

System-Theoretic View of Marine Pilotage Accident in Busan New Port

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Abstract : A contact accident with gantry cranes involving the container ship MV Milano Bridge in Busan New Port took place on 6 April 2020. The report concluded that the pilot unreasonably piloted the ship with impaired maneuverability and without a proper pilotage plan. Analyzing the entire system by CAST model gives a holistic approach in linking all the key components and their roles as well as violations that led to the accident, stepping away from placing the blame on only one component in the system. Furthermore, analyzing the accident as an system theory gives a clear overview of the relationships between system components and how these interactions led to the accident.

Key words : marine accident, accident analysis, CAST model, safety, system theory

1. Introduction

The traditional attitude to accident analysis is the assumption that accidents are contributed by events resulting from the erroneous behavior of the human while compliance with procedures shields the system from such accidents(Junior et al., 2012). However, with the development of complex socio-technical systems, there has been a shift from these traditional views on accidents to developing newer approaches...(중략)....(Qureshi, 2009).

2. Research Method

The selected systemic accident investigation model to analyze the marine accident was the CAST model (Causal Analysis based on Systems Theoretic Accident Model and Processes technique). The key goal of systemic accident models is to monitor and control any changes in a system with a focus on an emergent property called safet(Leveson, 2016)y.(중략)....

3. Analysis and Results

The CAST analysis model identified all the system components involved in the accident and their safety constraints, and how these constraints were violated. Moreover, the relationships between the system components were analyzed to identify the existing system behavior and how it led to the contact accident...(중략)....

5. Conclusion

The CAST approach views the human factor to be a critical part of the system development and purpose, but not to be viewed as the fundamental subject of analysis, and the issues arising from human error and safety culture are evaluated in the scope of emergent property (safety) and its control(Fukuoka, 2019)....(중략)....

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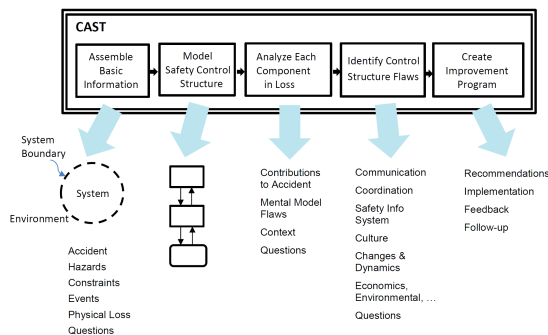


Fig. 1 CAST model components (Leveson, 2019)

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