Australian Government
Australian Transport Safety Bureau

Loss of separation between a foreign military Boeing 737 and a Cessna 206, VH-RAP

Darwin Airport, Northern Territory, 12 March 2014

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Addendum

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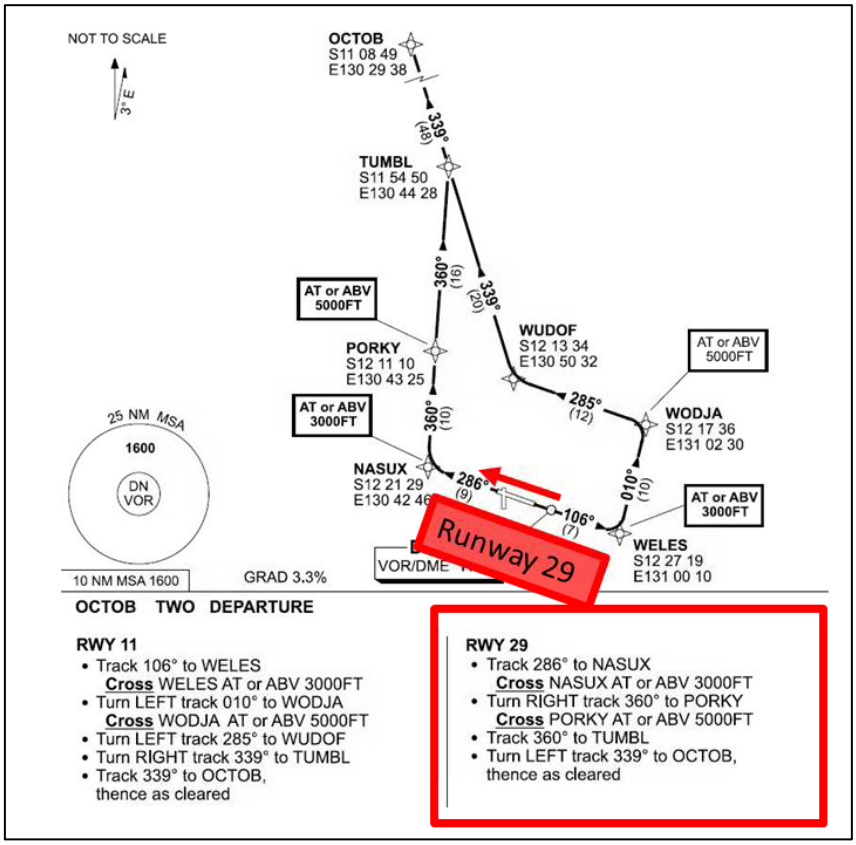
What happened

On 12 March 2014, at about 1211 Central Standard Time (CST), the crew of a United States military Boeing 737 aircraft, callsign 'Convoy 7186', requested a clearance from the air traffic control (ATC) planner at Darwin Airport, Northern Territory, for a flight to Kadena Air Base, Japan via the 'A461' air route.[1]

The planner cleared Convoy 7186 to track to the destination via the 'OCTOB' waypoint at 5,000 ft above mean sea level (AMSL) and for an 'OCTOB TWO' standard instrument departure (SID)[2] from runway 29 (Figure 1). The crew read back that they were cleared via the OCTOB TWO departure up to 5,000 ft. The planner advised that a read back of OCTOB as the first waypoint was also required. The co-pilot looked up the departure plate for the OCTOB TWO departure and reported that this was an unusual clearance, with the first point being OCTOB rather than the intermediate waypoints as depicted in the procedure chart. The co-pilot then read back 'OCTOB as OCTOB TWO departure'.

Figure 1: Darwin OCTOB TWO SID



Source: Airservices Australia

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1 Waypoint OCTOB, at 80 NM from Darwin, was the first tracking point on the A461 air route.

2 When departing from runway 29, the SID required pilots to maintain runway heading for 9 NM prior to conducting a right turn to the north, with a requirement to reach 3,000 ft by 9 NM at waypoint NASUX.

Due to the perception that this clearance was non-standard, at about 1215, the co-pilot again contacted the planner and requested clarification that their first point was OCTOB. The planner reiterated the clearance and confirmed that the first cleared point on the flight planned route was OCTOB, maintain 5,000 ft, and that the original departure was an OCTOB TWO departure type. The crew acknowledged the clearance, but did not read back the information. The co-pilot reported that this verified that they were to track direct to OCTOB and not fly the actual departure procedure in its entirety.

At about 1245, the tower controller cleared the pilot of a Cessna 206 aircraft, registered VH-RAP (RAP), for take-off from runway 29 at Darwin, then to turn right onto a heading of 320° and climb to 3,000 ft AMSL.

During the taxi, the co-pilot of Convoy 7186 briefed the aircraft commander on the departure clearance. The commander was concerned that the clearance was unusual and attempted to verify the clearance with ATC. At about 1246, while approaching the holding point for runway 29, the commander of Convoy 7186 contacted the tower and requested an 'IFR release'.[3] The tower controller asked the crew to repeat the call. The commander then stated that they wanted to verify the clearance was 'direct OCTOB on the go, up to 5,000'. The tower controller replied 'Affirm', and directed the crew to contact the approach controller when airborne.

At about 1248, the approach controller identified RAP on radar, and instructed the pilot to maintain 2,000 ft. The approach controller reported that, having noted that the next aircraft was Convoy 7186 on an OCTOB TWO departure, he elected to keep RAP at 2,000 ft to guarantee separation; rather than the 3,000 ft altitude originally cleared.

Shortly after, and following take-off from runway 29, the crew of Convoy 7186 contacted the approach controller and advised they were passing 2,000 ft on climb to 5,000 ft and tracking direct to OCTOB (a heading of about 339°).

The approach controller immediately issued a safety alert[4] and advised the crew that there was a visual flight rules (VFR) aircraft at 2,000 ft about 1 NM ahead, and that Convoy 7186 was cleared on an OCTOB TWO SID. The crew replied, 'Negative, it's direct to OCTOB on the go' and advised that they had the VFR aircraft in sight. The approach controller advised the crew to maintain separation with the VFR aircraft and suggested that the best rate of climb be maintained. The crew then advised that they were on climb to 5,000 ft. The controller alerted RAP to the Boeing 737 overflying and advised that they were maintaining separation with RAP. The controller then cleared Convoy 7186 to continue tracking direct to OCTOB and to climb to flight level (FL)[5] 130.

The flight crew of Convoy 7186 reported that they did not receive a traffic collision avoidance system (TCAS) advisory or resolution at any stage and maintained visual separation with RAP at all times.

A subsequent review of the radar data indicated that, at about 1250, the Boeing 737 was about 1.9 NM horizontally from the Cessna 206 when both aircraft were at 2,000 ft AMSL, as Convoy 7186 passed behind RAP. Separation subsequently reduced to about 1 NM before vertical separation of 1,000 ft was achieved at about 1251, as Convoy 7186 passed abeam and to the right of RAP.

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[3] The term 'IFR release' and a number of other phrases that were used were not defined in the Aeronautical Information Publication (AIP).

[4] The provision of advice to an aircraft when an air traffic services officer becomes aware that an aircraft is in a position which is considered to place it in unsafe proximity to terrain, obstructions or another aircraft.

[5] At altitudes above 10,000 ft in Australia, an aircraft's height above mean sea level is referred to as a flight level (FL). FL 130 equates to 13,000 ft.

Department of Defence investigation

The Department of Defence conducted an internal investigation into the incident and identified the following issues:

- The controller in the planner position stated that the clearance issue process for Convoy 7186 was more laboured than normal as the crew did not read back the initial clearance and then queried the clearance. The planner reiterated the clearance in an attempt to alleviate any confusion. While the clearance was not read back by the crew a second time, the planner felt confident that the clearance had been understood as the crew had acknowledged the explanation with their callsign.
- The SID was not flown as per the ATC clearance issued by the planner. The clearance for the SID was not cancelled or changed at any time. The Manual of Air Traffic Services (MATS) and the Aeronautical Information Publication (AIP) specified the words that were required to effect a change of a clearance; 'cancel', 'recleared' and 'amended'. These words were not used by the tower controller.
- When the crew of Convoy 7186 questioned their initial tracking clearance, the use of 'Affirm' by the tower controller was deemed to be an ambiguous response. The tower controller believed that the crew were only querying their first tracking point and not the SID, and while the controller did not change the aircraft's clearance, the response provided may have led the crew to believe that the clearance had been altered. The pilot's professional and confident tone reassured the controller that the crew understood the remainder of the clearance.
- The approach controller immediately recognised the conflict and responded appropriately to the situation. These actions prevented the situation from developing further.

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Department of Defence

As a result of this occurrence, the Department of Defence has advised the ATSB that they are taking the following safety actions:

- In future, foreign military aircraft will be issued with departure instructions to maintain runway heading and then be provided with radar vectors to intercept track in order to avoid any potential for crews to misinterpret their departure tracking.
- A safety awareness poster was completed and displayed in prominent locations for Darwin based controllers to view, with the important facts and learning points from the incident.

US Military flight crew unit

The unit to which the pilots are attached will review current procedures and where necessary improve training and standardisation.

Safety message

This incident highlights the importance of both flight crew and ATC using standard phraseology in all radio communications. If there is any uncertainty about a clearance or instruction issued by ATC, or about a broadcast or request by flight crew, clarification should be sought to remove any ambiguity or misunderstanding.

General details

Occurrence details

Date and time:	12 March 2014 – 1250 CST	
Occurrence category:	Serious incident	
Primary occurrence type:	Loss of separation	
Location:	Darwin Airport, Northern Territory	
	Latitude: 12° 24.88' S	Longitude: 130° 52.60' E

Aircraft details: VH-RAP

Manufacturer and model:	Cessna Aircraft Company 206	
Registration:	VH-RAP	
Serial number:	U20602989	
Type of operation:	Charter – passenger	
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

Aircraft details: Convoy 7186

Manufacturer and model:	The Boeing Aircraft Company 737	
Callsign:	Convoy 7186	
Type of operation:	Military (foreign)	
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.