AVIATION OCCURRENCE REPORT

RISK OF COLLISION

BETWEEN
WILDCOUNTRY AIRWAYS LTD
PIPER PA-31-350 CHIEFTAIN C-FPIO
AND
FAST AIR LTD
PIPER PA-31-325 NAVAJO C-GMDL
DRYDEN, ONTARIO 18 nm NW
15 FEBRUARY 1996

REPORT NUMBER A96C0018

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

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Summary

The Wildcountry Airways Ltd Chieftain was on an instrument flight rules (IFR) flight from Red Lake, Ontario, to Atikokan via airway Amber 4 at an assigned altitude of 7,000 feet above sea level (asl). The Chieftain was radar identified by the Kenora Sector controller and the altitude was verified. Approximately 20 nautical miles (nm) northwest of Dryden, the pilot observed, at his two o'clock position, another aircraft which appeared to be at the same altitude and flying on a collision course. The pilot of the Chieftain transmitted a position report on 126.7 MHz in order to alert the other aircraft of his presence. However, radio contact was not established, and he took evasive action to avoid a collision. The conflicting aircraft was a Fast Air Piper Navajo which was on a visual flight rules (VFR) flight from Winnipeg, Manitoba, to Sioux Lookout, Ontario, at a planned altitude OF 7,500 feet asl. The pilot of the Navajo did not see the conflicting traffic until the Chieftain had taken evasive action.

Analysis of the radar data revealed that the aircraft were about one quarter of a mile apart laterally and 200 feet vertically when the two tracks crossed. The pilot of the Chieftain reported that he flew through the wake of the Navajo during his avoidance manoeuvre.

Ce rapport est également disponible en français.

Other Factual Information

The weather was clear in the area of the occurrence.

This occurrence took place in Class E airspace within the altimeter setting region. Class E airspace is controlled airspace where air traffic control (ATC) separation is provided only to aircraft operating under IFR. The *Aeronautical Information Publication* (AIP) defines the altimeter setting region as an airspace of defined dimensions below 18,000 feet asl within which the altimeter of an aircraft en route shall be set to the current altimeter setting of the nearest station along the route of flight, or where such stations are separated by more than 150 nm, the nearest station to the route of flight. For both occurrence aircraft, the nearest station was Dryden.

The altimeter setting is the pressure that when set on the altimeter will cause the altimeter to read aerodrome elevation when the aircraft is on the ground at the aerodrome. The altitude obtained using the altimeter setting is called the indicated altitude. If the altimeter setting is not set as required, an erroneous indicated altitude is displayed on the instrument. An altimeter setting which is too high results in an altimeter reading that is too high; that is, the aircraft would actually be at a lower altitude than the altimeter indicates.

Both aircraft were operating in the altimeter setting region and were required by their respective routings to have their altimeters set to the Dryden altimeter setting. The pilot of the Chieftain re-set his altimeter as required at the mid-point of his route between Red Lake and Dryden to the Dryden altimeter setting of 30.08 inches of mercury. The pilot of the Navajo had not reset the altimeter after departing Winnipeg and still had the Winnipeg setting of 30.38 set on the altimeter. Each .10 inches of mercury changes the altimeter by approximately 100 feet.

ATS Sector control positions may be operated by either one or two controllers, depending on workload. When two controllers are working, controlling tasks are divided between two positions: the radar controller performs radar control responsibilities, and the data controller performs administrative control activities such as coordinating flight plans between sectors and updating the flight progress strips. At the time of the occurrence, the Kenora Sector was being operated by one controller, who was performing the duties of both positions. His workload was assessed by his supervisor as moderate.

The Chieftain was under the control of the Kenora Sector and was transponding a discrete code that was providing altitude information. Thus, the digital target symbol of the Chieftain that was displayed on the controller's monitor was a "correlated target" symbol that had an associated full data block, which included the altitude of the aircraft. The Navajo was a VFR flight and was not controlled by ATS. The Navajo was transponding the VFR code 1200, a non-discrete code, that was providing altitude information. Thus, the digital target symbol of the Navajo that was displayed on the controller's monitor was an "uncorrelated target" symbol, and had an associated limited data block but included the altitude of the aircraft.

At the time of the occurrence, the controller was engaged in data controller tasks and had reduced his radar controller tasks correspondingly by not monitoring uncorrelated target symbols. The controller did not observe the uncorrelated target symbol of the Navajo merge with the target of the Chieftain until the pilot of the Chieftain reported his avoidance action.

The *Air Traffic Control Manual of Operations* (MANOPS), TP703E, specifies the rules, procedures, and separation minima in the control of air traffic. Section 165.3 of MANOPS states that the controller must provide traffic information to radar-identified IFR aircraft if the targets appear likely to merge with another radar-observed target. The controller does not have to apply this procedure if the aircraft are known to be separated by more than the appropriate vertical separation minimum or if precluded by higher priority duties. Sections 131.1 and 131.2 of MANOPS state that the controller must give priority to the provision of control service over other services, and make every effort to provide the other services to the fullest possible extent.

The AIP summarizes information concerning rules of the air and procedures for aircraft operation in Canadian airspace. In the "Rules of the Air and Air Traffic Services" (RAC) section, paragraph 5.7, the AIP states that when operating in areas where radar coverage exists, aircraft operating in accordance with VFR and equipped with a transponder may request traffic information if traffic and ATC workload permit. The Navajo was transponder equipped and transponding the VFR transponder code 1200, but the pilot had not requested en route radar surveillance. RAC, paragraph 6.2, states that an IFR clearance provides separation between IFR aircraft only and that pilots operating IFR must be aware of the need to provide their own separation visually from VFR aircraft when operating in VFR conditions.

Air Navigation Order (ANO) Series V, No. 2, specifies aircraft cruising altitudes appropriate to aircraft track. Cruising altitudes for the tracks of the occurrence aircraft are specified as odd thousands of feet for IFR aircraft and odd thousands of feet plus 500 feet for VFR aircraft. Both aircraft were flown at indicated altitudes appropriate to direction of track.

The AIP, in RAC, Section 4.5.6, NOTE, states the following: "Pilots operating VFR en route in uncontrolled airspace or VFR on an airway should continuously monitor 126.7 MHz when not communicating on the MF [mandatory frequency] or the ATF [aerodrome traffic frequency]." This guidance is contained in a section entitled "Airport Operations" and is not found in the "VFR Enroute Procedures" section. Enroute Low Altitude charts contain the note that, "Whenever practicable 126.7 should be continuously monitored when VFR in controlled airspace unless another frequency is more appropriate." Enroute Low Altitude charts are designed for IFR use and are not commonly used by VFR pilots. The pilot of the Navajo was monitoring 122.8 MHz, which many pilots operating VFR in northwestern Ontario use for en route communication.

Analysis

This analysis will discuss the altimeter settings of the two aircraft, and assess the air traffic control procedures and pilot actions.

When the Navajo arrived in the vicinity of Dryden, the pilot did not reset the altimeter from 30.38 to the appropriate setting of 30.08. Consequently, although the pilot of the Navajo flew at a VFR cruising altitude of 7,500 feet with reference to the altimeter, the aircraft was actually flying at about 7,200 feet asl. The vertical distance between the two aircraft was about 300 feet less than the required vertical distance of 500 feet.

Because the controller was performing the duties of both radar and data controller, he prioritized his tasks, giving higher priority to the data controller tasks and lower priority to the provision of traffic information. Thus, he spent little time monitoring the uncorrelated digital target symbols. This prioritization is permitted by the ATC procedures specified in MANOPS. As a consequence, he did not provide traffic information to the Chieftain. The pilot of the Chieftain, while on an IFR flight plan, correctly maintained a visual lookout, saw the conflicting traffic, and took evasive action. The pilot of the Navajo chose not to ask for en route ATS radar surveillance. This decision precluded the verification of the altitude of the Navajo by the Kenora Sector controller, which probably would have prevented the altitude conflict. The lack of guidance on the use of the recommended en route frequency of 126.7 MHz reduced the possibility of immediate communication between the pilots when the altitude conflict occurred.

Findings

1. The pilot of the Navajo did not reset the aircraft's altimeter to the nearest station, as required, as the aircraft progressed along its route.

2. Because of the incorrect altimeter setting, the Navajo was flying about 300 feet lower than the indicated altitude.

3. When the aircraft passed, the vertical distance between them was about 300 feet less than the required vertical distance of 500 feet.

4. The Kenora Sector controller was performing the combined duties of the radar controller and the data position.

5. The Kenora Sector controller prioritized his control responsibilities and did not monitor uncorrelated digital target symbols.

6. The Kenora Sector controller did not provide traffic information to the Chieftain nor did MANOPS obligate him to do so.

7. The pilot of the Navajo did not request en route radar surveillance and, therefore, did not get confirmation of altitude or receive traffic information.

8. The pilot of the Navajo did not see the other aircraft prior to the occurrence.

9. The pilot of the Navajo did not monitor the recommended en route frequency of 126.7 MHz in controlled airspace.

10. Guidance on the use of the en route frequency in controlled airspace is not readily available to VFR pilots.

Causes and Contributing Factors

The Navajo came within 200 vertical feet of another aircraft as a result of the pilot not resetting his altimeter to the pressure setting of the nearest station along his route of flight, as set out in the AIP. Contributing to this occurrence were ATS procedures that gave controllers the discretion to assign data services a higher priority than that assigned to the provision of traffic services. Also contributing to this occurrence were the fact that directions to VFR pilots on the use of radio frequencies are not well publicized and the Navajo pilot did not request en route radar surveillance.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 20 December 1996.