The analysis of the line crew performance through the Line Operation Safety Audit (LOSA)

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ABSTRACT


Key Words : LOSA, TEM(Threat and Error Management), Human factors, SMS(Safety management system), Hazard identification, SCP(Safety change process)

I. INTRODUCTION

1.1 The definition of LOSA

LOSA stands for Line Operations Safety Audit. It is a flight safety program that analyses human errors in normal operations. Trained pilot observers monitor the normal flights at the observer seat. LOSA is a proactive non jeopardy data collection tool using threat and error management(TEM) as a framework. The observations are strictly confidential, and analysed by the LOSA Collaborative (TLC) and the University of Texas Human Factors Research Project(UTHFRP). [1]

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There are many safety related data through accident investigation, incident reports, line checks, and FOQA, these days. The conventional Safety management system(SMS) tools provide what occurs while LOSA explains why the errors happen and how these are managed. With the analysis of crew behaviors through LOSA with TLC and University of Texas(UT), the airlines were able to identify the behaviors of the crew during normal operations. The major objective of LOSA is to measure how the crew manage threats, errors and undesired aircraft deviations in the cockpit on day to day operations. [2]
1.2 The History of LOSA

The beginning of LOSA was initiated with Delta Airlines and UT to check actual line application after the CRM training in 1994. TWA, US Airways and American Airlines followed Delta and conducted CRM audits with UT.

The 1st TEM based LOSA was developed in collaboration with Continental Airlines in 1996. The follow-up LOSA at Continental Airlines in 2000 after the improvement provided the proof of concept for LOSA as a proactive safety tool. [3]

1.3 LOSA as an Integral part of SMS

The human performance less than optimum caused the majority of the accident and incident. The LOSA and TEM are integral parts of a SMS. The hazards can be identified through LOSA. The LOSA is the primary tool to develop countermeasures to human error for monitoring normal operation.

Now we know these threats, errors and how these were managed through LOSA from TLC, the management set targets for enhancement, and making efforts to improve the system and focus the area needed be trained and the procedures to be amended to reduce the risk effectively. [4]

The propose of this paper is to introduce the implementation of LOSA of a sample Airline “Z” according to ICAO DOC 9803 and the analysis of the data in the airlines using LOSA with TLC.

II. TEM

TEM is the basic tool to capture day to day operation of the crew performance for LOSA. The schematic enable us to understand how the threats effect on errors. It helps to comprehend the flow of management on threats and errors.

There are at least one threats on most normal flight. The mismanaged threats that contributes to a crew error and UAS. LOSA takes a view that errors will occur, because of human limitation. Most training were focused on minimizing errors before we adopt the TEM concept.

It is very useful to find out the threats and errors chain from the schematic of threat and error for pilots to trap and avoid these threats and errors more effectively when we identify and understand them through the schematics and analysis of LOSA.

Fig 1. The schematic of threat and error

III. THREATS

3.1 Definition

Threats increase the risk of the flight. Threats are events or errors occurred outside of the flight crew’s influence, but have to be managed to keep safety. Errors caused out