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Reporting Error in Aircraft Maintenance: are engineers reporting safety concerns?

A thesis presented in partial fulfilment of the requirements for the degree of

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Abstract

Aviation accidents seldom occur as the consequence of an isolated incident, but as the result of a series of contributing factors. The industry has focussed on detecting and predicting these casual factors to support accident prevention. However, the complexity of aircraft maintenance errors makes them somewhat harder to capture. One method adopted to support error identification is error-reporting systems.

The primary aim of study was to identify if reporting systems were being utilised by maintenance personnel. The secondary aim was to distinguish the factors that contribute to maintenance personnel rejecting reporting systems as a supportive tool. This was achieved through an online questionnaire. Due to a lack of research on error reporting and usability of reporting systems by aircraft maintenance personnel it proved difficult to use an existing survey, so survey questions were developed from an extensive literature review and a focus group made up of front-line personnel. Survey questions focussed on reporting system design, company attitude, error recognition and finally maintenance personnel personality patterns.

Results showed several issues affected reporting system usage including lack of company support, inadequate training, and lack of feedback. Perhaps the most significant discovery were engineers believing that they would report error, but were inadequately able to recognise error. Although regulatory authorities and organisations themselves are seeing the benefits of a positive reporting culture the current study showed there are still significant issues with current reporting systems, without these inhibiting factors being addressed the industry cannot solely rely on self-reporting to manage error.

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Abbreviations

AMC	Acceptable Means of Compliance
AME	Aircraft Maintenance Engineer
AMM	Aircraft Maintenance Manual
ATSB	Australian Transport Safety Bureau
BFI	Big Five Inventory
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CAR	Civil Aviation Rule
CASA	Civil Aviation Safety Authority
CFR	Code of Federal Regulations
EASA	European Aviation Safety Agency
ED	European Decision
EU	European Union
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organisation
LAME	Licensed Aircraft Maintenance Engineer
MBN	Maintenance Briefing Note
MRO	Maintenance and repair Organisation
NAA	National Aviation Authority
NTSB	National Transport Safety Bureau
NZ	New Zealand
SMM	Safety Management Manual
TSB	Transport Safety Board