Civil Aviation Department
Ministry of Transport and Civil Aviation

Investigation Report of the Accident to De Havilland DHC-6 "Twin Otter" (8Q-TMA) on 19 February 2001 at Sun Island Resort

Title

Investigation Report of the Accident to De Havilland DHC-6 "Twin Otter" (8Q-TMA) on 19 February 2001 at Sun Island Resort.

Synopsis

At about 0810 on 19 February 2001, a Twin Otter operated by Trans Maldivian Airways was maneuvering on the water near the Floating Platform, after landing in the lagoon near Sun Island resort, when it struck another Twin Otter that was parked against the floating platform. There were no passengers on either aircraft, and no injuries to any of the crew were reported.

The accident was reported to the CAD at 0930, and a team was appointed to investigate.

1. Factual Information

1.1 History of the flight

At about 0810 on 19 February 2001, a Twin Otter operated by Trans Maldivian Airways was maneuvering on the water near the Floating Platform, after landing in the lagoon near Sun Island resort, when it struck another Twin Otter that was parked against the floating platform. There were no passengers on either aircraft, and no injuries to any of the crew were reported.

The accident was reported to the CAD at 0930, and a team was appointed to investigate.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Other
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	Nil
Minor/None	Nil	Nil	Nil

1.3 Damage to Aircraft

The aircraft suffered substantial damage to the nose, front windscreens, and the upper, forward area of the cockpit, and minor damage to one float.

1.4 Other Damage

The other aircraft, 8Q-TMH, suffered substantial damage to the port wingtip and aileron.

1.5 Personnel Information

The pilot in command was aged 27. He held an Airline Transport Pilot Licence No. 215. At the time of the accident he had flown a total of about 3500 hours, including 1900 hours on type. His previous competency check had been conducted on 1 September 2000. He had flown 13.4 hours in the preceding seven days, and 70.5 hours in the preceding 28 days.

The first officer was aged 54. He held an Airline Transport Pilot Licence No. 088. At the time of the accident he had flown a total of about 12,500 hours, including 500 hours on type. His previous competency check had been conducted on 16 January 2001. He had flown 18.0 hours in the preceding seven days, and 80.0 hours in the preceding 28 days.

1.6 Aircraft Information

The aircraft was a DHC6-100, s/n 082, manufactured in Canada in 1968. Its Certificate of Airworthiness was valid to 13 May 2001, and its Certificate of Maintenance Review was valid to 6 May 2001.

It had flown a total of 25,331 hours since new.

1.7 Meteorological Information

The weather was overcast, with better than 10 km visibility, and a light northerly breeze.

1.8 Aids to Navigation

N/A

1.9 Communications

N/A

1.10 Aerodrome Information

The Sun Island Resort is located at 3° 29'N, 72° 49'E. The landing area near it had been inspected by government officials and found acceptable for use as an aerodrome in May 2000. Subsequently, a floating platform had been installed. The licensing formalities had never been completed, but the area had been used as an aerodrome for 10 months.

1.11 Flight recorders

N/A

1.12 Wreckage and Impact Information

The aircraft came to rest with one float on the platform, and the wingtip of the parked aircraft protruding into its cockpit.

1.13 Medical and pathological Information

The pilots were both appropriately rested, and there is no evidence of any incapacitation on their part.

1.14 Fire

Fire did not occur.

1.15 Survival aspects

This was only a minor taxiing accident, and survival was not an issue.

1.16 Tests and Research

Inquiries were made amongst experienced Twin Otter pilots and engineers to establish why the aeroplane moved upwind when its flaps were down, and the propellers feathered, and how the pilot came to apply a surge of thrust when he was trying to put the aircraft into reverse.

Feathering the propellers involves the pilot moving the propeller levers to the full aft position. This causes the blades to twist so that they lie along the longitudinal axis if the aircraft, reducing their thrust to zero. The propellers then turn very slowly, and the noise level is much reduced. This was the purpose of the pilot feathering the propellers in the first place.

In the case of the PT6 engine in the Twin Otter, the gas generator part of the engine continues to run, providing jet thrust from the exhaust.

It was concluded that in this case, the jet thrust from the engine exceeded the effect of the light wind on the aircraft, even with its flaps down, and this caused the aircraft to move upwind.

To unfeather the engines, the pilot moves the propeller controls to the full forward position. This causes the propeller blades to twist through the forward thrust angle to a flat, near zero thrust position.

Then, when the power levers are moved aft, the propellers twist further, into a reverse thrust angle, and fuel is fed into the engine, providing reverse thrust.

However, if the power levers are moved aft too soon, while the propellers are still coming out of feather, and at a forward thrust angle, the fuel being fed into the engine will cause the aircraft to surge forward.

1.17 Organizational and management information

The investigation revealed a need for improvement in the Standard Operating Practices of the operator.

For example, some pilots were in the practice of feathering their propellers while waiting on the water, and others were not. Following the accident, the company banned the practice.

There is also a lack of standardization in the way in which pilots park the aircraft against the floating platforms. The company SOPs require that the aircraft are parked along the longitudinal axis of the platforms, with their propellers forward of the platform and over the water, to avoid risk to persons on the platform. The investigation revealed that some pilots park along the short axis, and others park along the longitudinal axis, but in doing so, allow the propellers to cross the platform while parking. The aircraft that was parked on the platform at the time of the accident was parked across the short axis of the platform.

1.18 Additional Information

The first draft of this report was sent to the operator and the pilot for comment. As a result of comments from the operator, paragraph 1.17 was modified slightly.

The operator advises that the recommendations have already been actioned.

1.19 Useful or effective investigation techniques

N/A

2. Analysis

1. The crew were appropriately licensed, qualified, and rested.
2. The aircraft was airworthy
3. The landing area was suitable, but not appropriately licensed. The operation was thus in breach of Civil Aviation Regulation No. 13.1 (1), but this is not considered to be a factor in the accident
4. The accident was caused by a mistake on the part of the pilot
5. Following the accident, the company has taken appropriate action to prevent a recurrence.

3. Conclusions

1. The accident was caused by an error on the part of the pilot in that he over-estimated the effect of the wind on the aircraft with the propellers feathered, and he attempted to apply reverse thrust too soon after taking action to unfeather the propellers.
2. There is room for improvement in the standard Operating Practices on the part of the operator.

4- Safety Recommendations

It is recommended that the company review, and if necessary, update its SOPs for operation on the water.