Reducing Human Error in Crane and Hoist Operations

Jiun-Yin Jian1, Gerry Miller, Sahil Shah, Ben Poblete

1WS Atkins
17220 Katy Freeway, Building 1, Suite 200, Houston, TX 77094

Between 1971 and 1985, crane accidents resulted in 37 fatalities and 26 injuries in the Gulf of Mexico [1], and occurred approximately once every year in the North Sea [2]. Over the last decade, major crane accidents in offshore environments resulted in three fatalities. For this reason, crane accidents continue to be a major focus of industry concern. Despite the large progress made with crane technology and regulation (API 2C and 2D), operators and workers remain exposed to risks due to inadequate consideration of human factors in design. This desk-based evaluation was conducted to address the human factors related to crane operations with a detailed focus on cabin display and control arrangements, identification of blind spots, safe lifting practices, and compliance with regulatory requirements. It was found that the one configuration of the two-lever controls recommended by API 2C was conducive to causing human error, and that a rearrangement of the labeling and color-coding could increase visibility to the operator. A modification to this arrangement is recommended in order to further prevent accidents stemming from human error. In addition, the operator's field of view was simulated using engineering drawings, 3D models, and anthropometric data in order to identify blind spots during lifting and lowering activities. This strategy can be implemented in the preparation of lift plans which will subsequently facilitate adequate communication between the operator and flagman during blind lifts.

References:
[1] MMS, Safety Alert No 125

1 Corresponding author