



**Australian Government**

**Australian Transport Safety Bureau**

# Radio failure involving a Mitsubishi MU-2B, N64MD

Townsville Airport, Queensland, 5 April 2013

**ATSB Transport Safety Report**  
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#### **Addendum**

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# Radio failure involving a Mitsubishi MU-2B, N64MD

## What happened

On 5 April 2013, at about 0830 local time,<sup>1</sup> a Mitsubishi MU-2B aircraft (Figure 1), with United States registration, N64MD, departed Honiara, Solomon Islands with two pilots onboard. The purpose of the flight was to ferry the aircraft from Honiara to Essendon, Victoria, with an intermediate stop at Townsville, Queensland.

The pilot in command (PIC) reported that the aircraft's high frequency (HF) radio was unserviceable and their position reports were relayed to air traffic control (ATC) via other aircraft operating in the area. However, when about 150 NM from Townsville, the crew were able to communicate directly with ATC using the very high frequency (VHF) radio.<sup>2</sup>

The aircraft landed at Townsville and was refuelled. The PIC also submitted a flight plan to Airservices Australia providing details on the aircraft's planned route and cruise altitude.

**Figure 1: A Mitsubishi MU-2B aircraft**



Source: Hans Grubb

At about 1354 Eastern Standard Time,<sup>3</sup> the flight departed under the instrument flight rules (IFR). The aircraft had full fuel on board, which included 341 L in each wing tip tank and 379 L in a ferry fuel tank installed behind the pilots' seat.

Shortly after takeoff, as the landing gear was retracted, both pilots heard a considerable amount of static in their headsets.

Townsville Tower ATC then instructed the crew to transfer to the Townsville Approach frequency. The PIC read back the instruction; however, ATC advised that he was transmitting carrier wave<sup>4</sup> only (no voice communications were heard). Air traffic control informed the pilot that, if he could

<sup>1</sup> Honiara local time was Coordinated Universal Time (UTC) + 11 hours.

<sup>2</sup> The aircraft was equipped with two VHF radios (COMM 1 and COMM 2).

<sup>3</sup> Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

<sup>4</sup> The transmitted radio wave, without voice, is heard.

hear ATC, to set the aircraft transponder to 'squawk ident'<sup>5</sup> and to try a different radio or frequency.

About 5 minutes after the aircraft departed, Townsville ATC offered the crew the option of returning to Townsville. The PIC reported that they could hear the transmissions made by Townsville ATC, but were unable to return to Townsville as the fuel quantity in each wing tip tank was in excess of the maximum landing limitation<sup>6</sup> and the aircraft was carrying additional fuel in the ferry tank. The PIC was unable to advise Townsville ATC of this as the aircraft's VHF radios were now inoperable. Consequently, the PIC elected to continue the flight as per the submitted flight plan.

The PIC attempted to resolve the radio problem by turning the radios off and on, changing frequencies, transferring between COMM 1 and COMM 2, recycling the radio circuit breakers, changing headsets, and using the handheld microphone, but without success. He also considered changing the transponder to the radio failure code of '7600',<sup>7</sup> however, elected to continue with the code previously assigned as the aircraft had already been identified on radar by Townsville ATC.

Townsville ATC continued attempts to re-establish communications with the crew and declared an uncertainty phase (INCERFA).<sup>8</sup> About 7 minutes after departing, Townsville ATC again offered the crew the option to return to Townsville.

As the aircraft approached the Townsville/Brisbane airspace boundary, Townsville ATC advised the crew that they would not be allowed to enter Brisbane airspace without a serviceable radio and instructed them to conduct right hand orbits and return to Townsville.

At about 1408, the aircraft entered Brisbane airspace and was transferred from Townsville ATC to Brisbane Centre ATC. Brisbane ATC attempted to establish communications with the aircraft and suggested that the crew try the HF radio. The aircraft was observed on Airservices Australia radar climbing to the planned level of flight level (FL)<sup>9</sup> 210.

During the cruise, the PIC also attempted to use his mobile telephone; however, there was no signal.

At about 1503, when 250 NM south of Townsville, the aircraft left radar coverage.

Brisbane ATC continued attempts to re-establish communications and left voice and text messages on both pilot's mobile telephones and utilised two overflying aircraft. The Australian Search and Rescue (AusSAR) were also briefed on the uncertainty phase.

At about 1625, the aircraft was transferred from Brisbane Centre ATC to Melbourne Centre ATC. Melbourne Centre continued attempts to contact the aircraft.

When about 230 NM north of Essendon, the PIC established communications with the crew of an overflying aircraft, who contacted Melbourne Centre on his behalf. Melbourne Centre provided the PIC with a different frequency and at 1731, communications with ATC were re-established. The uncertainty phase was cancelled and the flight continued to Essendon and landed without further incident.

The crew were not in normal communications with ATC for about 3 hours and 35 minutes.

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<sup>5</sup> A phrase used by ATC to ask a pilot to activate the identification feature on the aircraft's transponder. Once the feature is activated, ATC can immediately establish the aircraft's identity.

<sup>6</sup> The aircraft flight manual stated that, for landing, the maximum fuel quantity in each tip tank was 227 L.

<sup>7</sup> Selecting the code '7600' on the transponder indicates to ATC that the aircraft's radios have failed.

<sup>8</sup> Aeronautical Information Publication (AIP) GEN 3.6 Section 5 paragraph 5.1.1: an uncertainty phase may be declared when an aircraft is known or believed to be subject to irregular operations; namely, when it is experiencing navigational, altitude or communications difficulties.

<sup>9</sup> 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 210 equates to 21,000 ft.

The PIC reported that, throughout the duration of the flight, he continued to broadcast on the Brisbane Centre and Melbourne Centre frequencies.

**Radio examination**

A subsequent examination of the radio determined that water leakage from a small access door had corroded two main radio isolator breakers/switches, which subsequently resulted in the radio failure. The aircraft had been left outside for some time and subjected to tropical storms.

**Communications failure**

The En Route Supplement Australia (ERSA) stated that, in the event of a radio failure in controlled airspace, pilots should:

- squawk 7600
- listen out on the automatic terminal information service (ATIS) and/or voice modulated navigation aids
- transmit their intentions and make normal position reports (assume the radio transmitter is operating and prefix calls with ‘transmitting blind’).

The ERSA also provides guidance for aircraft operating in visual and instrument meteorological conditions. It further notes that that these procedures ensure that ATC and other traffic should be aware of the pilot’s most likely actions and pilots should follow these procedures unless strong reasons dictate otherwise.

In the event of an emergency, and when other conventional means of communication are either inadequate or not available, the ERSA suggests that mobile telephones may be used to contact ATC and AusSAR. Telephone numbers for the individual ATC locations and the SAR hotline are listed in ERSA GEN FIS Section 16 ‘Use of mobile telephones in aircraft’.<sup>10</sup>

**Safety message**

According to Eurocontrol, a loss of communication generally results from one of three main reasons: radio interference; radio frequency change; or communication equipment problems. Whether brief, or prolonged, this has obvious flight safety implications, which may result in a failure to receive a new ATC clearance, leading to a loss of separation; inability to provide important information to ATC: and increased controller and pilot workload due the need to resolve any confusion.<sup>11</sup>

It is important that ATC is made aware of any problems as soon as possible. This provides ATC with sufficient time to manage a situation, rather than having to react when an issue has developed into a major problem. In the event of a communications failure, it is important that pilots follow the appropriate procedure, and if communications cannot be re-established, consider utilising alternative methods such as mobile telephones.

**General details**

Manufacturer and model:	Mitsubishi MU-2B-60
Registration:	N64MD
Type of operation:	Private - ferry
Occurrence category:	Incident
Primary occurrence type:	Avionics/flight instruments
Location:	Townsville Airport, Queensland

<sup>10</sup> [www.airservicesaustralia.com/aip/current/ersa/GUID\\_ersa-fac-2-9\\_30-May-2013.pdf](http://www.airservicesaustralia.com/aip/current/ersa/GUID_ersa-fac-2-9_30-May-2013.pdf)

<sup>11</sup> [www.skybrary.aero/bookshelf/books/111.pdf](http://www.skybrary.aero/bookshelf/books/111.pdf)

	Latitude: 19° 15.15' S	Longitude: 146° 45.92' E
Persons on board:	Crew – 2	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

## About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The Bureau 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.