



**Australian Government**

**Australian Transport Safety Bureau**

# Take-offs without runway lighting

VH-FVL, ATR72

VH-FVU, ATR72

VH-QOK, DHC-8

Gladstone Airport – 16 and 17 May 2012

**ATSB Transport Safety Report**  
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# Take-offs without runway lighting

## VH-FVL (ATR-72), VH-FVU (ATR-72), VH-QOK (DHC-8)

AO-2012-069

### What happened

At 1751 Eastern Standard Time<sup>1</sup> on 16 May 2012, a GIE Avions de Transport Regional ATR-72 aircraft, registered VH-FVL, was being operated by Skywest Airlines on a scheduled passenger flight from Gladstone to Brisbane, Queensland. On departure from Gladstone the runway lighting extinguished during the takeoff roll.

At 1754 EST on 17 May 2012, a GIE Avions de Transport Regional ATR-72 aircraft, registered VH-FVU, operated by Skywest and a Bombardier DHC-8-402 aircraft, registered VH-QOK, operated by QantasLink, were conducting scheduled passenger flights from Gladstone to Brisbane. VH-FVU departed Gladstone without activating the runway lights for the takeoff. VH-QOK departed Gladstone without the runway lights being activated for the taxi and takeoff roll.

Gladstone Runway 10



Source: QantasLink

### Airport information and lighting

Gladstone Airport is a non-towered, uncontrolled airport operating on a common traffic advisory frequency (CTAF). A CTAF is a radio frequency designated for communications between aircraft in the vicinity of aerodromes without a control tower.

The runway lighting was controlled by a pilot activated lighting (PAL) system that was combined with an aerodrome frequency response unit<sup>2</sup> (AFRU). To activate the lights, pilots were required to make a sequence of three transmissions on the CTAF. Each transmission was to have a maximum duration of 1 second, with the break between transmissions being a maximum of 1 second. On receipt of the appropriate transmission, the AFRU would broadcast an automatic message 'Gladstone lights ON' on the CTAF.

Once the PAL system was activated, the airport lighting would remain on for 30 minutes. If it was reactivated during this period, the lighting would remain on for 30 minutes from the time of reactivation. At 10 minutes prior to the end of the 30-minute activation period, the wind indicator (windsock) lights would commence flashing to warn users that the airport lighting was about to extinguish. In addition, an automated message would be transmitted on the CTAF to state there was 10 minutes of runway lighting remaining. There was no indication that the system was malfunctioning on the nights of the occurrences.

### Aircraft lighting information

The exterior lighting of both aircraft types included several lights, which illuminated the ground in front of the aircraft. These included the landing lights, nose lights, taxi lights and flare lights. The combination of these lights provided a substantial amount of illumination in front of the aircraft.

<sup>1</sup> Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

<sup>2</sup> Aerodrome frequency response unit (AFRU) is a VHF transceiver which provides an automatic response when the pilot transmits on the traffic frequency (normally a CTAF) for a particular aerodrome.\_

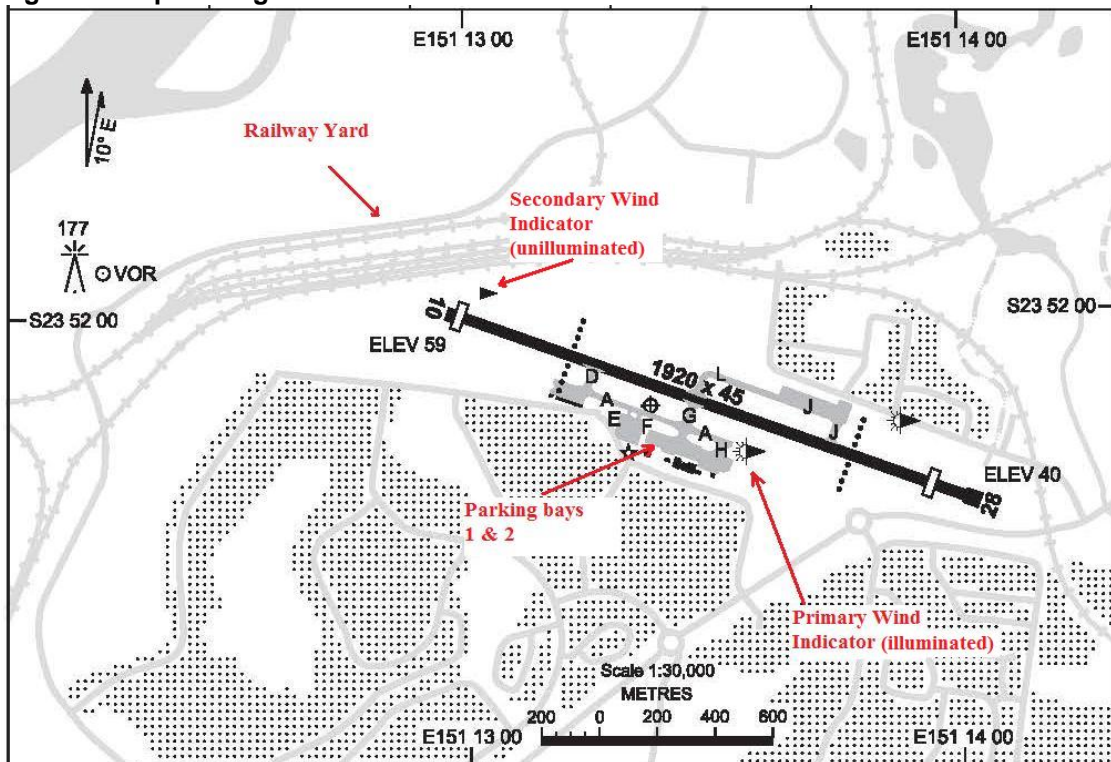
### Local conditions

Gladstone Airport is in a shallow valley surrounded by commercial and industrial buildings which were well lit, as well as private housing, major roads and a brightly lit railway. The overall effect was to provide a high level of ambient lighting surrounding the airport.

The primary wind indicator (windsock) was located adjacent to the eastern most corner of the apron (Figure 1). It was behind all aircraft parked on bays 1 to 4. The windsock was situated in low ground relative to the apron. From parking bays 1 and 2, the windsock was partially obscured by a lighting control cabinet (Figure 3). The windsock lights were grouped at the top of the pole.

All aircraft were utilising parking bays 1 and 2 and were parked facing the terminal on the nights of the occurrences. The terminal was brightly lit inside and the glare from the lighting extended out to the apron. The parking bays were also floodlit. The flood lighting provided an area of bright lighting which reached to the rear of the apron behind the aircraft.

Figure 1: Airport Diagram



Source: Airservices Australia

### Weather

The weather conditions on both nights were reported as calm with a clear sky and no moon. Last light on the 16 and 17 May 2012 was at 1743 Eastern Standard Time.

### Recorded information

Recordings of radio transmissions made on the CTAF along with footage from closed circuit television (CCTV) mounted on the passenger terminal were reviewed by the ATSB. The CCTV showed movements of the aircraft consistent with the audio recording of the CTAF for both nights. In addition, the recordings confirmed the following:

#### 16 May 2012

- Runway lights are on – from CCTV footage 1727

- an automatic airport lighting 10 minutes remaining warning was made at about 1737
- VH-FVL made a taxi call at 1745
- VH-FVL made an entering and backtracking call at 1746
- *Runway lights turn off at 1747 - from CCTV footage*
- VH-FVL made a departure call at 1753 noting time of departure of 1751
- a DHC-8 made a taxi call at 1751
- a DHC-8 made an entering and backtracking call at 1752
- 'Gladstone lights ON' at 1752
- A DHC-8 made a rolling call at 1754

### **17 May 2012**

- *Runway lights are on – from CCTV footage 1735*
- an automatic airport lighting 10 minutes remaining was made at about 1745
- VH-FVU made a taxi call at 1748
- VH-FVU made an entering and backtracking call at 1750
- VH-FVU made a rolling call at 1754
- *Runway lights turn off- from CCTV footage at 1754*
- VH-QOK made a taxi call at 1804
- VH-QOK made an entering call at 1804
- VH-QOK made a rolling call at 1806
- 'Gladstone lights ON' at 1811

### **Comments from flight crew**

All flight crew interviewed advised that, during the taxi and take-off roll, they did not notice anything unusual or problematic with the airport lighting or environmental conditions at the airport. In addition, they reported that they had no difficulties maintaining directional control during the take-off. All pilots commented that the aircraft's lights provided a substantial amount of illumination during the taxi and take-off roll. The flight crew also reported that they were not aware that the runway lights had deactivated between boarding the aircraft and the aircraft departing, until contacted by the ATSB.

All crew stated that they did not recall hearing the 10 minute warning broadcast on the CTAF. They stated that they may have been distracted with other tasks related to preparing the aircraft for departure at the time of the transmission.

The crews commented that they could not recall seeing or specifically looking for the windsock flashing warning, indicating the runway lights were about to turn off. However, all crew noted that the windsock was difficult to see from the parking bays and on taxi out to the runway. In addition, all crew stated that the presence of an aerodrome weather information service (AWIS), which provided actual weather conditions via a radio broadcast on a frequency separate to the CTAF and PAL frequency, made it unnecessary for them to turn their attention to the windsock to obtain information on wind speed and direction.

All crew also noted that on line up for runway 10, the illuminated primary windsock is over half way down the runway and behind the terminal flood lighting. There was higher ground containing bright lighting behind the windsock. The combination of these things obscured any flashing warning (Figure 2). All crew stated that they would be more likely to look to the closer unlit windsock located on the threshold of runway 10 as a final confirmation of the wind direction on line up at runway 10.

**Figure 2: Gladstone runway 10 threshold – lights on**



Source: *QantasLink*

**Figure 3: Windsock view from parking bay 2**



Source: *QantasLink*

## 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.

### ***Skywest Airlines***

As a result of this occurrence, Skywest have advised the ATSB that they are taking the following safety actions:

- Issue of an internal company memo reminding flight crew of the standard operating procedure requirement to cycle the runway lighting prior to engine start and to confirm that the PAL status light is correctly illuminated.

### ***QantasLink***

As a result of this occurrence, QantasLink have advised the ATSB that they are taking the following safety actions:

- Policy to be formulated regarding the activation and verification of the runway lights prior to taxi,
- A review of runway verification process and line up drill to align with “best practice”,
- QantasLink, with the assistance of the Civil Aviation Safety Authority (CASA), will approach operators of airports where air transport operations are conducted to encourage airport lighting to be left on continuously during periods of peak aircraft activity.

### ***Gladstone Airport***

As a result of this occurrence, Gladstone Airport has advised the ATSB that they will be investigating the viability of installing a reflective sign, stating ‘Are the runway lights on?’, to prompt pilots before entering the airport manoeuvring areas.

## **Safety message**

Runway and taxiway lighting serves many important functions for a departing aircraft. For example, it provides:

- navigational guidance around the airport
- directional guidance during the take-off roll
- an indication of the location of the end of the runway
- necessary guidance for approach and landing if required due to an emergency shortly after takeoff

The incident highlights the potential hazards associated with change blindness, inattention blindness and expectation bias.

Change blindness occurs when a person does not notice that something is different about the visual environment relative to before the change. Research has shown that in some cases, quite dramatic changes are not detected, particularly if changes occur when the observer is not looking at the relevant part of the visual environment at the time. In this instance, the crews did not notice the difference between the airport lighting when they were boarding the aircraft versus when they taxied out for departure. At the time the airport lighting was turned off, the aircraft was parked on the apron and the crew were onboard the aircraft facing away from the runway lighting and looking into a brightly lit terminal.

Inattention blindness occurs when a person does not notice an object which is visible, but unexpected, because their attention is engaged on another task. In this instance, the absence of airport lighting was noticeable, if looked for, and the crews probably had an assumption or expectation that the lighting was on.

In simple terms, expectation bias is ‘seeing’ what you expect to see even when it is not there. In this case, runway lighting being on.

Defining a specific place for PAL tasks in the crew’s sequence of procedures, such as when the pre-taxi CTAF call is made and incorporating this into a pre-taxi checklist, could potentially ensure more reliability in performing these tasks.

For a similar procedural event refer to:

- Procedures-related event, Launceston Airport, Tas., 12 March 2008, VH-VQY, Airbus A320-200 ATSB Investigation AO-2008-020  
[www.atsb.gov.au/publications/investigation\\_reports/2008/aair/ao-2008-020.aspx](http://www.atsb.gov.au/publications/investigation_reports/2008/aair/ao-2008-020.aspx)

For further information on change and inattention blindness and expectation bias refer to:

- *Deadly Omissions*- Transport Canada  
[www.tc.gc.ca/eng/civilaviation/publications/tp185-2-10-feature-3718.htm](http://www.tc.gc.ca/eng/civilaviation/publications/tp185-2-10-feature-3718.htm)
- Sights unseen – American Psychological Association  
[www.apa.org/monitor/apr01/blindness.aspx](http://www.apa.org/monitor/apr01/blindness.aspx)

## VH-FVL

Manufacturer and model:	GIE Avions de Transport Regional ATR 72
Operator:	SkyWest
Registration:	VH-FVL
Type of operation:	Air transport – high capacity
Location:	Gladstone Airport
Occurrence type:	Navigation event
Damage:	Nil

## VH-FVU

Manufacturer and model:	GIE Avions de Transport Regional ATR 72
Operator:	SkyWest
Registration:	VH-FVU
Type of operation:	Air transport – high capacity
Location:	Gladstone Airport
Occurrence type:	Navigation event
Damage:	Nil

## VH-QOK

Manufacturer and model:	Bombardier DHC-8-402
Operator:	QantasLink
Registration:	VH-QOK
Type of operation:	Air transport – high capacity
Location:	Gladstone Airport
Occurrence type:	Navigation event
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.