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Target Audience:

RSG/SSG Specialist Inspectors, AFQ Inspectors

## **HANDLING CONTAINERS WITH SLEWING CRANES**

This guidance has been written to address the specific problems that can arise when ports use slewing cranes to handle containers. In particular it gives advice on the equipment used, the issues that port managers must consider prior to deploying stevedores onto ships and the control measures required if stevedores are deployed. Whilst the guidance deals primarily with quayside cranes some issues relating to ships cranes are also covered

### **BACKGROUND**

- 1 At large container ports, the majority of containers are usually handled using ship-to-shore gantry cranes.
- 2 These cranes can handle containers quickly and accurately and the driver, generally, has a good view of the operation at all times. The cranes are usually equipped with an automatic spreader which allows the driver to lock on to and release containers from the crane cab.
- 3 Gantry cranes tend to be expensive and whilst this is acceptable for ports handling large quantities of containers annually, for the smaller ports a dedicated container crane may be uneconomic. Smaller ports will, however, handle general cargo and will generally have access to either fixed or mobile quayside slewing cranes.
- 4 Handling containers with slewing cranes tends to be slower than with a gantry crane and the crane driver generally has less control over the suspended load as the container will tend to swing and twist. The amount of movement is clearly influenced by several factors including the equipment used, whether the container is full or empty, whether it is properly loaded, its centre of gravity, the skill of the operator and the weather.

### **MAIN HAZARDS**

5 The main hazards associated with container handling with slewing cranes, which are considered in this guidance, are falls from height and slips and trips.

## GENERAL CONTAINER HANDLING ISSUES

6 Whether a gantry crane or a slewing crane is used, container-handling operations can involve several high hazard tasks, for example lashing and unlocking twist locks etc. These common issues are covered in Docks Information sheet 7 and the ICHCA guidance "Container Top Safety, Lashing and Other Related Matters" and are, therefore, not covered in this guidance. When slewing cranes are used for containers further hazards can be introduced over and above those associated with gantry cranes.

## EQUIPMENT USED WHEN HANDLING CONTAINERS WITH A SLEWING CRANE

7 There are several different ways of moving containers with slewing cranes. Some cranes are fitted with a spreader whilst others are used with chains and hooks on the corner castings of the containers.

8 Some spreaders are fitted with locking devices, which allow the crane driver to lock onto and release the container from his cab. Locking onto the box can also be done manually.

9 Some cranes are fitted with a rotator which is a hydraulic device, fitted between the crane hook and the spreader, that allows the driver to turn the container (up to 360 degrees) thus increasing his control over it.

10 Some spreaders are fitted with "flippers" which are flat metal plates, which can be deployed along the sides and ends of the spreader. These may be manually or automatically deployed. They assist the driver to position the spreader on the container.

11 The spreader and other equipment can be removed should the crane be required for other duties.

12 For most operations where containers are handled regularly with a quayside slewing crane, a self-locking/unlocking spreader equipped with a rotator should be used where it is reasonably practicable to do so. When ships cranes are used to move containers a semi automatic spreader should usually be provided by either the shipping line or the Port. (This type of spreader usually remotely locks onto the container but is released manually). Use of this type of equipment gives the crane driver more control over the suspended container and importantly may provide scope for stevedores to be removed from the work area for at least part of the operation.

## STEVEDORES ON BOARD SHIP

13 Landing the spreader on a container, or landing a container in the correct position on the ship, will be more difficult with a slewing crane, than with a gantry crane even when a skilled crane driver is provided with good signals and uses a spreader fitted with a rotator and flippers.

14 Visibility may be restricted, particularly with smaller slewing cranes, and there may be less control of the spreader and the load.

15 In addition to lashing and twist-lock removal, stevedores may be required on the ship to:

- Attach or detach chains from containers when a spreader is not used
- Lock a non-automatic spreader onto a container
- Act as banksman for the crane driver and to help guide the container or spreader into place
- Push the spreader or container into its final position if the crane driver lacks sufficient control to do so himself

16 Deploying stevedores onto a container ship, for any operation, could potentially put them in a position where they could fall from height or be struck or trapped by a moving container. Carrying out the above tasks is no exception. The risk will be dependant on the design of the ship, the stowage of the containers and of course the system of work and control measures that are used.

17 Containers may be stacked on the deck as well as in the hold, they may overhang the hatch coamings of the ship and the stows may have significant gaps between them through which people could fall.

18 Port managers, ships agents or those who are in control of the container operations must consider and justify the need for stevedores to be present for all (or even part) of the operation.

## RISK ASSESSMENT

19 A risk assessment made under the Management of Health and Safety at Work Regulations 1999 should be carried out to assess the hazards and risks of loading and discharging containers. The risk assessment should cover the risks to employees and others who may be affected by the work activity including agency employees and ships crew. The assessment should consider the requirements of the Work at Height Regulations 2005.

20 The risk assessment should specify the type of equipment to be used. It should also identify the roles and responsibilities of all parties involved in the operation and the specific risks that arise from working a particular vessel.

21 There may be significant parts of the work on any given ship, which do not require stevedores to be present, and removing them will significantly reduce the overall risk.

22 On a given vessel some containers are easier to handle than others for example:

- Containers on the deck can be seen more clearly than the ones at the bottom of the hold on the shore-side of the ship.
- It may not be possible to use flippers when breaking out the first container in a stow and this make that container more difficult to handle.
- Over height and out of gauge containers (those that are higher/wider/narrower than “standard” 20 and 40 foot containers)

23 The crane driver may therefore need more or less help depending on which part of the stow they are working on and the layout of the ship. In some cases the crane driver may not need any help with a particular container or series of containers.

24 The risk assessment should consider whether any container, genuinely, could not be moved without the help of stevedores or whether their absence merely reduces work rate. If the latter is true then a slight reduction in speed of handling may result in a big reduction in risk and the issue becomes a straightforward one of reasonable practicability. Ports will need to balance the need for an acceptable work rate against the significant risk that may be introduced when stevedores engage in this sort of activity.

25 At least one port, in the UK, in conjunction with a shipping line that uses semi-automatic twistlocks, has completely removed stevedores from the container discharge operation and other ports have removed stevedores for significant parts of the container handling operation.

26 Measures to protect ships crew could include instructions to stop work when crew enter the working area and availability of written instructions, for crew, in several languages.

## SAFE SYSTEMS OF WORK

27 It is unlikely that Ports will be able to remove stevedores for the whole operation of vessel discharge and loading back. If stevedores are put on board they must be deployed in accordance with a safe system of work (SSOW) which sets out clear methods for avoiding a fall from height and the other hazards.

28 As a minimum the SSOW will need to consider:

### (1) Falls from Height

- Arrangements to avoid working at height, for example guide ropes (tag lines) on the spreader to allow stevedores to influence it from positions of safety
- How to keep stevedores at least 2m away from unprotected edges as far as practicable, bearing in mind that a ship is seldom a stable platform and will roll, especially when ships cranes are being used. (Planning the loading and discharge sequence can help). This is an industry standard based on the width of a box.

- Provision of adequate means to move around the ship, both onto and between container stows, for example man riding cages, properly designed and footed ladders, simple youngman type drawbridges to cross gaps etc. If a gap is large enough for a person to fall down then precautions are required.
- Arrangements to ensure that where stevedores do approach open edges adequate **fall prevention** (not fall arrest) measures are used (usually harness with a short lanyard) wherever practicable and that fall arrest is only used when fall prevention is not reasonably practicable.
- Provision of an appropriate anchor point if a harness is provided, for example a container corner casting, the spreader frame or part of the ship. If the spreader is used as an anchor point then the SSOW must anticipate and avoid the potential to be struck by the spreader.
- Measures to ensure that the anchor point does not hinder a stevedore's escape route should one be required, that is the ability to move away from a swinging container.
- Measures to ensure that the choice of anchor point does not introduce different hazards, for example the possibility of being suspended from the spreader if it is raised unexpectedly.
- Arrangements for ensuring that staff are adequately trained e.g. banksman training.
- The SSOW should include arrangements for dealing with maintenance issues e.g. crane breakdowns, jammed twistlocks etc
- Emergency arrangements for speedy recovery should a person fall when using fall arrest including 1<sup>st</sup> aid arrangements for anyone who suffers harness trauma.

## (2) Suspended Loads

- How to ensure that stevedores are kept clear of suspended loads
- Arrangements to ensure that where stevedores approach suspended containers they do so in such a way so that they are not struck or pushed over an open edge.

## (3) Slips and trips

- Ensuring that the lanyards do not become a tripping hazard
- Provision of appropriate footwear to reduce the risk of with slips and trips.

## SHIPS CRANES

29 Some ports still use ships' cranes to handle containers. The same general principles, to ensure stevedore safety, that are set out in this guidance should still apply although it may be more difficult to insist on certain equipment especially for infrequent visitors to a port. Port managers will need to work with shipping lines, the ships agent and the crew on these issues. Ports will often prefer to use their own spreader and gear rather than the ship's.

30 Ships cranes introduce a further hazard as they can cause the ship to roll significantly and the safe system of work and provision of fall arrest should take this into account

31 Those in charge of the container handling operation should satisfy themselves that the crane has a certificate of thorough examination as required by the Docks Regulations, The Merchant Shipping (Hatches and Lifting Plant) Regulations 1988 and the Merchant Shipping (Safety at Work) (non UK Ships) Regulations 1988

## ADVICE TO INSPECTORS

32 Where containers are handled on a regular basis, by shore-based slewing cranes, inspectors should expect to see such cranes fitted with an automatic spreader fitted with a rotator where it is reasonably practicable to do so In the absence of such equipment an improvement notice should be considered unless the Port can properly justify their decision. With regular container operations using ships cranes, inspectors should expect to see a spreader, which can be easily attached to the crane hook. If inspectors visit ports which are handling containers using slewing cranes, it is likely that stevedores will be involved in these operations. Inspectors should ask to see risk assessments which justify the deployment of stevedores and challenge whether such a deployment is for technical or economic reasons and whether all reasonably practicable precautions have been taken.

33 If the port is properly able to justify the deployment, inspectors should expect to see robust written safe systems of work and hardware which prevent a fall from height and which control the other risks associated with this operation, so far as is reasonably practicable.

34 Where persons in control of these operations fail to provide risk assessments which justify stevedore deployment an improvement notice should be considered. Where there is a failure to provide SSOW or adequate fall prevention measures a prohibition notice should be considered.

35 Where containers are handled using ship based cranes inspectors should encourage the same standards as for shore-based cranes This work may have to be carried out jointly with MCA particularly if the issues involve ships equipment (i.e. the cranes).

36 Inspectors may wish to encourage dialogue with MCA over many of the issues raised in the SIM, during joint visits with MCA surveyors.

#### PUWER REGULATION 4 AND SLEWING CRANES

37 Some managers within the ports industry have expressed the view that slewing cranes are not suitable work equipment to handle containers. It would be difficult to use PUWER regulation 4 to argue that a slewing crane, as work equipment, is not suitable for this form of cargo handling provided it has the appropriate attachments.

38 It would also be difficult to use a reasonably practicable argument to justify the installation of a gantry crane.

#### FURTHER ADVICE

39 Further advice on this topic is available from the CACTUS Transportation Section.

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