

**NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594**

February 1, 2011

ATC GROUP CHAIRMAN'S FACTUAL REPORT

CEN10FA443

A. AIRCRAFT ACCIDENT

Location: Oshkosh, Wisconsin

Date: July 27, 2010

Time: 1816 Central Daylight Time / 2316 Coordinated Universal Time

Aircraft: N6JR, Raytheon 390 Premier

1.

B. AIR TRAFFIC CONTROL GROUP

Mr. Scott J. Dunham
National Transportation Safety Board
Washington, D.C.

Ms. Christine Soucy
Federal Aviation Administration
Washington, D.C.

Ms. Michelle Wroblewski
National Air Traffic Controllers Association
Green Bay, Wisconsin

C. SUMMARY

On July 27, 2010, approximately 1816 central daylight time (all times referenced as central daylight time), a Hawker Beechcraft model 390 (Premier IA) business jet, N6JR, registered to and operated by Roush Fenway Racing, LLC, was substantially damaged when it impacted terrain during landing to runway 18R at Wittman Regional Airport (KOSH), Oshkosh, Wisconsin. Day visual meteorological conditions prevailed at the time of the accident. The business flight was being conducted under the provisions of 14 Code of Federal Regulations Part 91. The airline transport certificated pilot and his passenger were seriously injured. The cross-country flight had departed Willow Run

Airport (KYIP), near Ypsilanti, Michigan, at 1729 with KOSH as the intended destination.

The pilot was flying to KOSH to attend the Experimental Aircraft Association's AirVenture 2010 fly-in convention. Air traffic control (ATC) data indicated that the accident flight entered the Oshkosh area under visual flight rules and was cleared to land on runway 18R (8,002 feet by 150 feet, concrete).

A review of amateur video taken at KOSH showed the accident airplane in a left base turn to final for runway 18R. The airplane appeared to overshoot the runway centerline during this turn and then level its wings momentarily before entering a slight right bank simultaneously as the nose of the airplane pitched up. The airplane then turned left toward the runway centerline and began a descent. During this descent the airplane's pitch appeared to increase until the airplane entered a right bank and struck the grass area west of the runway in a nose down, right wing low attitude.

The pilot and passenger were assisted out of the aircraft and transported to the hospital for treatment of their serious, but non-life-threatening injuries.

D. DETAILS OF THE INVESTIGATION

The air traffic control group met at Oshkosh Airport Traffic Control Tower (OSH ATCT) on July 28, 2010. The group reviewed ATCT standard operating procedures to be used during the AirVenture 2010 event, obtained audio recordings of the ATCT local control and the runway 18R Fly-by Mobile positions, and met with the controllers and supervisory personnel on duty to discuss the sequence of events. We reviewed an amateur video of the accident with the controllers to identify their control actions as the aircraft approached the runway and attempt to synchronize the audio recordings with the aircraft's trajectory. We also obtained a copy of the separation waiver issued to OSH ATCT by the Federal Aviation Administration's Terminal Safety and Operations Support branch, which authorized the use of reduced separation standards for certain operations conducted during AirVenture 2010.

1. Special Procedures for AirVenture 2010

The AirVenture exhibition is an annual event sponsored by the Experimental Aircraft Association that attracts thousands of aircraft from all over the United States. Because of the number of flight operations conducted at OSH during AirVenture, the FAA establishes special air traffic control (ATC) and flight procedures for use during the event. Flight procedures are published via a Notice to Airmen (NOTAM) detailing arrival and departure routes, ground operations, and communications procedures to be used by pilots. ATC procedures are defined by a combination of FAA Order 7110.65, "Air Traffic Control," a local "2010 Training and Procedures" manual published by OSH ATCT management, and a waiver issued by FAA's Terminal Safety and Operational Support branch relaxing certain provisions of FAA Order 7110.65.

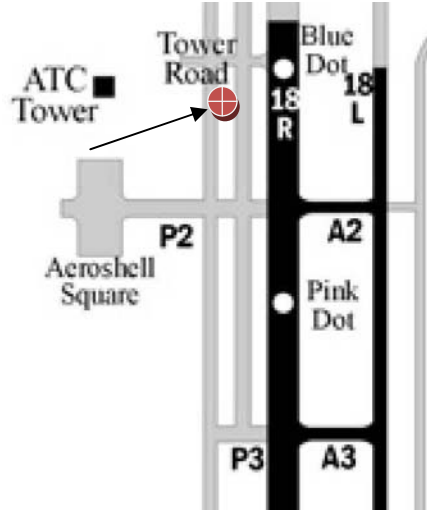


Figure 1 – Location of the Fly-by Mobile MOOCOW (arrow)

In addition to the normal contingent of controllers assigned to staff the ATCT, other controllers work near the runways at Mobile Operations / Communications Workstations known as MOOCOWS. The MOOCOW involved in the accident sequence was called “Fly-By Mobile.” According to the 2010 Training and Procedures manual, Fly-By Mobile was responsible for departing aircraft operating on runways 18L/R or 36L. At the time of the accident, Fly-By mobile was staffed by four controllers. One controller was acting as Aircraft Communicator (AC), and was responsible for issuing control instructions to pilots. A second controller was acting as Spotter/Coordinator (SC), responsible for watching the pattern for traffic, assisting AC with separation and sequencing of departures, communicating with the other team members, and coordinating with controllers in the ATCT via an unrecorded FM radio link. A third controller was acting as a flagman, providing physical direction to pilots as necessary, and the fourth controller was on a break but seated on the ground near the MOOCOW.

When the MOOCOWs are operational, takeoff clearances are issued at the discretion of the MOOCOW team based on observed pattern traffic and, when necessary, coordination with the ATCT. Landing clearances are issued by the ATCT local controllers. The ATCT supervisor advises the MOOCOW SC controller (via an unrecorded FM radio link) of any unusual operations or aircraft inbound to their runway that may affect their departures.

At the time of the accident, the Fly-By Mobile MOOCOW was operational and responsible for providing required runway separation between aircraft operating on runway 18R. The team was required to adjust the departure flow to account for arrival traffic and ensure that appropriate separation existed at all times. Aircraft landing on runway 18R were under control of the South Local Control (SLC) position, which was staffed with an AC controller, two SC controllers, and a team lead. In addition, there was a supervisor and an operations manager present to oversee tower operations and

coordinate activities within the tower cab as well as between the tower cab and the MOOCOW controllers.

The NOTAM for AirVenture 2010 contains an arrival procedure restricted to use by turbine-powered aircraft and warbirds. The procedure states, in part:

- Proceed from the city of Fond du Lac direct to Warbird Island (6 miles SE of Wittman Regional Airport, along the west shore of Lake Winnebago). When more than 4 NM from FLD, descend to maintain 2,800' MSL.
- Pilots may be instructed to orbit the island until a landing sequence is issued. **Use caution; make left turns; and stay alert for other aircraft!**
- When cleared at Warbird Island, proceed to the assigned runway as directed by ATC, reduce speed to 150 knots or less and begin descent to 1,800' MSL (2,300' MSL for overhead approaches). Pilots are cautioned to maintain VFR separation at all times.
- If your landing clearance appears unsafe because of spacing, speed of preceding aircraft, or any other reason, go around! A new sequence will be issued.

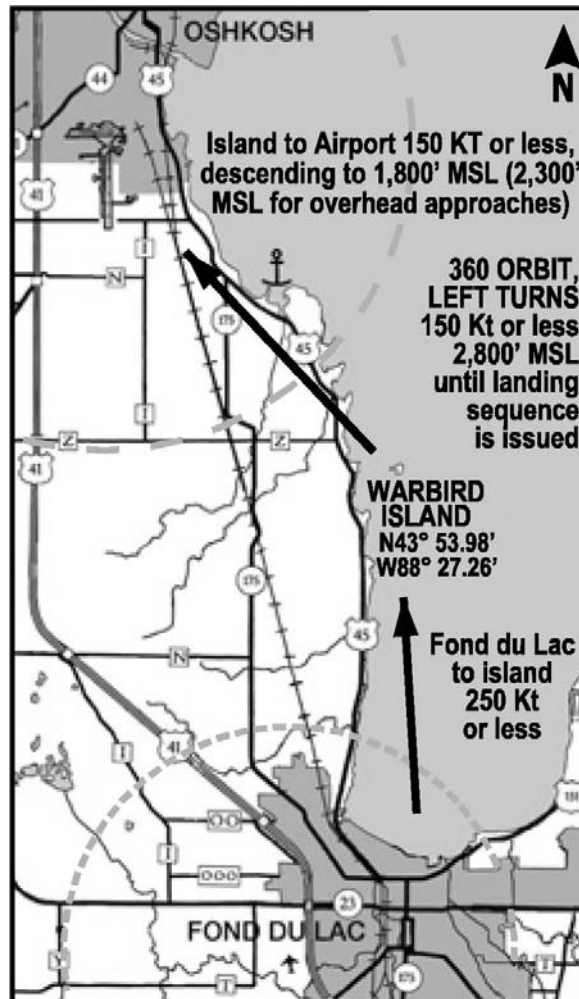


Figure 2 – Warbird arrival

A copy of the waiver to certain provisions of FAA Order 7110.65, "Air Traffic Control," issued to OSH ATCT for the duration of AirVenture 2010 and a copy of the pertinent

sections of the Oshkosh Tower “2010 Training and Procedures” manual have been entered in the docket for this report.

2. History of Flight

N6JR departed from Ypsilanti, Michigan on an instrument flight rules (IFR) flight plan, to Oshkosh, Wisconsin. The aircraft departed Ypsilanti at 1829 Eastern daylight time and climbed to flight level 220 before descending, canceling IFR, and entering the OSH area under visual flight rules.

The pilot contacted the OSH SLC controller at 1810:33, stating “Oshkosh tower Premier 6JR’s uh is coming in on the warbird arrival – we’re just about 10 east of the island.” The SLC controller responded, “Premier 6JR Oshkosh tower roger, report over the island.” The pilot read back the instruction, and at 1811:18, the controller asked, “Premier coming in over the warbird, uh which runway would you like?” The pilot replied, “Uh 18 or 27’d be OK.” The controller transmitted, “OK sir, expect a left base runway 18 uh report over the island.”

At 1813:31, the pilot stated, “...and N6JR’s over the island.” The SLC controller responded, “Premier roger left base runway 18R cleared to land wind 200 at 9 gusts 18.” The pilot read back “Left base runway 1R uh 18R, cleared to land 18R, and the controller then continued, “Premier make your base turn abeam the tower,” which was also correctly read back by the pilot. At 1815:23, the controller transmitted, “Premier you can turn northbound on the downwind,” which was acknowledged with an unidentified “yup.”

At 1815:54, the Fly-by Mobile AC controller instructed the pilot of a yellow Cub (unknown registration number) to position and hold on runway 18R. The pilot of the Cub acknowledged and requested “...the 18L angled departure to stay clear of faster traffic.” At 1816:10, the Fly-by controller transmitted, “Cub uh 18R cleared for takeoff as requested, cleared for immediate takeoff.”

At 1816:19, the pilot of N6JR transmitted, “Is...is 6JR gonna be OK with this?” The SLC controller responded, “Affirmative,” to which the pilot replied, “I don’t think so.”

At 1816:21, the Fly-by Mobile controller transmitted, “Cub as soon as you’re airborne offset off the runway.” At 1816:33, the Fly-by Mobile controller instructed the pilot of the Cub to, “...turn left off the runway, traffic short final behind you.” At 1816:36, the controller continued, “Thank you sir – doing a good job.”

At 1816:40, there was an unidentified partial transmission sounding similar to the pilot of N6JR on the SLC frequency that stated, “Going a--.” Review of the amateur video available showed that the Premier pitched up at that time. At 1816:46, the SLC controller stated, “Uh Premier jet uh use caution for the uh traffic ahead on the upwind and uh...” The video showed the Premier descending, and then banking to the right before striking

the ground at approximately 1816:56 (when an unidentified voice on the Fly-by Mobile frequency transmitted, “Crap!”)

At 1817:02, the controller instructed the next arrival, a Lake amphibian, to go around. The tower operations manager directed a supervisor to notify Airport Rescue and Firefighting personnel of the accident, and they responded to the crash site. The pilot and passenger were assisted out of the aircraft and transported to the hospital for treatment.

3. Air Traffic Controller Actions and Observations

At the time of the accident, the Fly-by Mobile MOOCOW located near runway 18R was staffed by Charles Posey – Aircraft Communicator (AC), Leonard Weidner – Spotter/Coordinator and Team Lead, Craig Keech – Flagman, and Ryan Picha – off position, but observing nearby. The South Local Control team consisted of Walter Stokes – AC, Ronald Schaefer – Spotter Right, Michael Moynihan – Spotter Left, and James Vantine – Team Lead / monitoring the AC. Also on duty were Scott Stark – supervisor, and Donald Kruse – operations manager.

Because of the team nature of the OSH ATC operation, the ATC personnel were interviewed as a group and asked to detail the sequence of events while reviewing the amateur video of the accident. Each controller also provided a written personnel statement.

Mr. Weidner stated that he was made aware of the inbound Premier jet via notification by the tower supervisor over an FM radio link used for coordination between the tower and the MOOCOWs. The supervisor made two calls: one when the aircraft was on downwind, and another when it turned left base. In response to the first notification, he directed the AC controller to clear the yellow Cub holding on runway 18R for immediate takeoff and to ask the pilot to sidestep off the runway after departure. At that time, the Premier was in the turn from downwind to base. The Cub was clear of the runway before the Premier turned inbound on the final. When the Premier turned toward the final, the aircraft overshot and flew over the MOOCOW unit. It looked like it was going around, but Mr. Weidner was unable to hear the aircraft’s power setting because he was wearing a headset. Mr. Posey and Mr. Picha made similar observations about the aircraft’s trajectory. Mr. Keech was located next to Tower Road¹ (between P1 and P2), and saw N6JR turning overhead before flying low just west of runway 18R. He observed the right wing dip and the aircraft strike the ground.

Mr. Moynihan was working in the tower cab, acting as a spotter for the SLC AC controller. He stated that N6JR called inbound on the Warbird arrival route, and was given the option of runway 27 or 18R. The pilot said that either one would be fine, so the AC controller instructed the pilot to enter left downwind for runway 18R. When the aircraft was on left base, a Cub was departed on runway 18R. The pilot of N6JR asked if

¹ When interviewed, and in his written statement, Mr. Keech stated that he was at taxiway P1. Review of amateur video showed that he was actually next to Tower Road where aircraft were entering runway 18R.

“this was going to work,” and the AC controller responded that it was. When N6JR turned from base to final, it appeared to be low and made a very steep turn toward the runway. The pilot then said he was going around and the aircraft appeared to be doing so. The AC controller issued a cautionary advisory because of the Cub to the left of the Premier. The aircraft then began descending like the pilot was going to try to salvage the landing. The nose went up and the right wing dropped. Mr. Moynihan stated that, “...he knew it was going to crash.” The tower personnel started following emergency procedures, and told the next arrivals to go around.

Mr. Schaefer was the other spotter for the SLC AC controller. When N6JR called inbound for landing, Mr. Schaefer saw the aircraft and pointed it out to the other team members. He did not continue to watch the aircraft, and next noticed it when he heard the pilot ask, “Is this going to work?” At that time, Mr. Schaefer informed the SLC AC that the Cub on 18R was departing and already airborne, so it was not a problem. Mr. Schaefer then saw N6JR overshoot the final and end up west of runway 18R. The pilot then said he was going around, and Mr. Schaefer again advised the SLC AC controller that the Cub was airborne and to the left of N6JR, and was not a problem. N6JR appeared to level off, but was slow and then descended as if to land. The aircraft crashed before reaching the P3 taxiway.

Mr. Vantine was the team lead for the SLC position in the tower cab and was monitoring the SLC AC position at the time of the accident. In addition to the observations made by Mr. Schaefer and Mr. Moynihan, Mr. Vantine noted that when approaching the pattern, N6JR appeared to be heading too close to the runway for a safe downwind. The SLC AC instructed the pilot to start his turn northbound and enter downwind to keep the aircraft further out. The pilot was given the wind information and cleared to land on runway 18R. While on left base, the pilot asked, “Is this going to work?” The AC controller responded, “affirmative.” Shortly afterward, the pilot made a statement indicating that he was going around. The AC controller issued a cautionary advisory about the Cub. The aircraft initially appeared to be going around, but then banked left and right before crashing.

Mr. Stokes was the SLC AC controller, responsible for communicating with aircraft in the 18R traffic pattern. His observations were similar to those of the other controllers, with the addition that he described the Cub’s position when N6JR commenced the go-around as “airborne and offset.” Shortly afterward, he saw the aircraft pitch up and appear to stall, with the wing striking the ground and the aircraft spinning around.

Mr. Stark was the tower supervisor, monitoring the SLC operation. He heard N6JR’s initial call to SLC and all subsequent communications with the pilot. When he saw N6JR entering left downwind for runway 18R, he contacted the MOOCOW controllers to advise them of the inbound aircraft, and he also advised them when the aircraft turned base “close in.” Mr. Stark stated that the Cub departing ahead of N6JR entered the runway at the same time that N6JR was turning from downwind to left base, and subsequently saw the Cub in a left turn while N6JR was still on base leg. When the pilot

of N6JR asked “Is 6JR OK with this?”, Mr. Stark saw that the Cub was airborne between runway 18R and runway 18L, and “...no factor for N6JR.”

Mr. Kruse was the operations manager on duty in the tower cab. He was advised by one of the controllers that N6JR was going around. When he first saw the aircraft, it looked like it was already executing the go-around, but was low and slow. Shortly afterward, it looked like N6JR was going to settle back down and land. However, the nose pitched up, the aircraft rolled left and right, the aircraft appeared to stall, and it crashed. Mr. Kruse instructed the North Local controller to notify the ARFF unit of the “alert 3” (accident) on the airport. The tower controllers then stopped traffic and began making the required post-accident notifications.

4. Witness Statement Summary

Several witnesses saw at least part of the accident sequence. The consensus of those who observed the relationship between the departing Cub and N6JR was that the Cub was between runways 18R and 18L as N6JR lined up with the runway. Witness Stephen Scheick, who saw the two aircraft from the vicinity of the Theater in the Woods, provided a written statement that he saw the arriving jet on what appeared to be a base leg for runway 18R. He saw the jet turning toward the south before he lost sight of it behind the trees. As he lost sight of the jet, he saw a small yellow aircraft that was southbound and climbing at low altitude. He believed that it was “...flying above runway 18R.” Contacted by telephone to obtain more information, Mr. Scheick stated that he only saw the yellow aircraft for one to two seconds, and that he “guessed” that it was 75 to 100 feet above the ground. He also stated that during the brief sighting it was difficult to say exactly where the yellow aircraft was in relation to the runway. Witness information has been entered into the docket.

5. Radar Data

Radar coverage in the vicinity of OSH is limited, with antennas located at Horicon, Wisconsin, Milwaukee, Wisconsin, and Green Bay, Wisconsin. N6JR was visible on radar until turning left base for runway 18, but radar coverage was not sufficient to identify the position of the departing Cub or its relationship to N6JR during its takeoff roll and immediately after departure. Radar data for N6JR is shown in figure 3.

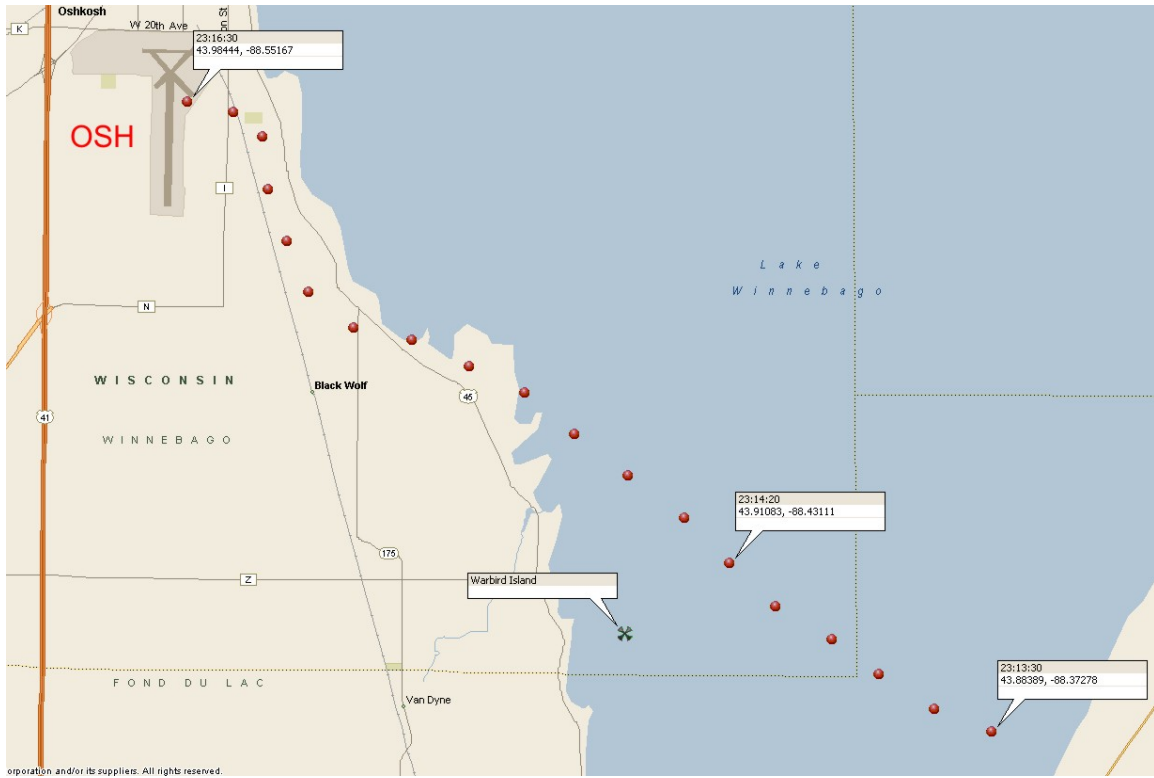


Figure 3 – N6JR approaching OSH. All targets are 1200 code, no altitude information. Times shown are Coordinated Universal Time, 5 hours later than local time.

Scott Dunham
NTSB ATC Investigations