Effectiveness of Safety Management Systems of Two Helicopter Operators

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Approval Sheet No. 1.

I certify that an Examination Committee has met on to conduct the final examination of Graduate Student on his Master of Science project paper entitled " Comparative Studies of Helicopter Operators in the Effectiveness of Implanting Safety Management System to Reduce Accidents" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommended that the candidate be awarded the relevant degree. The Committee Members for the candidate are as follows:

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Approval Sheet No. 2

This project paper submitted to the Senate of Universiti Putra Malaysia and was accepted as fulfilment of the requirements for the degree of Master of Science.

Dean of Graduate School,
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Abstract

The objective of this study is to determine whether there is any impact in implanting a Safety Management System in helicopter operations. The function of the system is to assist managers: to analyse, to develop, to communicate and to monitor safety at workplace. This paper will outline one important area critical to aviation safety, the new 'safety health' concepts being applied to improve the safety of world aviation. This study will examine the perception of the importance of safety issue at two organizations, one organization already has a safety management system implanted and the other has yet to introduce one into their organization. Although both companies have to follow the Malaysia Department of Civil Aviation regulatory requirement to manage their own helicopter operations it is imperative to note that a safety management system could further enhance the aviation safety standards.

Fundamentally the system is to build or maintain a positive safety culture. Dr. James Reason Model is used to develop the safety management process. Reason acknowledges that each of the organisational, workplace and person/team components of his model is difficult to identify before an accident. This is because latent failures are usually unforeseeable, workplace factors are dynamic, and errors or violations are unpredictable. The model implies that the integrity of safety defences can be more accurately determined. Rather than waiting for accident to occur, the Safety Management program provides a structured method for helicopter operators to proactively evaluate potential defence failures on a regular basis.

In order to determine safety management system effectiveness an alternative method is used. Normally audits are carried out to measure and evaluate a system, however this method can be counter productive where accident frequency is very low or non existent especially in a helicopter operations. In this study the perception survey method is used to assess the success of the operator safety programme. The survey begins with a short demographic survey, typically question about their employee level, their general work location, and their function. The second part of the survey consists of questions designed to uncover employee perception about safety.

The finding of the survey shows that staff do operate unsafely due to peer pressure or management pressure to complete tasks. The overall picture is, operator with a safety management system in place exhibit higher perceived hazardous condition and likelihood of accident. This positive safety attitude in the workplace can reduce accidents and even could prevent one.

It is clear that consistent communication of safety related information within an organization is crucial for improving staff attitude toward safety. While the MASIS program has only been applied within one regional helicopter operators, the process is sufficiently simple and flexible to be applied to other operator as well as other industries. Department of Civil Aviation has produced an implementation guide that allows any operator to self-install the program.

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Chapter 1

Introduction

The concept of a safety system assumes the existence of risk of damage, and the kind of danger that is relevant to this paper is the kind that is familiar in the aviation industries; incidents or accidents involving injury or loss of life, and damage to or loss of property are costly. Since accidents have increasingly been attributed to human errors, there is an ongoing need for safety systems aimed at human error in particular. A survey conducted by Boeing concluded that 73.3% of the accidents are caused by flight crew error (see figure 1.0). These alone do not include other human error contributed by engineers and air traffic controllers. Appendix A provides a list of aviation safety hazards.

Primary factor	Number of accidents: Total	Number of accidents: Last 10 years
Flight crew	327	92
Airplane	49	15
Maintenance	14	9
Weather	22	5
Airport/ATC	19	6
Miscellaneous/ other	15	5
Total with known causes	446	132
Unknown or awaiting reports	90	54
Total	536	186

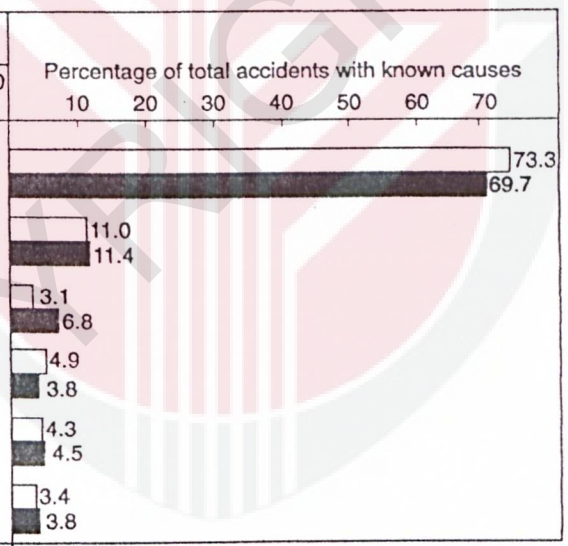

Figure 1.0 Primary cause factor in hull-loss accidents, all aircraft, worldwide commercial jet fleets.

Boeing Commercial Airplane Co. 1995, Statistical Summary of Commercial Jet Aircraft Accidents: Worldwide Operations 1959 – 1994. Seattle, WA, March.

Human errors follow a chain of event that begins from the management. FSF, Flight Safety Foundation, Icarus committee reports that there are at least four levels of human intervention that can greatly affect the level of risks

- Senior Management
- Line Management
- Inspectors and quality Control personnel; and'
- Operational personnel.

The measurement of "safety health" can be done using non accident data analysis. Accidents investigation often uncover pervasive, but recognized, causal factors and can help prevent similar accidents from occurring. However, because commercial aviation accidents are so rare, other measures are needed for identifying short-term changes in safety. The goal of non-accidents data analysis is to help prevent the first accident from happening (Alexander, 1997)

Potential safety indicators are measurable factors associated with or causally related to accidents, fatalities, or injuries. Ideally, the amount of data available will be large enough, unlike accidents or fatality data, so that random events will have a small effect on yearly trends. The diagram of aviation accidents causal and prevention factor (Fig 2.0) identified sources for some non-accident safety indicators. (Alexander, 1997)

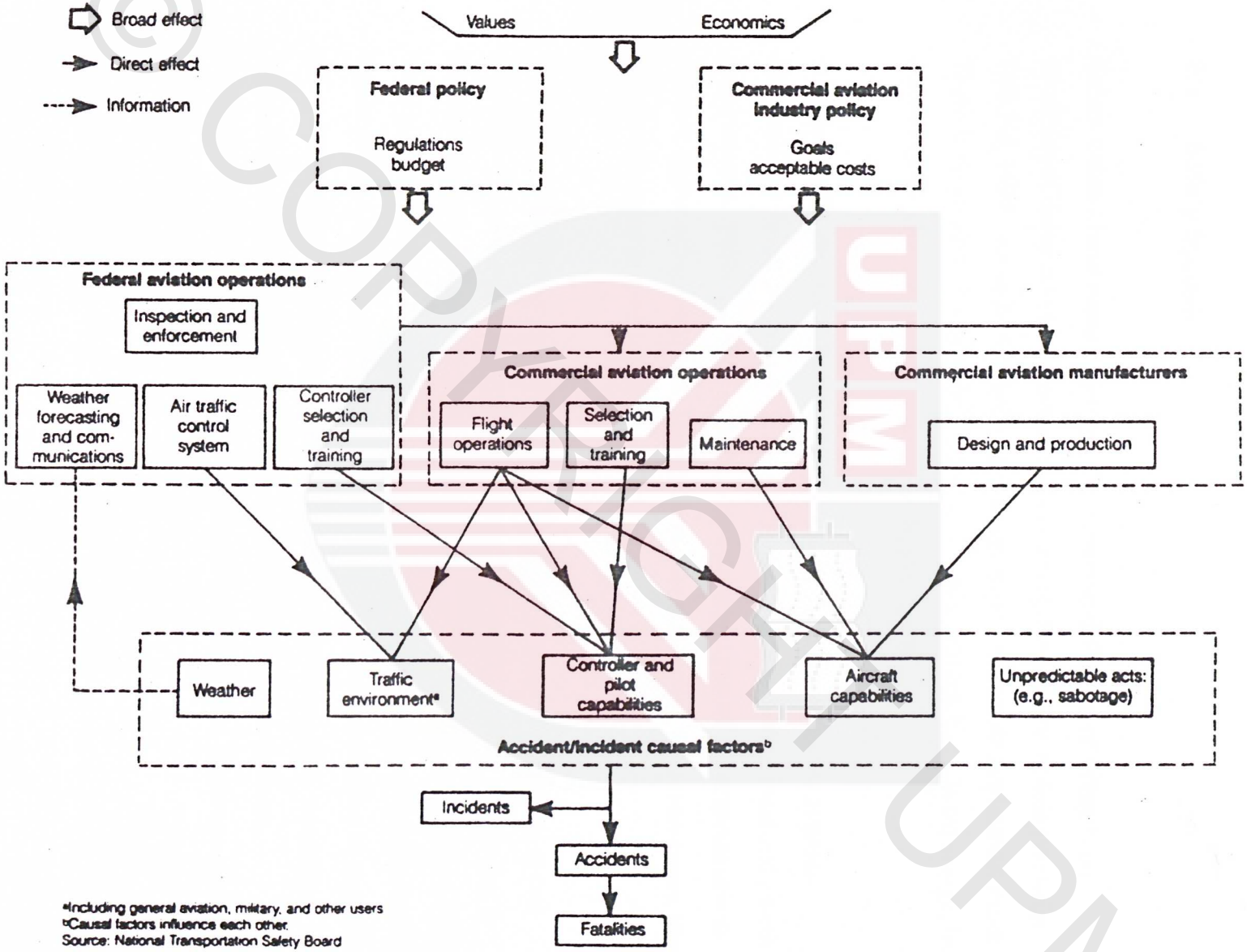

Figure 2.0. Commercial Aviation Accident and Causal Prevention Factors

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