National Transportation Safety Board
Aviation Accident Data Summary

Location:	Cape Girardeau, MO	**Accident Number:**	CHI07LA063
Date & Time:	02/02/2007, 0930 CST	**Registration:**	N777AJ
Aircraft:	Raytheon Aircraft Company B200	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General Aviation - Business		

Analysis

The airplane was operated by a company pilot. A noncompany pilot, who had not attended or completed a training course or received a checkout for Raytheon Aircraft Company Beech King Air 200 airplanes, was asked by the pilot to accompany him on the flight so that the noncompany pilot could accumulate flight time. The flight only required one pilot.

While the airplane was in cruise flight (27,000 feet mean sea level), the cockpit voice recorder (CVR) recorded the sound of the windshield fracturing. The CVR transcript indicated that the company pilot was not in the cockpit when the windshield fractured because he was emptying trash in the cabin. This action showed poor judgment considering the noncompany pilot was not qualified in the airplane.

Although the windshield stayed in place, the company pilot stated that "within seconds" after it fractured, he depressurized the airplane because he was unsure about the windshield's "integrity." However, the Beech King Air Airplane Flight Manual (AFM) states to maintain cabin pressurization in the event of a fractured windshield and further states that the airplane can continue flight for up to 25 hours with the windshield fractured. During the on-scene examinations, an unapproved document (not derived from the AFM) that contained several checklists was found on the airplane. The company pilot stated that he used this document and that it "came with the airplane." The document did not include a checklist addressing a cracked or shattered windshield. The company pilot most likely was not aware that the airplane should not have been depressurized nor that it could operate for 25 hours after the fracture occurred and, therefore, that the fractured windshield did not present an in-flight emergency.

The CVR transcript revealed that, after depressurizing the airplane, the pilots attempted to use the oxygen masks but were unable to receive any oxygen. (The pilots most likely did not turn the oxygen on once they needed it because they either forgot as a result of the emergency or because they did not have time to do so before they lost consciousness.) According to the company pilot, during his preflight inspection of the airplane, the oxygen system was functional. He stated that, after the inspection, he turned the oxygen system ready switch to the OFF position because he wanted to "save" the oxygen, which was not in accordance with the Before Start checklist in the AFM. Postaccident functional testing of the oxygen system revealed normal operation. The unapproved checklists document did not include the instruction to leave the oxygen system on. Regardless, the pilot stated that he knew the approved checklist stated to leave the oxygen system on but that he still chose to turn it off. The pilot exhibited poor judgment by using an unapproved, incomplete checklists document and by knowingly deviating from approved preflight procedures.

About 1 minute after the pilots tried to get oxygen, the CVR recorded the last comment by either pilot. For about the next 7 minutes until it stopped recording, the CVR recorded the sounds of increased engine propeller noise, the landing gear and overspeed warning horns, and altitude alerts indicating that the airplane had entered an uncontrolled descent. (The CVR's 4-g impact switch was found in the open position during the on-scene examination, indicating that the airplane experienced at least 4

acceleration of gravity forces.) Further, a plot of two radar data points, recorded after the last pilot comment, showed that the airplane descended from 25,400 feet to 7,800 feet within 5 minutes. Shortly thereafter, the pilots regained consciousness and recovered from the uncontrolled descent. The airplane was substantially damaged by the acceleration forces incurred during the uncontrolled descent and subsequent recovery.

Examination of the windshield revealed that a dense network of fractures was located on the inner glass ply; however, the windshield did not lose significant pieces of glass and maintained its structural integrity. Therefore, the fractures did not preclude safe continued flight. Postaccident examinations revealed evidence that the fracture initiated due to a design deficiency in the glass. The manufacturer redesigned the windshield in 2001 (the accident airplane was manufactured in 1998), and no known similar fractures have occurred in the newly designed windshield. The manufacturer chose not to issue a service bulletin for a retrofit of the new windshield design in airplanes manufactured before 2001 because the fracture of one pane of glass is not a safety-of-flight issue.

Members Hersman and Sumwalt did not approve this brief. Member Hersman filed a dissenting statement, with which Member Sumwalt concurred. The statement can be found in the public docket for this accident.

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The company pilot's poor judgment before and during the flight, including turning the oxygen system ready switch to the OFF position after he conducted the preflight inspection and using an unapproved checklist, which did not provide guidance for a fractured windshield and resulted in his depressurizing the airplane.

Members Hersman and Sumwalt did not approve this probable cause. Member Hersman filed a dissenting statement, with which Member Sumwalt concurred. The statement can be found in the public docket for this accident.

Findings

Occurrence #1: DECOMPRESSION
Phase of Operation: CRUISE

Findings
1. (F) WINDOW,FLIGHT COMPARTMENT WINDOW/WINDSHIELD - CRACKED
2. (F) CHECKLIST - NOT FOLLOWED - PILOT IN COMMAND
3. (C) IMPROPER USE OF PROCEDURE - PILOT IN COMMAND
4. (F) CHECKLIST - NOT APPROVED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
6. (C) INCAPACITATION(LOSS OF CONSCIOUSNESS) - FLIGHTCREW

Occurrence #3: ABRUPT MANEUVER
Phase of Operation: DESCENT - UNCONTROLLED

Pilot Information

Certificate:	Airline Transport; Commercial	**Age:**	31
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Instrument Rating(s):**	Airplane
Other Aircraft Rating(s):	None	**Instructor Rating(s):**	None
Flight Time:	4048 hours (Total, all aircraft), 110 hours (Total, this make and model), 3878 hours (Pilot In Command, all aircraft), 49 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

Co-Pilot Information

Certificate:	Flight Instructor; Commercial; Private	**Age:**	28
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Instrument Rating(s):**	Airplane
Other Aircraft Rating(s):	None	**Instructor Rating(s):**	Airplane Multi-engine; Airplane Single-engine
Flight Time:	2806 hours (Total, all aircraft), 28 hours (Total, this make and model), 2737 hours (Pilot In Command, all aircraft), 72 hours (Last 90 days, all aircraft), 28 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Raytheon Aircraft Company	**Registration:**	N777AJ
Model/Series:	B200	**Engines:**	2 Turbo Prop
Operator:	Hudson Timber Services Inc	**Engine Manufacturer:**	Pratt & Whitney
Operating Certificate(s) Held:	None	**Engine Model/Series:**	PT6A-42
Flight Conducted Under:	Part 91: General Aviation - Business		

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	CGI, 342 ft msl	**Weather Information Source:**	Weather Observation Facility
Lowest Ceiling:	Broken / 3300 ft agl	**Wind Speed/Gusts, Direction:**	11 knots / , 330°
Temperature:	-3°C	**Visibility**	10 Miles
Precipitation and Obscuration:			
Departure Point:	ROGERS, AR (ROG)	**Destination:**	Staunton, VA (SHD)

Airport Information

Airport:	Cape Girardeau (CGI)	**Runway Surface Type:**	
Runway Used:	N/A	**Runway Surface Condition:**	
Runway Length/Width:			

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
Latitude, Longitude:	37.225278, -89.573611		

Administrative Information

Investigator In Charge (IIC):	Mitchell F Gallo	**Adopted Date:**	11/20/2008
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/.		