

## Risk Lessons from Fatal Helicopter Accident near Mackay, Qld

The tragic loss of a Sea King helicopter from HMAS Kanimbla, during humanitarian operations in earthquake-ravaged Indonesia again highlights the risk such operations pose.

Apart from military operations, many people would associate helicopters with community rescue services. They are a familiar sight on the news bulletins and in the air near major cities.

However a news bulletin on 17 October 2003 was particularly distressing. An Emergency Medical Services (EMS) Bell 407 helicopter flying from Mackay to Hamilton Island crashed into the sea killing all three crewmembers. The Australian Transport Safety Bureau's (ATSB) final report<sup>1</sup> found that "spatial disorientation of the pilot was likely".

ATSB found that the circumstances of the accident combined most of the risk factors known to be associated with EMS accidents. What can we learn from this?

### Outline of accident

The emergency service responded to a request to collect a patient from Hamilton Island and make a transfer to an on-shore facility. The flight was at night, over water, and in weather conditions acceptable for night Visual Flight Rules. The aircraft was not suitable for Instrument Flight Rules, nor was the pilot qualified for IFR.

Shortly after leaving Mackay the aircraft departed from controlled flight and crashed. ATSB could not conclusively determine the cause.

### What are the known risk factors in EMS operations?

Twenty years ago, in response to a high rate of EMS helicopter accidents in the US, the FAA and NTSB<sup>2</sup> identified a series of risk factors:

#### *Pilot factors:*

- Inexperienced with night and over water missions
- Inexperienced with aircraft type
- Not instrument rated
- New to EMS operations

#### *Operational factors:*

- Dark night with no celestial or ground-based lighting
- Over water with few features
- Possibility of cloud

#### *Organisational factors:*

- A number of organisations involved in providing the service
- Actual or perceived pressure not to reject missions

The FAA and NTSB stressed the importance of risk management by the operator. Otherwise safety is reliant on flawless performance of the pilot, even in changing and difficult circumstances.

As it happened, accident rates in the US were halved – see table below<sup>3</sup>:

Helicopter EMS service	Period	Total Accident Rate*
Australia (total)	1992 – 2002	4.38
Qld Community Health Providers	1992 – 2002	25.03
US	1982 – 1987	11.7
US	1992 – 2001	4.83

\* Accident rate per 100,000 flying hours

## What went wrong at Mackay?

- The pilot was not instrument-rated, and was new to EMS operations
- There was found to be little or no operational risk assessment prior to flights
- Limited funds meant that more expensive, twin-engined, fully IFR helicopters were not always available for night duties
- The accident aircraft was not equipped with autopilot or stability augmentation systems
- Investigations revealed that the pilot may have been unaware that the available weather information was not as current as it could have been
- Overall safety supervision was diffused amongst the several organisations involved in providing the service
- Investigations revealed little evidence that the managing organisations had fully incorporated the significant US findings, and in fact may have been unaware of the work

## Potential scenarios

- Low cloud may have been present, even though weather reports did not indicate
- The pilot may have been unaware of US FAA findings that it is possible on dark nights not to see cloud until actually in it
- Flying a non-autopilot, non-stability augmented helicopter on a dark night requires constant skill and visual alertness – the craft cannot be readily trimmed for level flight as with a fixed wing aircraft
- Combined with a defect or loss of a primary flight instrument such as the attitude indicator, flight becomes very difficult
- Contractual pressures to meet response times may have created a perceived reluctance to reject the mission

## References:

1. Australian Safety Transport Bureau: Aviation Safety Investigation 200304282
2. Federal Aviation Administration, National Transportation Safety Board
3. Op cit, p 42

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