Dangers of Gantry Crane Operations

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Following a number of recent incidents, the Club would like to remind members of the dangers and hazards of shipboard gantry crane operations.

Introduction

Incidents involving gantry crane operations often result in serious injuries or fatalities which could easily have been avoided through properly risk assessing the activities, robust communication protocols and general safety awareness.

This Risk Alert is intended to briefly highlight potential safety scenarios and to raise the levels of awareness for personnel and the need for them to exercise extreme care and caution when conducting or when working in the vicinity of gantry crane operations.

Considerations

A gantry crane could be the crane fitted on board a vessel or a shore crane. Gantry crane operations often involve blind spots or blind sectors for the gantry crane operator.

Examples of potential contributory causes for related incidents:

- Limited line of sight resulting in blind spots or blind sectors due to:
  - Operator position
  - Location of the operation and nature of activity
  - Load or spreader or other structure or obstruction blocking a clear view of the work area
  - Movement of the crane itself or the lift path of the load
- Inadequate provisions (warning lights / alarms / cameras / signalling equipment / signalling personnel) to provide information, guidance and signals to the crane operator and personnel who may be working in the vicinity of operations.
- Accessibility to emergency stop controls.
- Inadequate communication and communication equipment
- Inadequate procedures and practices such as permit to work systems, work planning, information sharing, preparation and conduct of gantry crane operations
- Inadequate training
- Unsafe conditions –
  - Restricted access
  - Defective / unsuitable equipment
  - Inadequate illumination
  - Inadequate safety signages
  - Unprotected openings
  - Inadequate safety barriers
  - Inadequate electrical isolation
  - Unsecure objects / machinery
- Unsafe acts such as taking short-cuts, unauthorised entry into the work area, unplanned / unauthorised operation of equipment
- Incorrect/inadequate PPE
- Rest hours / Fatigue
- Impairment due to consumption of alcohol or other influencing substances
- Other distraction such as simultaneous operations being carried out, use of cell phones
- Weather conditions
- Vessel's heeling motion (during heavy lifts by vessels' own lifting gear)

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Recent Cases

The following links are for some recent casualty reports and include incidents of a similar nature for reference:

Serious Injury – Ketter@Antwerp, Belgium – 28 Jun 2021

Fatal crush – Cimbris @Antwerp, Belgium - 14 July 2020

Fatal crush – Karina C @Seville, Spain - 24 May 2019

Fatal crush – Beauforce@Sea - 9 June 2015

Fatal crush – Toucan Arrow@Portland, Victoria – 7 Oct 2013

The above incidents and their investigations highlight several issues that should have been addressed by following appropriate procedures and the exercising of due care and attention.

Identifying hazards as a part of routine risk assessment is an important exercise and should form a very important core element of the safety culture on board a vessel. It is equally important to ensure that the identified risk control measures are effectively implemented. Physical control measures such as, lock-out/tag-out, safety signs, barriers, markers, tagging and isolation, etc should be utilised where appropriate.

Training needs should be identified, and an appropriate training programme implemented.

A vessel's equipment and design influence and provide direction on the operational characteristics that should be considered during gantry crane operations, in tandem with crew training, experience, and familiarity.

Timely and appropriate emergency response with support and effective coordination from assisting parties may help prevent the escalation or further deterioration of an incident.

PPE should be in good condition, of correct size/fit and when correctly worn can save lives.

Great care needs to be exercised when planning and assigning work activities. Aspects such as the experience, fitness and suitability of the task team, location of work, ambient conditions, and other activities in the vicinity of the work area are all important considerations.

Communication is essential, communicating intent is crucial along with regular status checks with team member(s) at key stages and at frequent intervals.

Shortcuts with the intent to save time and speed up an operation at the cost of increasing risks should never be considered.

Fatigue and Mental health are often being identified as contributory causes in incidents. Studies suggest that the effects of fatigue can be slowed thinking and reaction time with a delayed / false response. The correlation between quality of sleep and fatigue also cannot be ignored. The consumption of alcohol or other influencing substances can further impair reaction times, situational awareness and rational thinking.

Conclusion

Training and reinforcement of safe work practices is of paramount importance not only to ensure an individual's personal safety but to also ensure that the work area remains safe for others.

The above guidance supplements other widely available industry guidance which is not addressed in this risk alert.

Avoid Shortcuts - Stay Alert

Suggested References

- Code of safe working practices
- Maritime Labour Convention, 2006

Citations / Acknowledgements / References

The club would like to acknowledge and thank the investigating bodies and other sources for allowing us to use the wealth of information contained in the referred publications and reports. Below citations refer to the reports used.

Marine Safety Investigation Unit (MSIU) – Transport Malta

The material used from the following report is acknowledged as TM copyright:

MV KETTER

Transport Malta - Safety Investigation Report – 12/2022

June 2022

Australian Transport Safety Bureau
The material used from the following report is acknowledged as copyright of the Commonwealth of Australia:
Crew member fatality on board Toucan Arrow
ATSB Transport Safety Report
Marine Occurrence Investigation
303-MO-2013-010
Final – 16 June 2014

Marine Accident Investigation Branch (MAIB) - United Kingdom
The material used from the following reports is acknowledged as Crown copyright:
Fatal crush accident while a gantry crane was moving a hatch cover on board the general cargo vessel Cimbris, at Antwerp, Belgium, on 14 July 2020
MAIB Accident Report No 12/2021
September 2021

Report on the investigation of the fatal crush accident on the general cargo vessel Karina C at Seville, Spain on 24 May 2019
MAIB Accident Report No 18/2020
November 2020

Dutch Safety Board
The material used from the following report is acknowledged as property of Dutch Safety Board:
Hatch cover crane entrapment
Beauforce – 9 June 2015