SIP012 – GUIDANCE ON RO-RO PASSENGER AND CRUISE OPERATIONS

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# GUIDANCE ON RO-RO PASSENGER AND CRUISE OPERATIONS

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INTRODUCTION

1.1 This guidance has been produced by the ports industry with the support of the Health and Safety Executive.

1.2 It is for companies operating in the UK ports industry with responsibility for the safe design, construction, operation, management and maintenance of ports and terminal facilities and management of port and terminal activities. It will also be useful to employees and their representatives.

1.3 Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance. If the guidance goes beyond compliance then this will be clearly identified.

1.4 This guidance covers RoRo, passenger and cruise operations. The term Ro-Ro refers to an operation in which cargo is driven on or off, i.e. rolled on and rolled off. Passenger and cruise operations are the movement of passengers with or without their vehicles and the handling of passengers through ports with or without their luggage. This guidance also covers activities that are not carried out at dedicated passenger terminals.

REGULATORY FRAMEWORK AND GUIDANCE

2.1 The two principal relevant pieces of law are the Health and Safety at Work etc. Act (HSWA) 1974, and the Management of Health and Safety at Work Regulations (MHSWR) 1999, which set out the basic requirements to ensure, so far as is reasonably practicable, the health, safety and welfare of all involved.

2.2 Port specific legislation includes the Dangerous Substances in Harbour Areas Regulations (DSHAR) 1987 and the Loading and Unloading of Fishing Vessels Regulations 1988.

2.3 The Docks Regulations 1988 were in force from 1 January 1989 to 6 April 2014. COP25 ‘Safety in Docks’ was the accompanying ACOP for DR88, which was replaced by a new ACOP L148 ‘Safety in Docks’.


2.4 The guidance is aimed at routine operations and does not cover some of the specialised and high risk activities associated with handling dangerous goods and hazardous cargoes, or major hazards sites which are subject to the Control of Major Accident Hazards Regulations 1999.
2.5 Reference can also be made to the:
- International Labour Organisation’s (ILO) Code of Practice on Safety and Health in Ports (ILO 152)

3 HEALTH

3.1 The wide range of activities in ports can give rise to possible health risks such as exposure to dusty cargoes; back injuries, sprains and strains from lifting and handling/ pushing and pulling; noise and vibration. There is specific legislation including the Control of Substances Hazardous to Health Regulations (COSHH), the Noise at Work Regulations and the Manual Handling Regulations.

3.2 While there is reference to some specific health risks in these guidance documents, it is not possible to cover all the issues. Further information and guidance on the identification, assessment and reduction or avoidance of such risks can be found on the HSE website and:
- Ports web pages
- Control of Substances Hazardous to Health
- Noise at Work
- Musculoskeletal disorders (MSDs)
- Control of Vibration at Work Regulations 2005

4 RISK ASSESSMENT

4.1 Risk Assessments must be undertaken in accordance with the Management of Health and Safety at Work Regulations 1999. The risk assessment must consider the risks – not only to permanent employees but also to others including non-permanent employees (NPE’s), ship’s crew, passengers and visitors that may be affected by the activity. The appropriate control measures must be introduced and should consider collective measures ahead of personal or individual measures.

4.2 Risk assessments must be reviewed regularly and immediately after any incident or when there are significant changes to the operation. Most accidents and near misses can be avoided if the risks from the work are suitably and sufficiently assessed and appropriate control methods are adopted.

4.3 The risk assessment should record the significant hazards of the operation together with the relevant control measures. In port operations risk assessments should take into account changes such as tidal changes, weather, trim, list, load/cargo and vessel
4.4 Planning and work execution is discussed in HS(G) 177, Managing Health and Safety in Dockwork:  http://www.hse.gov.uk/pubns/books/hsg177.htm

4.5 The Health and Safety at Work Act (HSWA) applies on board a ship when shore based workers are engaged in cargo handling* or other tasks on board. The HSWA also applies to the Master and ship’s crew when working with shore-based personnel on board ship.

Note: *Cargo handling may include, but is not limited to, loading, unloading, stowing, unstowing, pouring, trimming, classifying, sizing, stacking, unstacking as well as composing and decomposing unit loads; and also services in relation to cargo or goods such as tallying, weighing, measuring, cubing, checking, receiving, guarding, delivering, sampling and sealing, lashing and unlashing.

4.6 Cooperation and coordination between shipside and landside employers is required. Employers must therefore carry out risk assessments and develop safe systems of work (in consultation with the workers involved) that all parties agree to, so that the respective employers can co-operate effectively with each other.

4.7 A signed agreement or an agreed and recorded system of work with the master of each vessel is recommended - this is not a legal requirement but may help to ensure effective co-ordination with other parties.

4.8 The regulations made under the HSWA; such as The Management of Health and Safety at Work Regulations 1999; The Lifting Operations and Lifting Equipment Regulations 1998 and The Provision and Use of Work Equipment Regulations 1998, do not apply to a master or crew of a ship, or any persons employing them, in relation to safe access, plant and equipment which remain on board the ship and for any undertakings or work which are carried out on board ship solely by the master and the crew. Instead, the MerchantShipping Act 1894 and related Merchant Shipping Regulations impose similar duties on board ship in UK territorial waters.

4.9 A ship’s master has duties under the HSWA in relation to the ship’s crew who are put ashore to perform their own tasks (for example loading ship’s stores or carrying out maintenance work on their ship). Those duties also extend to plant and equipment (for example a forklift truck) which is under the master’s control that is used ashore by ship’s crew, or when used by shore based workers ashore or on board ship.

5 LIFTING OPERATIONS AND LIFTING EQUIPMENT

5.2 So as not to cause confusion with the different terms used to describe lifting equipment, LOLER clearly uses the following definitions:

- "lifting equipment" means work equipment or machinery for lifting or lowering loads and includes the attachments used for anchoring, fixing or supporting it, for example vehicle lifts, side port cargo lifts, hanging car decks and ramps
- "accessory for lifting" or ‘lifting accessories’ means work equipment for attaching loads to lifting equipment or machinery for lifting

5.3 Ships documentation in relation to statutory inspection of lifting equipment and accessories should be checked to confirm it is certified for the intended use.

5.4 Further general advice and guidance can be found on the HSE and MCA web pages – see A simple guide to LOLER and the references at the end of this document.

5.5 See also ‘Lifting Operations’ in ACOP L148: http://www.hse.gov.uk/pubns/books/l148.htm

6 HAZARDS

6.1 Segregating pedestrians and vehicles is a fundamental safety principle of RoRo/Cruise operations and should be at the forefront of operating procedures.


6.2 The potential hazards to personnel and passengers arising from Ro-Ro, Passenger & Cruise operations (including the quay side shore ramp and/or linkspan) includes but is not limited to:

- person struck or crushed by vehicles/machinery
- slips, trips and falls
- hazardous cargos and fumes
- access equipment such as linkspans and gangways
- traffic on/off vessels and on the port estate
- additional risks from passengers and third parties
- consideration should be given to risks posed by: adjacent berth operations, passengers wandering from routes, falls into water, vehicles servicing ships (stores,
PLANNING

7.1 Ro-Ro, passenger and cruise operations should be planned and executed in a way that minimises risks to those involved in the operation, including direct employees, non-permanent employees (NPEs), ship’s crew and passengers. While the handling of various types of cargo is to a great extent routine, consideration of the impact and presence of passengers in the operational environment must be taken into account. In these situations a suitable and sufficient risk assessment will be required.

7.2 Planning of operations should include co-ordinating the interface between vehicle movements, cargo, ferry & cruise passengers, luggage handling/flows, ships stores & materials and any personnel required to be on freight and service decks such as lashers, other shore-based workers, ship’s crew, ferry company employees, victuallers, service outlets/concessions, border control agencies, facilities management staff etc.

7.3 A cargo stowage plan on vessels and lorry/vehicle parks should include a record of the positioning of any dangerous cargo:

- on board, such cargo should comply with the requirements of the International Maritime Dangerous Goods Code (IMDG)
- suitable arrangements for segregation of hazardous cargo should be made on the terminal

Hazardous cargoes should, where possible, be segregated from vehicles and passengers.

7.4 Plans must be in place to deal with emergency situations such as:

- rescue and evacuation
- leakage of hazardous cargoes
- fire
- contagious disease on a vessel
- adverse weather, flood etc.
- other foreseeable events such as serious injury, explosion, etc.

See also Safety in Ports 016 Emergency planning: http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance

7.5 A number of other activities may need to be considered, including:

7.5.1 Baggage handling: Several issues arise from baggage handling and the ergonomic layout of the facility needs to take account of the variety of vehicles and equipment involved. The baggage moving equipment itself needs to have been properly designed and be fit for purpose and the operation may require specific manual handling and
ergonomic assessment. Issues to be considered include:

- heights of baggage conveyors
- specialist imports / exports (or unusual items)
- heavy baggage
- stack heights
- examination and inspection activities such as security checks
- damaged baggage manual handling risks

7.5.2 **Quayside activities:** General risks will need to be considered before during and following the load / discharge of vessels. Typical issues for consideration include:

- control of bulky cargoes (including ships stores)
- control of waste
- restricted traffic flows – maintaining vehicle and pedestrian segregation
- communications of systems and procedures
- gangways and pedestrian walkways
- bunkering
- control measures for vehicles manoeuvring near the quay edge (e.g. wheel stops or barriers)
- safe access to welfare facilities

7.5.3 **Movements around the terminals:** The dynamics of loading and unloading a ship can change very quickly. Typical factors include:

- age profiles of passengers and drivers
- crew
- foot passengers, children etc.
- people with special needs
- rest points for passengers in walkways and elsewhere in the port
- access
- passenger information – including signage
- vehicles: cars, motorcycles, cyclists etc.
- cargo
- weather
- tide – rise and fall of ramps
7.5.4 **Terminals:** The safe and efficient operation of the terminal is dependent on the cooperation between all parties. Priority loading/unloading arrangements/plans should be in place to ensure the safe efficient operation. Effective control of vehicle movements on deck and communication between ship and shore are essential. Traffic management plans should consider:

- interface between vehicles and pedestrian
- lane management
- park/ships plans
- set down areas e.g. coach park management
- walkways
- passenger control
- signage, including emergency procedures and muster points

7.6 In mixed traffic operations, planning and design should take into account the range of different types of traffic (for example HGV, coach, pedestrian, cyclist etc.) and acceptable traffic combinations. Additionally, planning should incorporate activities that might impact on traffic flow and therefore affect safety, for example, vehicle inspection, immigration, breakdown etc.

Some further considerations may include but are not limited to:

- sifting mixed traffic flows on entry to port
- achieving desirable mix of traffic combinations which minimises risks, and maximises safety assurance
- police/marshal presence
- traffic systems e.g. lights, barriers, segregated lanes

8 **VESSEL ACCESS**

8.1 All ships must provide a safe means of access, which must comply with the: [Merchant Shipping Means of Access Regulations](#)

8.2 Pedestrians and vehicles need to be suitably segregated.

8.3 Any measures adopted for the control of vehicle traffic (which may include traffic signallers) on vessel ramps, vehicle decks or linkspans, particularly single lane linkspans, must be strictly observed. Hand signals must be clear to passengers and drivers.

- [HSE video and information on signals](#)
- [The Health and Safety (Safety Signs and Signals) Regulations 1996](#)

8.4 If separate pedestrian access is not available then vehicle, pedestrian and cyclist traffic
8.5 Pedestrians requiring access to a vessel by means of the vessel ramp or internal ramps have some responsibility for their own personal safety and they must therefore observe traffic movement and only access the ramp when it is safe to do so and as instructed.

8.6 Linkspans, ramps and associated equipment should be safe, fit for purpose and be routinely inspected and maintained.

8.7 Structures used by vehicles should be sufficiently rigid to be used safely.

8.8 Linkspans and ramps should not be used at a slope greater than that for which they were designed.

8.9 In areas where ships are loaded or unloaded, vehicles should avoid manoeuvring close to unprotected quay edges. Where the pattern of vehicle movement presents a foreseeable risk from vehicles running over the edge of a quay or other dangerous edge, suitable barriers should be provided and maintained.

8.10 Where practical, the edge of the quay adjacent to a linkspan or ship’s ramp should be protected to prevent people from falling into the water.

8.11 See also SiP014 Guidance on safe access and egress in ports: http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance

9 RAMPS

9.1 Access via the ramp should be controlled at all times while vehicles are using it. The degree of control that will be necessary may vary with the size of the ramp and the number of vehicle movements. The control arrangements adopted should ensure that all pedestrians, including seafarers and other persons visiting the ship, are subject to the same control system.

9.2 A suitable and safe traffic movement system, appropriate to the circumstances, which includes the regulation of traffic between ship and shore, should be set up and adequately supervised and monitored.

9.3 Ramps which are used by vehicles should not be used for pedestrian access unless there is suitable segregation of vehicles and pedestrians, such segregation can be achieved by a separate walkway which may be either a pavement or protected by a suitable barrier, or by ensuring that pedestrians and vehicles do not use the ramp at the same time. This could be achieved by not allowing any vehicle to move until the passengers have all disembarked, a temporary halt to vehicle movements to allow pedestrians safe passage, or moving people through the area by vehicle. Whenever possible, the use of such ramps for pedestrian access should be avoided, and such access should be routed via a separate
gangway or accommodation.

9.4 The ramp controller should ensure that when vehicles are using internal ramps, pedestrians are prevented from doing so. The traffic movements should be stopped to enable them to transit the ramp. Other control measure that could be considered include: the use of hand signals or traffic light systems.

9.5 Ramps should be maintained at an optimum angle by means such as automatic control systems of by the manual operation of the ramp's operating machinery. It may be required to monitor and control the ramp in adverse weather conditions.

9.6 See also SiP014 Guidance on safe access and egress in ports: [http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance](http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance)

### 10 LINKSPANS

10.1 Linkspans are used to provide a safe means of access between ship and shore at all states of tide. They can be designed for use by people or vehicles and in some cases both people and vehicles, provided adequate segregation is provided.

10.2 Linkspans design can vary significantly they can be linked to a floating pontoon that is ballasted to be compatible with the ship or ships berthed to them. Alternative designs involve a ramp or walkway lifted of lowered as required either hydraulically or operated by a wire hoist mechanism. Some are automatic and adjust to the rise and fall of the ship and tide and changes of trim/list automatically whereas others are required to be adjusted manually.

10.3 Whatever design is adopted linkspans must be properly designed and fit for purpose and be capable of withstanding the loads that they will be subjected to during use.

10.4 Linkspans must also be properly maintained to ensure they are and remain safe, The Provision and Use of Work Equipment Regulations 1998 and Lifting Operations and Lifting Equipment Regulations 1998 may apply. Thorough examinations of linkspans should be undertaken at appropriate intervals.

10.5 Floating linkspans may need to be approved by maritime classification societies.

10.6 Ports and terminals should ensure that linkspans are only used as designed. Heavy loads could cause significant damage and cause linkspans to fail or become unsound. The total weights as well as axle loads need to be taken into account to ensure loads are acceptable and complex engineering calculations maybe required to ensure structural safety.

10.7 Operators of linkspans must be trained and where appropriate certified to operate the linkspan. Inappropriate operation may cause damage and/or make the linkspan unsafe to use.
10.8 Controls should be in place to ensure that ships do not move when alongside and a linkspan connected as significant damage may occur if the ship moves. Ships should not test engines unless suitable precautions are in place.


10.9 Linkspans should have suitable surfaces for both pedestrians and vehicles to use it safely.

10.10 The angle that the linkspan achieves must be within design limits of the linkspan itself and not endanger the equipment and people using it.

10.11 Linkspan safety:

- HSE
- CIRIA RP572 Ship-to-shore Linkspans and Walkways

BSI BS6349 Maritime structures, General Criteria provides guidance on the criteria relevant to the planning, design, construction and maintenance of structures in a maritime environment and located at or close to the shore. Covering environmental factors, operational requirements, sea state, loadings, geotechnics, materials and protective measures.

10.12 All moorings need to be maintained to limit the possibility of inadvertent ship-shore separation.

11 WORKING IN THE PROXIMITY OF VEHICLES

11.1 PERSONNEL SAFETY

All personnel involved in loading and discharging of Ro-Ro, passenger and cruise vessels should wear high visibility clothing, safety footwear and other items of approved personal protective clothing and equipment as required by risk assessment.

11.2 Noise levels on vehicle decks may be excessive; therefore a noise assessment should be carried out in order to determine noise levels and any appropriate control measures required. Care should be taken when selecting personal hearing protection to ensure that its attenuation does not prevent the wearer hearing communications such as whistles signals, vehicle horns and reversing alarms.

11.3 Ro-Ro decks often have potential trip hazards such as deck fittings, treads, lashing points, ribs or deck gratings. Personnel must be aware of loose lashings, chains and other trip or slip hazards on the deck. Trestles, lashings and chains should be properly stowed where practicable. Stowages may be simple rails, trolleys or racks.

11.4 All personnel working on-board decks should have a means to stop a vehicle in an emergency situation or attract attention if required. For example, the use of whistles and a
11.5 A system must be in place to safely manage the movement of vehicles on freight decks, taking into consideration speed, restricted driver visibility, safe stowage or positioning and any other activities being carried out at the same time. Different systems may be required for cars, accompanied freight and unaccompanied freight. Particular attention should be given to the fact that some drivers’ first language may not be English.

11.6 Freight drivers must not move their vehicles without suitable communication from the designated signaller.

11.7 The designated signaller guiding a vehicle into a final position should ensure that they are in communication with the driver, either directly visible, via vehicle mirrors or by whistle. The designated signaller must position themselves clear of the vehicle movement and avoid the risk of being trapped or crushed.

11.8 Signals should be agreed and understood. Normally a loud long blast on a whistle or the hand signal below indicates emergency stop.

11.9 Consideration should be given to the need for clear and unambiguous control measures in these situations as well as the driver’s responsibility not to move unless instructed or not to move if the banksman moves away. Sufficient staff should be available to control passenger vehicle activities.

12 VENTILATION

12.1 Prior to operations commencing on enclosed decks it is essential that the ships ventilation system is operating. If in doubt then this should be reported immediately to the Ships Officer.

12.2 Operations should be controlled to minimise the number of vehicles with engines running on the vessel at the same time. On car decks, engines should not be started or left running until the vehicle is ready for discharge.
12.3 When monitoring atmospheres on vehicle decks for noxious substances the safe levels indicated in EH40 "Workplace exposure limits" should be used.

12.4 See also SiP015 Guidance on confined spaces in ports: http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance

13 COMPETENCE, INFORMATION, INSTRUCTION, TRAINING & SUPERVISION

13.1 All persons engaged in port operations must be suitably trained and assessed as competent for the role that they are required to perform.

13.2 All persons must be provided with adequate information, instruction, training and supervision. This includes non-permanent employees (NPEs).

13.3 All persons involved in operations must know who is in charge of the operation. This is particularly important where NPEs or ship’s crew are working alongside permanent employees. Operations can involve permanent staff and NPE of various organisations. To ensure a safe operation there must be clear rules and/or agreements as to how the site operation is conducted.

13.4 Supervisors should be trained, competent and experienced and have access to relevant competent advice and assistance.

14 RELEVANT LEGISLATION AND GUIDANCE

14.1 Relevant legislation and guidance includes:

- Control of Substances Hazardous to Health Regulations (COSHH) 2002 http://www.hse.gov.uk/coshh/index.htm
- Control of Vibration at Work Regulations 2005 http://www.hse.gov.uk/pubns/indg175.pdf
- Design and safety of linkspans and walkways http://www.hse.gov.uk/ports/linkspans-walkways.htm
- International Labour Organization’s (ILO) Code of Practice on Safety and Health in Ports (ILO 152)

- Lifting Operations & Lifting Equipment Regulations (LOLER) 1998
  http://www.hse.gov.uk/work-equipment-machinery/loler.htm

- Maintaining portable and transportable electrical equipment  HSG107 published by HSE  

- Managing Health & Safety in Dockwork HSG 177
  http://www.hse.gov.uk/pubns/books/hsg177.htm

- Manual Handling Regulations and Musculoskeletal disorders (MSDs) and  
  http://www.hse.gov.uk/msd/information.htm and  
  http://www.hse.gov.uk/msd/index.htm

- Merchant Shipping and Fishing Vessel (Lifting Operations & Lifting Equipment) Regulations (LOLER) 2006  

- Merchant Shipping & Fishing Vessels ( Provision and Use of Work Equipment) Regulations (PUWER) 2006  

- Merchant Shipping Means of Access Regulations 1988  

- Noise at Work  
  http://www.hse.gov.uk/noise/index.htm

- Occupational health and safety advice for people working in the docks industry  
  http://www.hse.gov.uk/docks/index.htm

- PSS Safety in Ports Guidance suite  
  http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance

- Provision & Use of Work Equipment Regulations (PUWER) 1998  
  http://www.hse.gov.uk/work-equipment-machinery/puwer.htm

- Safety in Ports Guidance documents  
  http://www.portskillsandsafety.co.uk/publications/safety_in_ports_guidance  
  o  SiP001 Workplace transport planning and terminals  
  o  SiP010 Workplace transport StoRo and RoRo operations  
  o  SiP014 Safe access and egress in ports

- Vehicles at work  
  http://www.hse.gov.uk/workplacetranport/index.htm

- Working at Sea - Maritime & Coastguard Agency  
  http://www.mcga.gov.uk/c4mca/mcga07-home/workingatsea.htm