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## Erroneous airspeed indications/stickshaker, Boeing 717-200, VH-NHX, February 28, 2006

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**Micro-summary:** This Boeing 717-200 experienced erroneous airspeed indications and stickshaker activation in cruise.

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**Event Date:** 2006-02-28 at 0855 YST

**Investigative Body:** National Transportation Safety Board (NTSB), USA


**Investigative Body's Web Site:** <http://www.nts.gov/>

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		NTSB ID: DCA06WA028		Aircraft Registration Number: VH-NXH	
		Occurrence Date: 02/28/2006		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By:	
Location/Time					
Nearest City/Place Paraburdoo		State	Zip Code	Local Time 0855	Time Zone YST
Airport Proximity:		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing			Model/Series 717-200		Type of Aircraft Airplane
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On February 28, 2006, about 0855 western standard coordinated time, a Boeing 717-200, Australian registration VH-NXH, operated by National Jet, experienced erroneous airspeed indications and stick shaker activation while in cruise flight about 122 miles south of Paraburdoo, Western Australia. There were no injuries to 2 certificated pilots, 4 flight attendants, and 66 passengers. Night instrument meteorological conditions prevailed for the flight that departed from Paraburdoo, about 0000, destined for Perth. An instrument flight rules flight plan was filed for the scheduled domestic flight.</p> <p>According to an interim factual report issued by the Australian Transport Safety Bureau, the weather conditions for the flight were under the influence of a decaying tropical cyclone that had crossed the northwest coast of Western Australia earlier that day. Rain and heavy cloud conditions persisted through most of the region. The meteorological forecast indicated a temperature of -39 degrees Celsius at the airplane's planned cruise altitude. The flight crew had selected the engines anti-ice system "ON" during the climb. The autopilot was engaged and had captured the planned cruise altitude of FL340. The airspeed, body angle, and engine power settings were normal for that stage of flight and the airplane was accelerating normally to cruise speed. During that period, the flight crew detected that, over several seconds, the speed displayed on the primary flight display (PFD) for stick shaker activation (Vss) began converging towards the current indicated airspeed. The speed indicated for Vss appeared to overtake the amber caution foot associated with the flight management computer (FMC) calculated minimum operating speed (Vmin), which appeared to be remaining stationary, rather than moving in conjunction with the Vss indication.</p> <p>The stick shaker warning activated as Vss merged with the current airspeed and then continued to increase and merge with the maximum operating speed (Vmo/Mmo). The right edge of the airspeed tape gave the appearance of one continuous red chevron "zipper." Similar indications were observed on both pilots' PFDs. The flight crew reported that they did not receive any other cautions, alerts, or warnings on the airplane's engine and alert display. The flight crew recalled that, although the pitch limit indicator had turned red, indicating that the airplane was at or near a stalled condition, there was no "STALL" annunciation on the PFD, nor any aural "STALL STALL" warning or klaxon alert. The flight crew initiated an immediate on-track descent and advised air traffic services (ATS) of their requirement to change altitude. The stick pusher stall recovery system did not activate and the flight crew did not identify any secondary indications of an impending stall, such as aerodynamic buffet or an abnormally high pitch attitude. Although the flight crew did not detect any evidence of airframe ice on the windscreen or windscreen wiper posts, they selected the airframe anti-ice "ON." They did not otherwise change the configuration of the airplane. The stick shaker continued to operate as the airplane was descending approximately 2,000 feet per minute. The flight crew recalled that the speed indicated on the PFD for Vss returned to normal as the airplane descended through FL290 and that the stick shaker warning ceased at that time. The flight crew leveled the airplane at FL280 with all of the airplane's controls and system</p>					
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National Transportation Safety Board

## FACTUAL REPORT

AVIATION

NTSB ID: DCA06WA028

Occurrence Date: 02/28/2006

Occurrence Type: Incident

## Narrative (Continued)

indications "normal." Once the in-flight weather conditions improved, the airplane was returned to FL300, and the flight landed at Perth without further incident.

The operator's maintenance engineers performed a built-in test equipment check following the airplane's arrival in Perth. The check confirmed that no faults had been recorded during the occurrence flight and the airplane was released for service. Subsequent flights were completed without incident.

The airplane's flight data recorder (FDR) and the electronic recording media for the quick access recorder (QAR) were removed for analysis. Data was also recovered from the non-volatile memory of the airplane's flight control computers (FCC). The FDR data indicated that the output from each of the airplane's angle of attack (AoA) sensors became static (continuously indicating about 4 degrees AoA) passing FL287 on climb, at a total indicated air temperature (TAT) of -4 degrees Celsius. The stick shaker activated approximately 80 seconds after the airplane had reached FL340, as it was accelerating through a computed airspeed of 258 knots and at a TAT of -10 degrees Celsius. About 14 seconds later the recorded data indicated the commencement of a descent from FL340. The stick shaker indication continued for another 2 minutes 23 seconds, ceasing as the airplane passed FL288, at a computed airspeed of 308 knots and a TAT of approximately +7 degrees Celsius. Associated with the cessation of the stick shaker warning were the AoA sensors returning to normal operation. The QAR media was found to contain no recorded data. Examination of that file indicated that the recording media was incorrectly formatted for use in the QAR. The manufacturer of the airplane's FCC analyzed the contents of each computer's non-volatile memory. That analysis revealed no fault history data for the day of the incident.


On March 3, 2006, an entry was made in the airplane's maintenance log, reporting the intermittent operation of the air data heat switch annunciator after the system was selected "OFF" following landing. An indicating globe was replaced and the switch tested serviceable before the airplane was returned to service.


The airplane's AoA sensors and air data heat switch were subsequently removed from the airplane and dispatched for examination by the component manufacturers under the direct supervision of the U.S. National Transportation Safety Board (NTSB).

The incident is under the jurisdiction of, and is being investigated by, the Australian Transport Safety Bureau. Further information can be obtained from:

Australian Transport Safety Bureau  
15 Mort Street, Braddon ACT 2612, Australia  
P.O. Box 967, Civic Square ACT 2608, Australia

Phone +61 2 6230 4408  
Fax +61 2 6274 6434  
Web site [www.atsb.gov.au](http://www.atsb.gov.au)

 <p>National Transportation Safety Board <b>FACTUAL REPORT</b> AVIATION</p>		NTSB ID: DCA06WA028			
		Occurrence Date: 02/28/2006			
		Occurrence Type: Incident			
<b>Landing Facility/Approach Information</b>					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Type Instrument Approach:					
VFR Approach/Landing:					
<b>Aircraft Information</b>					
Aircraft Manufacturer Boeing		Model/Series 717-200		Serial Number	
Airworthiness Certificate(s):					
Landing Gear Type:					
Homebuilt Aircraft? No	Number of Seats:	Certified Max Gross Wt.	LBS	Number of Engines:	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection Hours	Airframe Total Time Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?	ELT Operated?	ELT Aided in Locating Accident Site?			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner		Street Address			
		City	State	Zip Code	
Operator of Aircraft National Jet		Street Address			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 129: Foreign					
Type of Flight Operation Conducted: Scheduled; Domestic; Passenger Only					
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**First Pilot Information**

Name	City	State	Date of Birth	Age
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Sex:	Seat Occupied:	Principal Profession:	Certificate Number:
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Certificate(s):

Airplane Rating(s):

Rotorcraft/Glider/LTA:

Instrument Rating(s):

Instructor Rating(s):

Type Rating/Endorsement for Accident/Incident Aircraft?	Current Biennial Flight Review?
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Medical Cert.:	Medical Cert. Status:	Date of Last Medical Exam:
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time										
Pilot In Command(PIC)										
Instructor										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

Seatbelt Used?	Shoulder Harness Used?	Toxicology Performed?	Second Pilot?
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**Flight Plan/Itinerary**

Type of Flight Plan Filed: IFR

Departure Point	State	Airport Identifier	Departure Time	Time Zone
Paraburdoo		YPBO	0000	UTC

Destination	State	Airport Identifier	
Perth		YPER	


Type of Clearance:

Type of Airspace:

**Weather Information**

Source of Briefing:

Method of Briefing:

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**Weather Information**

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
			Ft. MSL	NM	Deg. Mag.

Sky/Lowest Cloud Condition:	Ft. AGL	Condition of Light:
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Lowest Ceiling:	Ft. AGL	Visibility:	SM	Altimeter:	"Hg
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Temperature:	°C	Dew Point:	°C	Wind Direction:	Density Altitude:	Ft.
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Wind Speed:	Gusts:	Weather Conditions at Accident Site: Instrument Conditions
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Visibility (RVR):	Ft.	Visibility (RVV)	SM	Intensity of Precipitation:
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Restrictions to Visibility:

Type of Precipitation:

**Accident Information**

Aircraft Damage: None	Aircraft Fire:	Aircraft Explosion
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**Classification:**

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants				4	4
Other Crew					
Passengers				66	66
- TOTAL ABOARD -				72	72
Other Ground					
- GRAND TOTAL -				72	72

National Transportation Safety Board

**FACTUAL REPORT**

**AVIATION**



NTSB ID: DCA06WA028

Occurrence Date: 02/28/2006

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

Stephen M. Demko

Additional Persons Participating in This Accident/Incident Investigation: