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BY MARK LACAGNINA

Accident report questions decisions to launch  
a medevac flight in adverse conditions.

# HIGH RISK, LOW NEED

The pilot had been awake more than 14 hours  
when he lost control of this King Air during  
an attempted go-around at Atkasuk.

U.S. National Oceanic and Atmospheric Administration

Canada

The pilot had been home about two hours when the telephone rang around midnight on May 16, 2011. It was the chief pilot, asking if he could conduct an emergency medical services (EMS) flight. Although the pilot had been on duty for 10 hours earlier that day, he accepted the assignment, which entailed a short flight from the operator's home base in Barrow, at the northern tip of Alaska, to Atkasuk, an Eskimo village about 50 nm (93 km) southwest, where two medical crewmembers were to assess the condition of a patient. Depending on the results, the crew either would return to Barrow or transport the patient to Anchorage, in southern Alaska, for further diagnosis and treatment.

The lead medical crewmember told the pilot that, based on information that the 77-year-old patient had fallen several times and was experiencing weakness in her left arm, it was likely that she had suffered a stroke. She estimated a 90 percent probability that the patient would have to be flown to Anchorage.

Less than two hours later, the crew was en route to Atkasuk in a Beech King Air B200. "Given the long duty day and the early morning departure time of the flight, it is likely the pilot experienced significant levels of fatigue that substantially degraded his ability to monitor the airplane during a dark night instrument flight in icing conditions," said the U.S. National Transportation Safety Board (NTSB) report on the subsequent accident, in which the airplane picked up a load of ice on approach and crashed out of control during an attempted go-around. The three crewmembers sustained minor injuries.

The NTSB report, issued in April 2012, said that the absence of a formal risk assessment before the flight was launched was a contributing factor in the accident. "Had a thorough risk assessment been performed, the decision to launch a fatigued pilot into icing conditions late at night may have been different, or additional precautions may have been taken to alleviate the risk," the report said.

Moreover, noting that the patient was known to have a "non-critical injury/illness," the safety board questioned the decision by local medical authorities to request that the patient be transported in a public-use aircraft, without considering an alternate mode of transportation. "Pressure to conduct EMS operations safely and quickly in various environmental conditions — for example, in inclement weather and at night — increases the risk of accidents when compared to other types of patient transport methods, including ground ambulances or commercial flights," the report said.

### No Duty/Rest Rules

The King Air was among several public-use aircraft operated by the North Slope Borough, a local government entity. The report noted that most EMS flights in the United States are conducted under Federal Aviation Regulations Part 135 standards for commuter and on-demand operations, but, because the King Air was a public-use aircraft, the accident flight was conducted under the general operating and flight rules of Part 91.

The chief pilot told investigators that the pilot was the most suitable choice for the EMS flight because he was the only pilot on duty earlier that day who had not been assigned a flight.

The pilot, 62, held an airline transport pilot certificate and had 9,000 flight hours, including 8,500 hours as pilot-in-command and 6,500 hours in multiengine airplanes, with 500 hours in type. He reported 5,000 hours of night flying experience and 2,000 hours in actual instrument meteorological conditions. He had completed a B200 flight review at a FlightSafety International training center about five months before the accident.

According to the chief pilot, the pilot had just returned from a six-week vacation and mostly had flown the borough's Learjet before that; the pilot had not flown the King Air for nearly four months.



## Beech King Air B200



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The King Air line of twin-turboprop business airplanes dates back to the early 1960s, when Beech Aircraft performed a trial installation of United Aircraft of Canada — now Pratt & Whitney of Canada — 500-shp (373-kW) PT6A-6 engines on a modified Queen Air.

After changing from square to round windows and adding a supercharger-driven cabin-pressurization system, Beech introduced the King Air 90 in 1964. Maximum takeoff weight was 9,300 lb (4,218 kg). Among early production changes was a bleed-air system to pressurize the six- to eight-seat cabin.

The King Air 100 debuted in 1969 with a stretched fuselage to accommodate eight to 13 passengers and with the wings, tail and 680-shp (507-kW) PT6A-28 engines from the Model 99 Airliner. That year, Beech also began work on the Super King Air 200, which has the 100's fuselage, longer wings housing auxiliary fuel tanks, 850-shp (634-kW) PT6A-41 engines and a T-tail. Deliveries began in 1974.

The B200 was introduced in 1981 with PT6A-42 engines that, while still rated at 850 shp, improved climb and high-altitude performance. Maximum takeoff and landing weight is 12,500 lb (5,670 kg). Maximum rates of climb are 2,450 fpm with both engines operating and 740 fpm with one engine inoperative. Maximum cruising speed at 25,000 ft is 289 kt, and service ceiling is 35,000 ft. Maximum range is 2,000 nm (3,704 km).

The larger and more powerful 300 and 350 models appeared in the 1980s, and "Super" was dropped from the name in 1996. Hawker Beechcraft currently manufactures the King Air C90GTx, 250 and 350i.

Sources: *Jane's All the World's Aircraft*, *The Encyclopedia of Civil Aircraft* and Hawker Beechcraft

The airplane departed from Barrow at 0148 local time. It was about 35 nm (65 km) from Atqasuk, cruising at 15,000 ft in visual meteorological conditions, when the pilot was cleared by air traffic control (ATC) to fly directly to an

initial navigational fix for the global positioning system (GPS) approach to Runway 06 and to descend to and maintain 2,000 ft until established on the approach. ATC also cleared the pilot to switch to the uncontrolled airport's common traffic advisory frequency.

Weather conditions at the airport included 3 mi (4,800 m) visibility in blowing snow and fog, an 800-ft overcast and surface winds from 070 degrees at 15 kt. The temperature was minus 3 degrees C (27 degrees F), and the dew point was minus 4 degrees C (25 degrees F).

The pilot told investigators that he initially leveled at 2,200 ft, to stay "slightly above the cloud tops" until reaching the initial approach fix; after descending to 2,000 ft, the King Air "was mostly in the clouds." Ice began to accumulate on the airplane, but the pilot said that the rate of accumulation "did not seem excessive."

### Stall on Go-Around

Data from the operator's satellite tracking system and from the airplane's on-board monitoring system showed that during most of the initial approach, the King Air's indicated airspeed remained at or above 140 kt, the minimum airspeed recommended by the manufacturer for operating in continuous icing conditions. Airspeed decreased below 140 kt about the time that the pilot extended the flaps and the landing gear while inbound to the final approach fix.

The pilot activated the deice boots four times before crossing the final approach fix at the published minimum altitude of 1,700 ft. "The deice boots seemed to shed [the] ice almost completely, and all seemed to be in order," the pilot said. "I intermittently used the autopilot to help maintain control while inflating the deice boots."

Airspeed was about 100 kt when the King Air crossed the final approach fix. The pilot said that he increased power, but the indicated airspeed continued to decrease. The recorded data showed that the airplane's descent rate increased, reaching a maximum of 2,464 fpm.

"The chief pilot for the operator said that the pilot reported to him that ... the airplane [had]

accumulated a large quantity of airframe ice and he decided to discontinue the approach,” the report said.

The pilot applied maximum climb power and retracted the flaps and the landing gear. “We were in full go-around mode at this point,” he said. “There was some shuddering as the airplane climbed slowly to approximately 2,000 ft and we started to break out of the clouds.” He said that he activated the deicing boots during the climb but was too busy flying the airplane to visually inspect the wings.

Airspeed continued to decrease. “The stall warning started going off continuously as the airplane began to clear the clouds,” the pilot said. “The nose had to be lowered to stop the stall, and the airplane re-entered the clouds. At this point, directional control was nonexistent, and full attention was directed at keeping the airplane from inverting. After breaking out at about 800 ft, it appeared at times that I might be able to regain control of the airplane. However, that was not to be the case.”

The last data recorded showed the airplane descending at 1,651 fpm with a pitch attitude of 20 degrees nose-up and an indicated airspeed of 68 kt. The wings were level when it struck flat, snow-covered tundra 7 nm (13 km) southwest of the airport at 0218. “The tail section aft of the passenger cabin was severed from the fuselage,” said the report, which classified the airplane damage as substantial.

In a written statement, the pilot said he believed that tailplane icing had triggered the stall. “The injuries were very minor, considering the severity of the impact,” he said, noting that he had a slight cut on his forehead and “low-grade lower back pain,” one medical crewmember bit the tip of her tongue, and the other had a headache.

One of the crewmembers was able to transmit a text message via mobile phone to North Slope Borough, and local search-and-rescue personnel reached the accident site less than two hours later. “The morning of the accident, the patient subsequently took a commercial flight [to Anchorage] to receive medical treatment,” the report said.

In its determination of probable cause, NTSB said, “The pilot did not maintain sufficient airspeed during an instrument approach in icing conditions, which resulted in an aerodynamic stall and loss of control. Contributing to the accident were the pilot’s fatigue, the operator’s decision to initiate the flight without conducting a formal risk assessment that included time of day, weather and crew rest, and the lack of guidelines for the medical community to determine the appropriate mode of transportation for patients.”

### ‘Unacceptable Response’

The report noted that NTSB over the years has issued numerous recommendations intended to improve the safety of EMS flight operations. Several recommendations stemmed from the board’s special investigation of 55 accidents in 2002 through 2005 that resulted in 54 fatalities and 18 serious injuries.

Among the recommendations was A-06-013, issued in 2006, urging the U.S. Federal Aviation Administration (FAA) to require EMS operators to develop and implement flight risk evaluation programs. The FAA initially replied that it would incorporate the requirement as part of the operations specifications for EMS operators but later said that it would pursue formal rulemaking instead.

In the continued absence of a final rule, the recommendation at press time was still classified by NTSB as “open” and as having received an “unacceptable response” from the FAA.

Another recommendation, A-09-103, called on the Federal Interagency Committee on Emergency Medical Services (FICEMS), created in 2005 by the U.S. Congress, to develop national guidelines for selecting the appropriate mode of EMS transportation. “The most recent correspondence from FICEMS indicated that the guidelines are close to being finalized and distributed to members,” the report said. “Such guidance will help hospitals and physicians assess the appropriate mode of transport for patients.”

*This article is based on NTSB accident report no. ANC11TA031 and related docket information.*

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