Aviation Safety Investigation Report 199700925

Cessna Aircraft Company
310R
British Aerospace Plc
BAe 146-300

24 March 1997

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Aviation Safety Investigation Report

199700925

The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

Occurrence Number: 199700925 **Occurrence Type:** Incident
Location: 28km SW Coffs Harbour, VOR
State: NSW **Inv Category:** 4
Date: Monday 24 March 1997
Time: 1938 hours **Time Zone** ESuT
Highest Injury Level: None

Aircraft Manufacturer: British Aerospace Plc
Aircraft Model: BAe 146-300
Aircraft Registration: VH-EWI **Serial Number:** 3171
Type of Operation: Air Transport Domestic High Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Coffs Harbour NSW
Departure Time: 1936 ESuT
Destination: Sydney NSW

Aircraft Manufacturer: Cessna Aircraft Company
Aircraft Model: 310R
Aircraft Registration: VH-LGK **Serial Number:** 310R0890
Type of Operation: Charter Unknown
Damage to Aircraft: Nil
Departure Point: South Grafton NSW
Departure Time: 1920 ESuT
Destination: Kempsey NSW

Approved for Release: Tuesday, November 25, 1997

FACTUAL INFORMATION

An instrument flight rules (IFR) Cessna 310 (C310) departed South Grafton for Kempsey on climb to 7,000 ft. The pilot in command (PIC) had originally planned to operate from South Grafton to Coffs Harbour and then to Kempsey. He had advised flight service (FS) of the amended plan prior to departure. FS had passed the amended flight plan details to Coffs Harbour tower.

The operator at the FS position responsible for the area had recently conducted a handover/takeover. Two FS areas were combined on the console. This was normal practice when traffic numbers reduced to a level that could be managed by a single operator. Traffic was light to moderate across the combined areas.

The PIC of the C310 reported a departure time of 20 (0820 UTC) and on climb to 7,000 ft to the FS operator. The departure report transmission was the first to be received by the FS operator on this shift and he was unable to clearly hear the departure report. He increased the air-ground volume and requested the PIC of the C310 to confirm the aircraft's planned level. The FS operator did not request the PIC to repeat the departure report. The FS operator believed the departure time was 12 after he checked the console clock to confirm the time. He then annotated the flight progress strip (FPS) departure box for the flight of the C310 with 12. (The console clock was adjusted and operating correctly and these transmissions were made at a time when the clock would have displayed 0821.)

The FS operator co-ordinated the departure time and level for the C310 with the aerodome controller (ADC) at Coffs Harbour tower. Based on the departure time of 0812 and the time interval for the flight of the C310, the FS operator calculated that the aircraft's estimate for Kempsey was 0838. The ADC had the same estimate, based on the departure report from the FS operator. The aircraft's actual estimate, based on the correct departure time of 0820, was 0846.

The ADC was responsible for providing separation between IFR aircraft in controlled airspace (CTA) from ground level to 10,000 ft. Coffs Harbour tower controllers used visual and procedural methods to separate aircraft in CTA. There was radar coverage down to approximately 6,000 ft in the vicinity of Coffs Harbour, but there was no radar display installed in the tower. Radar was used by controllers located in Brisbane for separation in the CTA above 10,000 ft in the Coffs Harbour area.

The track of the C310 crossed the CTA steps to the south-west of Coffs Harbour and the PIC required a clearance from the ADC. While co-ordinating the departure from South Grafton, the FS operator asked the ADC if he required the PIC to transfer to the Coffs Harbour frequency immediately. The ADC suggested that the PIC remain on the FS frequency.

The Aeronautical Information Publication (AIP) states that "Except in special circumstances, pilots of aircraft are required to comply with the radio communication requirements appropriate for the "Classes of Airspace-Services and Requirements" table. The table indicates that the pilot of an IFR aircraft operating outside controlled airspace (OCTA) must report to air traffic control, prior to entering CTA, and request a clearance. The PIC had conducted similar flights and had transferred to the ADC's frequency to obtain a clearance through controlled airspace. Therefore, he was expecting to transfer to the ADC frequency when the aircraft was west of Coffs Harbour. There was no equipment limitation or other reason for the PIC of the C310 not communicating directly with the ADC.

The ADC issued a clearance for the aircraft to track from Grafton to Kempsey at 7,000 ft and requested the FS operator to advise him when the PIC required descent. The FS operator issued the clearance to the PIC. The PIC readback the assigned level and queried the FS operator regarding when to transfer to the Coffs Harbour frequency. The FS operator advised that there was no requirement to transfer frequency at this stage, and requested the PIC to advise the aircraft's descent point.

A short time later a new operator assumed responsiblity for the FS position. The PIC of the C310 requested a change of level to 6,000 ft and the FS operator co-ordinated the change in level with the ADC. The ADC recleared the C310 at 6,000 ft and this clearance was issued by the FS operator. The PIC reported that the aircraft's descent point was 26 NM by distance measuring equipment (DME). The FS operator advised the ADC of the aircraft's descent point.

The ADC was expecting a BAe146, operating a regular public transport flight, to taxi at Coffs Harbour for departure and assessed that the flight may conflict with the C310. The ADC asked the FS operator "Where is he now please" (meaning the C310). The FS operator, in turn, requested the PIC of the C310 to report his DME distance. The PIC advised that the aircraft was at 19 DME. This distance was consistent with the expected position of the C310 based on the incorrect departure time and estimate for Kempsey. The ADC believed that the aircraft was to the south-west of Coffs Harbour. The ADC issued a clearance for the C310 to leave the CTA on descent, which was relayed by the FS operator to the PIC. The aircraft's actual position was to the north-west of the aerodrome, outside controlled airspace and approaching the CTA steps.

The BAe146 had planned to Sydney and the intended track crossed the track of the C310 approximately 17 NM south-west of Coffs Harbour. The ADC co-ordinated a departure clearance for the BAe146 with Brisbane Sector 15 (SEC15) and advised the controller that the aircraft would depart at 36. The SEC15 controller issued departure instructions to the ADC and the crew of the BAe146 was subsequently issued a clearance to depart Coffs Harbour on climb to an amended level of FL160.

Using procedural control, the ADC was required to issue instructions to the crews of aircraft to establish and maintain either a lateral, vertical or longitudinal separation standard. There were a number of procedures which could have been used by the controller to separate the C310 and the BAe146.

The BAe146 departed and the crew reported their departure to the ADC. The SEC15 controller contacted the ADC and advised him that there was an aircraft on radar to the southwest of Coffs Harbour at 16 NM, that had just entered the CTA step. The radar display had displayed a secondary surveillance radar (SSR) code 2000 squawk indicating that the unknown aircraft was at 6,000 ft. The SEC15 controller asked the ADC whether he was aware of any other aircraft. The ADC advised that he was aware of a C310 estimating Kempsey at 38, and as the time was then 38, the C310 should be OCTA. The ADC then requested the crew of the BAe146 to report their level. The crew reported that the aircraft had left 7,000 ft.

There had been no instructions by the ADC to establish a lateral or time standard to separate the aircraft. The BAe146 had passed through the level of C310 while both aircraft were in the area of conflict. There had been a breakdown of separation.

ANALYSIS

It was probable that the FS operator did not hear the departure time and estimated the time incorrectly after checking the console clock. The operator's misreading of the clock may have been due to the similarity of the last two digits and the transposition of the "2" and "1". He only requested the PIC to repeat the aircraft's intended level and consequently missed an opportunity to confirm the departure report. Had the FS operator requested the PIC to repeat the entire departure report it was likely that the error would have been detected.

The ADC sought to establish the position of the C310 through the FS operator. However, the ADC did not explicitly request "the pilot to report position". The ADC used imprecise and non-standard phraseology to the FS operator. Had the ADC used standard phraseology it was likely that the FS operator would have requested and obtained a position report from the pilot consisting of a distance and direction from Coffs Harbour. This information would have clarified the position of the C310 for the ADC. Consequently, he would have issued instructions to maintain separation. However, the report of "19 DME" from FS confirmed the ADC's expectation that the C310 was to the south-west of Coffs Harbour, approaching the descent point and would be shortly leaving CTA.

The FS operator requested a DME distance from the PIC when the ADC asked where the aircraft was. By inference, the request was for a position report; yet, the FS operator reduced the request to one element of a position report. Consequently, another opportunity was lost to compare the actual and expected positions of the aircraft.

The PIC was prepared for and expected to change frequency from FS to Coffs Harbour Tower frequency to obtain a clearance. Had the FS operator and the ADC operated in accordance with standard procedures, the PIC would have transferred to the tower and communicated directly with the ADC. This would have reduced the possibility of the misunderstanding of the position information requested by the ADC from the pilot.

If the PIC had transferred to the tower frequency it is likely that the ADC would have requested the PIC to either report leaving CTA, or a level or a DME distance that would have established the aircraft OCTA, before clearing the crew of the BAe146 to depart. Alternatively, the ADC would have assumed that they were both in CTA and would have issued appropriate instructions to separate the aircraft. Either of these measures would have ensured the two aircraft remained separated.

The operation of the SSR transponder in the C310, and the consequent display and the recognition of the symbol on the Brisbane sector radar display, by the controller, provided an increased level of safety for the air traffic system.

SIGNIFICANT FACTORS

1. The FS operator misheard the departure report and did not request the PIC of the C310 to repeat the report.

2. The FS operator misread the console clock.

3. The ADC did not use correct phraseology when requesting the position of the C310 from the FS operator.

4. The FS operator did not request the PIC to "Report position".

5. The FS operator and the ADC did not follow standard operating procedure when they agreed to leave the PIC of the C310 on the area frequency.