

Accident Investigation Tool with an Approach Centered on Socio-Technical Factors

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Accidents are unexpected events or occurrences that result in unwanted or undesirable outcomes. The unwanted outcomes can include harm or loss of personnel, property or production. The performance of complex socio-technical systems is dependent upon the interaction among technical, human, organizational and environmental factors and these factors can be important co-contributors that could potentially lead to a catastrophic. Failures seem to be recurrent which indicates that the organization tends to suffer from learning disabilities. Human performance is classified in terms of the external error modes, psychological error mechanisms and performance influencing factors. External error modes represent the external manifestation of the error while psychological error mechanisms (PEMs) represent the internal mechanism of the error within each cognitive domain [1]. The design of complex systems must be a process that takes into account social, organizational and technical factors, in a way to contribute to a better understanding of how human beings as well as social and organizational factors affect the ways that work is done and technical systems are used. The whole spectrum of performance influencing factors is large and may be approached in different ways, depending on the type of industry where the classification is achieved, such as nuclear, medical, aviation or chemical. An accident model is a way of thinking about an accident. It is used to understand how an accident happened. What investigators look for when trying to understand and analyze an accident depends on how he believes an accident happens [2]. An accident analysis model is helpful because it suggests ways you can use to explain the accident sequence. Accident models can be characterized by three approaches. The sequential model is a simple, linear cause and effect model in which accidents are seen as a series of events, which occur in a specific and recognizable order. The

epidemiological model is a complex, linear cause and effect model in which accidents are seen as the result of a combination of active failures (unsafe acts) and latent conditions (unsafe conditions). The systemic model is a complex, non-linear model in which both accidents (and success) are seen to emerge from unexpected combinations of normal variability in the system. The aim of this paper is to propose a methodological framework applied to the development of an accident investigation tool. This tool will help to identify the socio-technical factors that affected the human performance and led to the workplace accident. A computational tool is presented as a result of this study, in order to assist investigators in formulating the causal relationships and sequences of the accident [3]. The new tool will be particularly useful in organizing and prioritizing relevant information to the Mishap Investigation Board. Figure 1 shows one of the screens of this tool

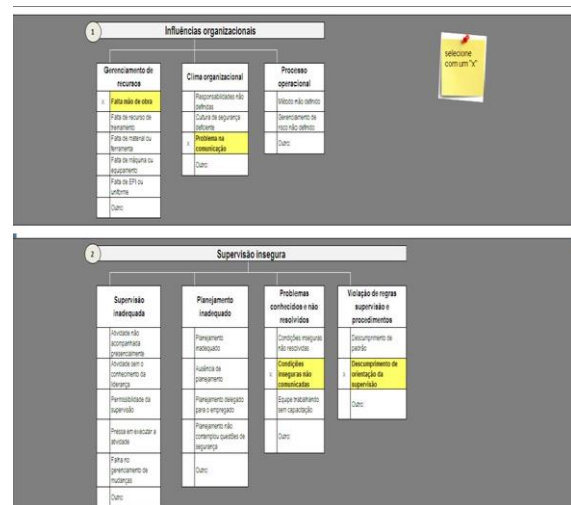


Figure 1. Accident investigation tool

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