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

March 4, 2003

ATC GROUP CHAIRMAN'S FACTUAL REPORT
LAX02FA288A/B

A. AIRCRAFT ACCIDENT

Location: 1 mile NW of McClellan-Palomar Airport (CRQ), Carlsbad, California

Date: September 17, 2002

Time: 1959 Coordinated Universal Time[1]

Aircraft: N1828A, Beechcraft BE76 Duchess, and N7199U, Mooney MO20

B. AIR TRAFFIC CONTROL GROUP

Chairman: Mr. Scott J. Dunham
National Transportation Safety Board
Washington, D.C. 20594

Mr. Domenic Torchia
National Air Traffic Controllers Association
Fremont, California

Mr. Eric West
Federal Aviation Administration
Washington, D.C.

C. SUMMARY

On September 17, 2002, at 1959 UTC, N1828A, a Beech BE76 Duchess, and N7199U, a Mooney MO20, collided in midair approximately 1 mile northwest of the McClellan-Palomar airport (CRQ), Carlsbad, California. Both aircraft were operating under visual flight rules. The two occupants of the Duchess and the single occupant of the Mooney were all fatally injured, and both aircraft were destroyed.

[1]All times are expressed in Coordinated Universal Time (UTC) unless otherwise noted.

D. DETAILS OF THE INVESTIGATION

On September 18, 2002, the ATC group chairman went to Southern California Terminal Radar Approach Control (SCT) to observe a replay of the recorded radar data for the CRQ area at the time of the accident. Ms. Sonja Morey, acting deputy air traffic manager, and Mr. Robert Green, of the FAA's Western-Pacific regional office, provided two replays of the traffic in the CRQ area: one as seen by the Camp Pendleton airport surveillance radar (ASR), and another as seen from the Miramar ASR. The ATC group chairman requested radar data files from both sites, which were provided by Mr. Green on September 19, 2002. Ms. Morey stated that SCT had no contact with either aircraft before the accident. After viewing the radar replays, Mr. Green and the ATC group chairman traveled to CRQ air traffic control tower (ATCT), the facility controlling the two aircraft at the time of the accident, to review the voice tapes of the local and ground control positions. At CRQ, the ATC group chairman met with Mr. Domenic Torchia, air safety investigator for the National Air Traffic Controllers Association, who had arranged with Mr. Plagens for party status and participation on the ATC group. We reviewed the tapes and received initial documentation from Ms. Christine Soucy, air traffic representative, including a draft transcript, controller statements, medical clearance documentation, tower and airport diagrams, and other information. We arranged to interview the ground and local controllers on duty at the time of the accident. On September 19 we returned to CRQ ATCT, where the group was joined by Mr. Eric West of the FAA's Office of Accident Investigation. The group again reviewed the ground and local control tapes, collected further background information, and visited the tower cab to observe the operational environment and equipment locations. We then completed interviews of the ground and local controllers and completed our work at the facility.

1. History of Flight

The pilot of N1828A contacted CRQ ground control (GC) at 1947, requesting taxi from Pinnacle Aviation to runway 24. The ground controller instructed the pilot to taxi to runway 24 via taxiway A. The pilot of N7199U called CRQ tower at 1955:37, reporting 10 miles north of the airport, over Oceanside harbor, for landing. The local controller (LC) instructed the pilot to enter right traffic for runway 24 and report downwind. The pilot of N1828A reported ready for takeoff on runway 24 at 1956:02, and was instructed to hold short of the runway. At 1957:32, the local controller cleared N1828A to taxi into position and hold. At 1958:08, the local controller cleared N1828A for takeoff, and the pilot acknowledged. At 1959:27, the local controller transmitted a traffic advisory to N7199U, advising of the Duchess on right crosswind turning to downwind, and in the same transmission also advised the Duchess pilot of the Mooney traffic inbound on the 45 degree entry to downwind. There was no response from either aircraft. According to the local controller, the aircraft collided immediately after this transmission. There was no further ATC contact.

CRQ airport is equipped with Automatic Surface Observation System (ASOS) weather reporting equipment. At 2000, the ASOS observation was 22007KT 190V250 8SM CLR 19/15 A2984. A special observation taken by tower personnel at 2013 reported 23008KT SKC 8SM 19/15 A2984.

2. Personnel Interviews

Christopher Phillips **CRQ Ground Controller**

Mr. Phillips entered on duty with the FAA on August 17, 1981, at Portland, Oregon ATCT (PDX). He became fully certified there on September 24, 1981. He transferred to Hillsboro, Oregon, ATCT (HIO) on May 27, 1984, and completed certification on August 8, 1984. He transferred to CRQ on September 17, 1995, and was certified on November 18, 1995. His medical certificate expires on May 31, 2003, and has no limitations or restrictions. Because of loss of currency, Mr. Phillips completed recertification on all positions on July 29, 2002, and satisfactorily completed both an over-the-shoulder monitoring session and a technical training discussion on September 15, 2002. He completed DBRITE certification on October 30, 1995. He has a private pilot certificate, but has not personally flown since approximately 1973. Mr. Phillips had no military ATC time before coming to work for the FAA.

On the day of the accident, Mr. Phillips was assigned a 1345 to 2145 shift, which was his fourth workday of a planned six day week that included an overtime day. He opened the tower along with the manager, and during the shift worked all positions in the cab at some point. He noted no problems with radio or radar equipment. Ms. Long came in at 1600. During the period leading up to the accident, Mr. Phillips was working GC, flight data (FD), clearance delivery (CD), and controller-in-charge (CIC) combined, while Ms. Long worked LC and cab coordinator (CC) combined. Mr. Phillips characterized the workload as moderate and routine. He was not aware of any unusual circumstances or events at the LC position that warranted his attention. A few minutes before the accident, Mr. Phillips took a weather observation, compared it to the ASOS observation, and recorded a new Automatic Terminal Information Service (ATIS) message. He first became aware of N1828A when the pilot called for taxi from Pinnacle Aviation to runway 24. The normal taxi route is via taxiway A, and that is what Mr. Phillips issued. Mr. Phillips stated that there was nothing unusual about the pilot's request, and he did not notice anything usual about the aircraft. N1828A is a trainer based at CRQ, and "we talk to him all the time." He stated that aircraft cleared to taxi to a runway at CRQ call the local controller from the runup area when ready for departure, and do not notify ground control when they leave GC frequency. Mr. Phillips had no further contact with N1828A.

During the period that the aircraft was taxiing, Mr. Phillips characterized the LC workload as light to moderate, with no unusual circumstances in the traffic pattern. There were "a few" clouds west of the airport that were close enough to be a factor for departures, and could cause pilots to turn somewhat earlier than normal if necessary to maintain adequate clearance. He stated that he overheard Ms. Long issuing a traffic alert

to an inbound aircraft, and after personally seeing the conflict on the DBRITE told her that "it was a good call." She sounded very professional and was doing "an excellent job." Mr. Phillips did not see N1828A take off. When the collision occurred, Mr. Phillips was in the NW corner of the tower cab performing minor maintenance on the flight strip printer. Ms. Long came toward the FD position and was looking out the window toward the downwind leg of the runway 24 traffic pattern. Mr. Phillips heard her issuing traffic information to N7199U and N1828A. He backed up to give her room, and looked out to where she was looking. He saw a flash of orange, and then saw the aircraft spiraling down. Mr. Phillips said, "I think we just had a midair" or something to that effect. He then called Rescue 7 (local airport rescue and firefighting service) to report the accident. He is unsure if they actually responded to the accident site. Ms. Long picked up the crash phone to report an Alert 3 (aircraft accident) and then paged the ATM to the cab to inform her of the collision. Mr. Phillips was relieved from the GC position by another controller, and then moved to the LC position to relieve Ms. Long. She was visibly shaken. Mr. Phillips then sent a departing helicopter to the accident area to check for survivors and report on the situation. The ATM began doing the emergency notification checklist, and Mr. Phillips notified the TRACON of the collision.

Mr. Phillips stated that Oceanside harbor is a normal reporting point for CRQ arrivals, and that he is familiar with the location. The usual instructions for arrivals from the northwest are to enter right traffic for runway 24 and either report right downwind or entering right traffic. The CRQ pattern altitude is 1500 feet, and departing aircraft are usually lower than that when crossing the downwind leg. Tower controllers track their traffic via pencil and paper, although Mr. Phillips stated that "everybody does it differently." Traffic conflicts between departures and arrivals are usually resolved during pattern entry by the arrivals.

When asked about use of the DBRITE, Mr. Phillips stated that he uses it on hazy days, or to verify position if an aircraft checks in "way far out" from the airport. He uses it to help establish appropriate pattern entry, and may use the radar to assist pilots in locating the airport if the weather is bad. When aircraft report in from the Oceanside area, he might or might not use the DBRITE to validate their position reports. Mr. Phillips believes that there is a way for the tower controllers to switch radar site selections for the DBRITE, but the Miramar site is the one normally used unless it is out of service. The location of the DBRITE within the cab is not optimal – in its current location, it blocks the local controller's view of traffic on left base to runway 24.

The tower is equipped with an audible alarm for conflict alert and minimum safe altitude alerts, and the alarm is tested every morning.

Mr. Phillips stated that he has had no specific training on aircraft performance, and isn't familiar with the performance characteristics of specific aircraft types. There are noise abatement procedures for CRQ departures, but they affect jets and other large aircraft and Mr. Phillips does not believe that those procedures played a role in this accident.

Ms. Victoria Long **CRQ Local Controller**

Ms. Long entered on duty with the FAA on February 29, 1976, in an administrative capacity. On March 12, 1979, she entered the "pre-developmental" program at Oakland Center, rotating through various temporary training assignments in order to prepare for developmental controller training. On March 22, 1980, Ms. Long was assigned to Hayward, CA ATCT (HWD), where she became fully certified on June 8, 1981. She transferred to Chino, CA ATCT (CNO) on July 26, 1981, and was reassigned to Brackett, CA ATCT (POC) on August 9, 1981. She was fully certified at POC on August 27, 1981. On February 24, 1991, Ms. Long transferred to Ontario TRACON, returning to POC on November 13, 1991. She was recertified on November 18, 1991. On July 23, 1995, Ms. Long transferred to CRQ ATCT, completing certification on September 18, 1995.

Ms. Long completed a skill check on the local control position on June 27, 2002, an over-the-shoulder review on September 15, 2002, a technical training discussion on September 15, 2002, and DBRITE certification on September 1, 1995. Her medical is current with no limitations or restrictions, and expires on March 31, 2003. Ms. Long has no pre-FAA military controller time or pilot ratings.

On the day of the accident, Ms. Long was scheduled to work a 1600-0200 shift (two hours of scheduled overtime) on her third day of a five day workweek. She worked various positions during the shift, and noted no equipment problems or other unusual conditions. At the time of the accident, Ms. Long was working the LC and CC positions combined, and Mr. Phillips was working GC/FD/CD/CIC combined. She characterized the workload as moderately busy, with no unusual operations. She first became aware of Mooney N7199U when the pilot called inbound for landing. She does not recall the specific report, other than that he was "somewhere northwest of the airport." She looked at the DBRITE, and believes that the Mooney was "tagged up" (identified on the DBRITE via call sign), so she thought that he must have been working with approach control. Ms. Long issued arrival instructions, and while she does not remember the exact words used, the normal clearance would be to make right traffic for runway 24 and report downwind. When a new aircraft calls, her normal practice is to note the aircraft's callsign on a pad of paper according to whether it is an arrival or departure, and whether it has been assigned a sequence or not. She put N7199U in the arrival list, and continued working her other traffic.

The pilot of N1828A called ready for departure, and Ms. Long instructed the pilot to hold short of the runway. She noticed on the DBRITE that N7199U had conflicting traffic, so she issued the pilot a traffic alert and the pilot acknowledged. She continued scanning the runway and traffic pattern, and cleared N1828A to taxi into position and hold. She asked a slower-speed departing aircraft to offset to the left of the departure centerline to provide more separation from N1828A's departure track, and asked an arriving aircraft to make S-

turns to increase spacing. She then cleared N1828A for takeoff. She handled some other aircraft, and then looked back to check on N1828A. Ms. Long didn't see the aircraft right away, but spotted it turning on to downwind. She thought it was "high", and may have topped the clouds off the end of the runway. She did not see the Mooney at that time. However, she issued traffic to the Mooney pilot and to the pilot of N1828A. She then saw the Mooney dropping straight down from "behind" N1828A, and N1828A started "drifting off" in what appeared to be level flight. She focused her attention on the Mooney, and saw it disappear behind a hill. When she looked back for N1828A, it was no longer visible.

When scanning for potential conflicts, Ms. Long stated that her priority is to watch the runway, the approach and departure ends, and then to scan the remainder of the traffic pattern and check her aircraft lists.

After the accident, she notified the ARFF services via the crash phone, and also called 911 to notify the local police and fire departments. She directed a departing aircraft to turn away from the crash site, and was then relieved from the position.

When asked if it is common for arriving aircraft to be "tagged up", Ms. Long stated that it was random. The TRACON is not required to coordinate the arrival of VFR aircraft that they have been working. She is not absolutely sure that N7199U was actually tagged: she noted the full callsign on her pad, but was not sure of she got the information from the radar tag or from the pilot's initial call.

Ms. Long stated that the DBRITE location in the cab puts it out of the line of sight of the majority of LC's traffic scan, so using the DBRITE for reference requires that controllers divert their attention from the traffic in the pattern and on the runway.

Ms. Long stated that the recommended pattern altitude at CRQ is 1500 feet, and that it is her understanding that pilots are expected to enter the downwind leg on a 45 degree entry between midfield and the departure end of the runway. She thought that the clouds off the end of the runway may have been between the Mooney and N1828A at some point, and may have prevented the two aircraft from seeing each other.

Ms. Long stated that she has had no specific training on aircraft performance other than general observations she has made during her career.

When asked if anything could have prevented this accident, Ms. Long suggested that staffing the cab coordinator position separately is helpful, because the coordinator has more time to monitor the DBRITE and assist LC in noticing traffic conflicts.

3. Radar Data

Examination of radar data provided by SCT showed that N1828A's first radar target appeared at 1958:39, and the aircraft passed the departure end of the runway at 1959:02.

N1828A immediately turned right crosswind and crossed the arrival track of N7199U at about 1959:36, reporting 1400 feet. N1828A continued roughly northbound, then entered a rapid descent and struck the ground east of Cannon Road. The last radar target, received at 1959:48, showed the aircraft descending through 500 feet.

N7199U followed the coastline from Oceanside to a point about three miles northwest of CRQ. The aircraft then turned eastbound and tracked toward the right downwind leg for runway 24. At 1959:36, N7199U crossed the path of N1828A, reporting 1300 feet, and the two aircraft collided. N7199U entered a rapid descent, striking the ground approximately 300 yards from the estimated collision point at 1959:43.

Figure 1 shows an overview of the radar targets for N7199U and N1828A in the period just before the collision. Figure 2 shows a closer view of the radar data.

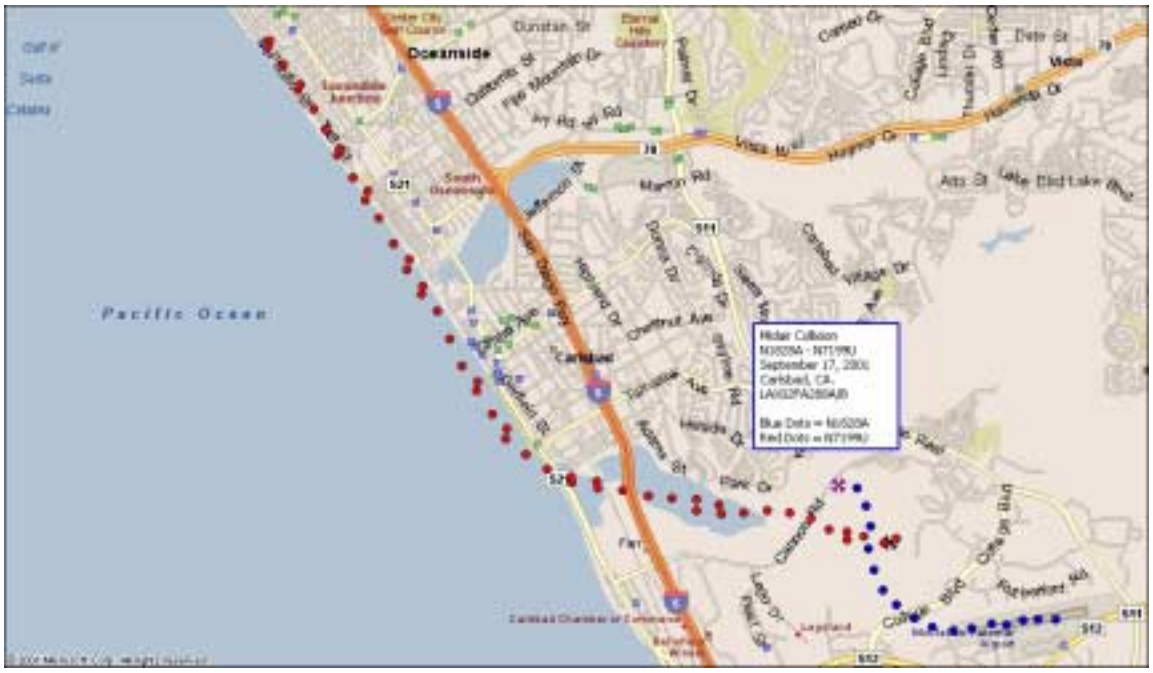

Figure 1. Overview of radar tracks

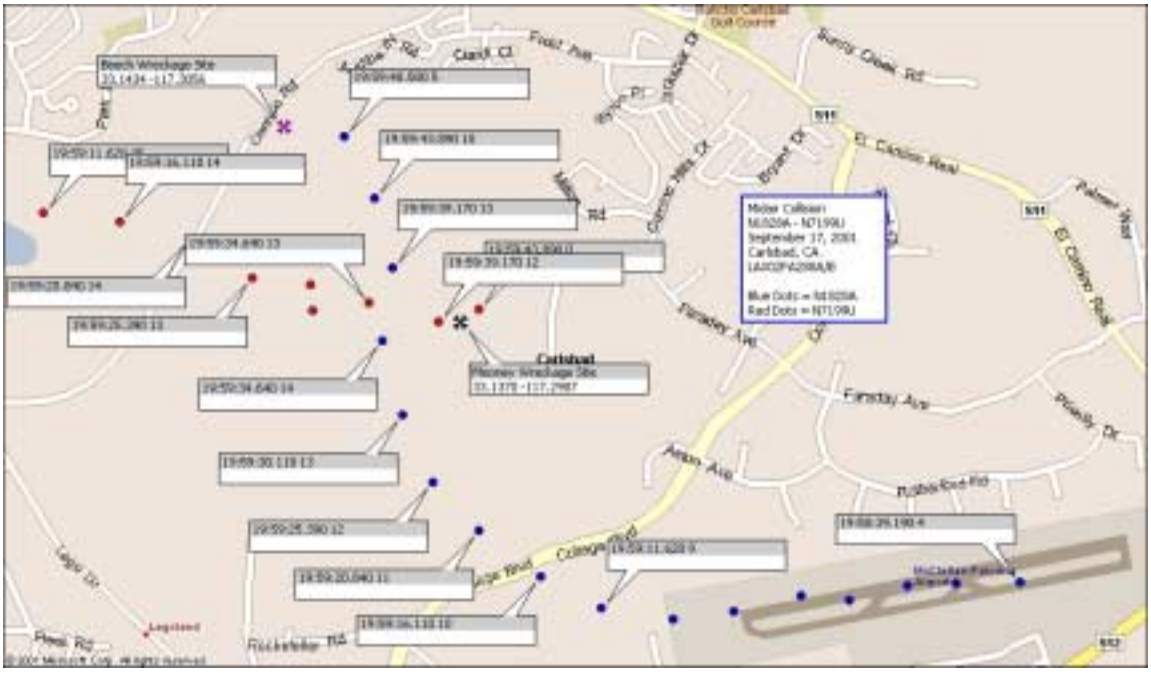

Figure 2. Closer view of targets in the area of the collision.

[redacted]
Scott Dunham
ATC Group Chairman

Attachments:

ARTS CDR extract, Camp Pendleton and Miramar radar sites 1945-2005 UTC
CRQ LC and GC transcripts, 1947 – 1959 UTC
Medical clearance forms
CRQ tower cab diagram
CRQ position logs, LC, GC, CC, FD, CIC
Tower hourly operations count, 9/17/02
CRQ daily record of facility operation, 9/17/02
Controller statements
ASOS weather observations