"Role of Human Factor for the Implementation of the "Vision Zero" Concept in Railway Transport: An Overview"

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Abstract. The railway is an essential mode of transportation. Despite advances in railway safety over the past few decades, train accidents and incidents continue to be prevalent. From statistical data around 80% of railroad accidents are caused by human error. Consequently, the study of human reliability is necessary, and it must be included within a complete reliability assessment for every railway-related system. The needs of human reliability analysis considered as an important criterion for the smooth and zero injuries operation in the complex Railway systems. The European standard EN 50126 emphasizes that human reliability is a necessary element for railway engineering. In this study of human reliability and analysis specifically a study on driver profile of an electric train. Within a complete driving operation, railway drivers are presented with a variety of error-producing conditions. These circumstances, when paired with essential human characteristics, lead to a variety of errors. Many accidents and mishaps in complex systems, including the railway system, are caused by human error. The purpose of this paper is to determine human factors influence the degree of occupational injuries by accidents. Besides that, some motivating aspects of human factor in a way that enables the concept of zero injuries in Railway Transportation Industry are introduced.

Keywords: Human Reliability, zero injuries, human factors, railway systems.

1.0 INTRODUCTION

One of the most essential modes of transportation in the world is the railway. Accessibilities and mobility have become more important as land urbanization has progressed. Thousands of trains move every day, bringing people, goods, chemicals, fuels, and other items. Railway transportation is a highly complicated mode of transportation in which many technological issues, such as design, construction, operation, management, and maintenance, are involved. As with other industrial areas (e.g., nuclear, chemical, and avionics), determining the role of human performance is difficult because every mishap is the result of a combination of errors and deficiencies[1]. Railway is a high-capacity transport mode for passengers with medium-to-long distance journeys in many countries, especially in China with a very dense population. It is reported that China has a railway network with over 1,210,000 km track at the end of 2015, and the volume of passenger traffic is 3004.7 billion passenger kilometer in 2015[2].

Design, construction, routine operations, maintenance, emergency operations, and decommissioning are all areas where human factors play an important role. Human behavior and decision-making, on the other hand, have been identified as the most important and prevalent variables in anomalous situations and accident causation[3]. Regardless