

Lifting and Rigging Plans

What happened?

Recent NOPSEMA investigations of dangerous occurrences during non-routine lifting and rigging activities, which resulted in dropped objects and failed rigging equipment, have identified a trend in the absence of effective lifting and/or rigging plans for an operation or partial completion of a plan which was considered ineffective.

The following examples aim to illustrate the above points:

- A 40 kg object was dropped 4 metres from a wooden pallet onto a grated walkway as it was being lifted into a pump room. An investigation identified that a lifting plan was not completed for the lift, as required by the operator's safety management system. Requirements regarding pallet lifts were also not detailed in the operators lifting procedures. NOPSEMA notes that the lifting of wooden pallets is not permitted by some facility operators.
- An investigation into rigging equipment, which parted in a drilling derrick, found that a rigging plan was not completed for the rigging operation as required by the operator's safety management system. The investigation also found that the rigging loads were not accurately estimated or calculated, and that the selected rigging equipment was subsequently determined as being under-rated for the anticipated loading.
- A manned forklift, which was being utilised to suspend a rigging equipment arrangement, toppled-over on the deck as a result of rigging equipment failure. An investigation identified that, contrary to the operator's safety management system, the rigging operation was conducted without a rigging plan and without rigging loads being determined for any part of the operation.
- An investigation into the lifting of a manned Fast Rescue Craft (FRC) for regular launch and recovery operations using the facility crane identified that the lifting plan was only partially completed. The lifting plan did not identify the actual or estimated weight of the load being lifted and subsequently, the rigging selected was identified as being under-rated for the actual lifting operation.



Failure of over-loaded wire rope sling



Toppled forklift (manned at the time)

What could go wrong?

Failure of lifting equipment can potentially result in a dropped load or dropped object, while failures of rigging equipment can potentially result in an uncontrolled vertical or horizontal movement of the load or equipment. The examples provided of failures of lifting and rigging equipment could have resulted in serious injuries or a fatality, while the potential failure in the under-rated FRC rigging had the potential for multiple fatalities.

Key lessons

The following recommendations should be considered.

Lifting or rigging plans should be completed in accordance with the facility safety management system, and should be:

- completed for every lifting or rigging operation (routine and non-routine)
- completed by suitably trained and competent personnel
- reviewed by a competent person
- approved by the supervisor of the lifting or rigging operation to ensure all of the identified controls are in place prior to commencement and remain in place for the duration of the activity.

Lifting and rigging plans are an integral part of hazard identification as a component of the overall risk management process for safe management of lifting and rigging operations.

The detail required in the lifting and rigging plans should be proportional to the complexity and frequency of the operation. Frequent or simple tasks may only require a basic plan while infrequent or complex lifting or rigging operations may require significant engineering. Also, lifting and rigging plans on floating facilities should consider the dynamic effects on loads and resulting dynamic amplification factors.

It has been reported by operators that many lifting and rigging incidents have occurred during what is perceived as low risk operations. It is important that these risks are effectively managed with lifting and rigging plans as part of the overall risk assessment process to ensure the operations are safe and risks are reduced to as low as reasonably practicable (ALARP).

The legislation

Clause 9 of Schedule 3 to the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* requires that “The operator of a facility must take all reasonably practicable steps to ensure that the facility is safe and without risk to the health of any person at or near the facility.” This includes an obligation to take all reasonable practicable steps to:

- implement and maintain systems of work that are safe and without risk to health [Clause 9(2)(d)]; and
- provide all members of the workforce with the information, training and supervision necessary for them to carry out their activities in a manner that does not adversely affect the safety of persons at the facility [Clause 9(2)(f)].

Contact

For further information email alerts@nopsema.gov.au and quote Alert 59. NOPSEMA safety alerts are on published at nopsema.gov.au, on the ‘Safety Alerts’ page under the ‘Safety’ tab.

The following oil and gas publications provide further guidance and recommended practice on lift planning and provide examples of lift plans.

- International Association of Oil & Gas Producers, Lifting & hoisting safety recommended practice, Report No. 376, April 2006. <http://www.ogp.org.uk/pubs/376.pdf>
- The International Maritime Contractors Association, Guidelines for Lifting operations, IMCA M 187, October 2007. <http://info.ogp.org.uk/liftingandhoisting/RPR/IMCASEL0192.pdf>
- UK Health & Safety Executive, Lifting Operations and Lifting Equipment Regulations 1998, Safe use of lifting equipment. http://www.hseni.gov.uk/1113_safe_use_of_lifting_equipment.pdf