

Near-miss involving knuckle boom crane – hydraulic pump selection

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A Member has reported a near-miss incident where a 220 litre drum and pallet lifter made an uncontrolled descent to within 2 metres of the deck.

What happened?

The drum was being moved on to the main deck from the quayside using the whipline of a knuckle boom, heave compensated, computer assisted type crane.

It is possible, on the type of crane used, for the crane operator to select the number of hydraulic pumps required dependent on the operations to be completed. There were four hydraulic pumps available but as the operation appeared to require only a single function at low speed the operator had selected only two pumps.

The crane operator was manoeuvring the load to the selected position using the left slew, boom up, knuckle in and whipline lowering functions.

On reaching the approximate landing area, the deck foreman and rigger were preparing to take control of the load with the taglines when the load commenced an uncontrolled descent of approximately three metres and then came to a stop approximately two metres from the deck. When the deck foreman and rigger heard the load descending they moved clear.

The crane manufacturer was contacted. One of its technicians inspected the crane and reviewed the circumstances leading to the incident. His findings were as follows:

“The reported incident appears to be a combination of improper use of pumps during operation – the operator had only two out of the four main pumps running when using multiple functions. This resulted in reduced flow to all functions when all functions were activated. When the majority of functions were deactivated and the winch function was still fully active, all hydraulic flow was diverted to the fully open winch function, causing an unintended situation.”

The crane manufacturer has confirmed that there is a danger that if only two pumps are running the system will produce this ‘unintended situation’.

The Member involved has instigated the following corrective/preventative actions:

To ensure safe working for lifting operations involving this type of crane, supervisory staff, in consultation with workers and their representatives are to provide all crane operators with the information contained in this safety notice,

and:

- during crane driver training/familiarisation, reiterate the requirement to have, as a minimum, three pumps working and warning of the danger of not doing so. It is appreciated that some operations can be completed with only two pumps; two pumps should only be selected for a lifting operation when careful assessment has been made of the likely risks and it is ensured that there is no possibility of a dropped load. An additional risk assessment must be completed to document two-pump operations and the precautions in place that ensure safe operations.
- install a warning notice in the crane cab highlighting the requirement to have, as a minimum, three pumps running.
- review the risk assessment for the crane, with additional focus on the potential for this type of incident.
- ensure supervisory personnel involved in lifting operations take responsibility for disseminating this notice and raise deck crew awareness of potential dropped loads through review of the revised risk assessment and the completion of a toolbox talk prior to lifting operations.
- provide all personnel onboard with information and instruction regarding the incident and the dangers of approaching any raised/suspended loads.
- issue this notice to IMCA and request distribution throughout the industry to warn others of the potential for incorrect set-up and operation of this type of crane system.

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