minot, North Dakota, a different flight crew had the same problem with the nose gear. That crew used the emergency gear extension to lower the nose gear. The corrective action was to perform an operational check and adjust the nose gear actuator. After the adjustment the nose gear operated properly.

On May 13, 1996 a different flight crew entered a discrepancy that the nose gear would not indicate up and locked. The corrective action was to rebuild the nose gear actuator, replace over center bellcranks and springs. The airplane was test flown and the gear worked properly.

A transcript of the cockpit voice recorder (CVR) was conducted on November 13, 1996 by the NTSB's Engineering and Computer Services Division. A transcript was prepared of 09:16 minutes of the 30:29 minute recording which is enclosed with this report. At 0813:17 on the cockpit microphone one, "gear down, before landing checks." At 0813:18 on cockpit microphone two, "K gear in transit sshhhh. before landing, landing gear's coming down, prop sync off, speed lever are high. lights?" That was the last recording of the landing gear position with a beeping horn in the background. The Pilot's Operating Handbook (POH) states for the

before landing challenge and reply checklist in the following order," No Smoking/Fasten Seat belt Sign--On, Speed Levers--High RPM, Propeller Synchronizer--Takeoff-Landing, Landing Gear--Down, Flaps--As Required, Cabin Differential Pressure--Check Zero, Ignition Mode Switches(if installed)--As Required."

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	**Age:**	35, 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):	Airplane Multi-engine; Airplane Single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last Medical Exam:**	02/16/1996
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	2293 hours (Total, all aircraft), 319 hours (Total, this make and model), 2080 hours (Pilot In Command, all aircraft), 300 hours (Last 90 days, all aircraft), 103 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Swearingen	**Registration:**	N229AM
Model/Series:	SA226TC SA226TC	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	305
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	05/02/1996, Continuous Airworthiness	**Certified Max Gross Wt.:**	12500 lbs
Time Since Last Inspection:	44 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	27839 Hours	**Engine Manufacturer:**	Garrett
ELT:	Installed, not activated	**Engine Model/Series:**	TPE-331-10UA
Registered Owner:	GAS WILSON, INC	**Rated Power:**	840 hp
Operator:	AIRVANTAGE, INC.	**Air Carrier Operating Certificate:**	Commuter Air Carrier (135)
Operator Does Business As:	AIRVANTAGE	**Operator Designator Code:**	BDHA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	FAR, 900 ft msl	**Observation Time:**	0800 CDT
Distance from Accident Site:	0 Nautical Miles	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear / 0 ft agl	**Temperature/Dew Point:**	18°C / 16°C
Lowest Ceiling:	None / 0 ft agl	**Visibility**	10 Miles
Wind Speed/Gusts, Direction:	8 knots, 220°	**Visibility (RVR):**	0 ft
Altimeter Setting:	29 inches Hg	**Visibility (RVV):**	0 Miles
Precipitation and Obscuration:			
Departure Point:	MINNEAPOLIS, MN (MSP)	**Type of Flight Plan Filed:**	IFR
Destination:	, ND (FAR)	**Type of Clearance:**	IFR
Departure Time:	0649 CDT	**Type of Airspace:**	Class C

Airport Information

Airport:	HECTOR INTERNATIONAL (KFAR)	**Runway Surface Type:**	Concrete
Airport Elevation:	900 ft	**Runway Surface Condition:**	Dry
Runway Used:	17	**IFR Approach:**	Visual
Runway Length/Width:	9546 ft / 150 ft	**VFR Approach/Landing:**	Full Stop; Traffic Pattern

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	TODD J CARLSON	**Adopted Date:**	10/14/1997
Additional Participating Persons:	JOSEPH F SOUZA; FARGO, ND MELVIN O CINTRON; FARGO, ND DANIEL DORRAIN; MINNEAPOLIS, MN		
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/.		