DISCLAIMER

This guidance has been produced by the ports industry, with assistance from the Health and Safety Executive, to help those who owe duties under health and safety legislation to identify key risks. This guidance also gives examples of good practice, which dutyholders can use to inform their risk assessments and procedures.

Ports and the activities which take place there vary. Employers and any other dutyholders must comply with the legal duties imposed on them by health and safety legislation, including the Health and Safety at Work Act 1974. This will also involve careful and continuing risk assessments to enable dutyholders to plan, implement, manage and review policies and procedures which address the risks associated with the conduct of their business.

Although this guidance refers to existing legal obligations, dutyholders are not obliged to follow it. However, a dutyholder which does follow the guidance will normally be doing enough to help it to meet its legal obligations.

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# SIP007 – GUIDANCE ON LOADING AND UNLOADING OF DRY BULK CARGO

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1 INTRODUCTION

1.1 This guidance document has been developed for use by companies operating in the UK ports industry, with responsibility for the safe design, construction, operation and maintenance of port facilities and management of port activities. The guidance is not exhaustive, but is intended to make the reader aware of current regulation and best practice, and to support the production of company and site specific safety policies, safe systems of work, asset maintenance and renewal and ongoing training and competence.

2 REGULATORY FRAMEWORK AND GUIDANCE

2.1 The two principal statutes governing the application of health and safety law in the UK 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2.2 Other port specific legislation includes the Docks Regulations 1988 (much of which has been repealed and replaced by more recent generic legislation), the Dangerous Substances in Harbour Areas Regulations (DSHAR) 1984 and the Loading and Unloading of Fishing Vessels Regulations 1988.

2.3 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.

2.4 Further advice and guidance on specific topics can be found on the HSE website at www.hse.gov.uk and includes specialised advice on the following:

- The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002 http://www.hse.gov.uk/fireandexplosion/dsear.htm
- The Control of Major Accident Hazards Regulations (COMAH) 1999 http://www.hse.gov.uk/comah/
- The Electricity at Work Regulations 1989 and guidance on electrical safety http://www.hse.gov.uk/fireandexplosion/dsear.htm

2.5 Reference can also be made to the International Labour Organization's (ILO) Code of Practice on Safety and Health in Ports (ILO 152) http://www.ilo.org/public/english/dialogue/sector/techmeet/messhp03/messhp-cp-b.pdf
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) 2002, 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 at

- Ports web pages http://www.hse.gov.uk/docks/index.htm;
- Control of Substances Hazardous to Health http://www.hse.gov.uk/coshh/index.htm;
- Noise at Work http://www.hse.gov.uk/noise/index.htm and
- Musculoskeletal disorders (MSDs) http://www.hse.gov.uk/msd/index.htm
- Control of Vibration at Work Regulations 2005 http://www.hse.gov.uk/pubns/indg175.pdf

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 and anyone else that may be affected by the work activity. The appropriate control measures must then be put in place 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.

4.4 Planning and work execution is discussed in the HSE Publication HSG177, Managing Health
and Safety in Dockwork.

5  VESSEL ACCESS

5.1 The requirements for safe access to and on vessels are contained within the Docks Regulations 1988 and Guidance, the Merchant Shipping (Means of Access) Regulations 1988 and The Merchant Shipping (Safe Movement on board ship) Regulations 1988.

6  HAZARDS

6.1 Typical hazards to personnel when engaged in loading and unloading ships carrying dry bulk cargoes include:

- the cargo itself may be classified as hazardous
- in other cases whilst not necessarily classified as hazardous the cargo may have characteristics that make its handling more dangerous, for example spontaneous ignition, explosion, reduction of oxygen in the atmosphere, production of or release of toxic or flammable gases
- the conditions under which the cargo is carried, a ship’s hold can be a confined space
- cargoes are often carried whilst under fumigation
- access/egress to and from cargo may present a problem such as gaining access to scrap metal stock piles or access for sampling free flowing bulk cargoes
- handling may involve the use of grabs, chutes, conveyors, throwers, suction devices, augers and other methods of handling that may create impact, entrapment or entanglement hazards
- moving vehicles (road, rail) plant and equipment and the risk of collisions with pedestrians, fixed objects (structure of shed, grid covering etc) or other moving vehicles
- operation of bagging plants, screening equipment, grading or processing plants and associated hazards
- items of cargo falling from lifting equipment
- working at height on top of stacks of bulk cargo
- forwarding & receiving cargo to road, rail or barge transport
- fires caused by dusty cargoes building up on heated surfaces such as plant engines and electrical light fittings
- fires caused by cargoes decomposing, heating up and self-igniting
• exposure to dusty cargoes and to hazardous substances can cause significant risks to health and lead to long term ill-health such as Chronic Obstructive Pulmonary Disease (COPD). In order to manage any such risks, consideration should be given to the nature of the cargo and the Material Safety Data Sheets, and specialist advice sought where necessary. Further advice can be found on the HSE website at http://www.hse.gov.uk/coshh/index.htm and http://www.hse.gov.uk/copd/index.htm

• insects, rodents, pigeons and any other vermin which may be present

6.2 This list is far from exhaustive and therefore it is important that the qualities of the product and design of the ship and method of the handling operation are carefully considered to ensure that the operation is carried out in as safe a manner as is reasonably practicable.

7 LIFTING AND SLINGING OPERATIONS


7.2 In the main, LOLER replaced existing legal requirements relating to the use of lifting equipment, such as The Docks Regulations 1988 and The Lifting Plant and Equipment (Records of Test and Examination etc) Regulations 1992. On board vessels, MSLOLER replaced The Merchant Shipping and Fishing Vessels, (Lifting Hatches and Lifting Plant) Regulations, 1988.

7.3 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

Figure 1 - Grabbing operations
and includes the attachments used for anchoring, fixing or supporting it

- "accessory for lifting" or “lifting accessories” means work equipment for attaching loads to lifting equipment or machinery for lifting

7.4 The Regulations aim to reduce risks to people’s health and safety from lifting equipment provided for use at work. Generally, the Regulations require that lifting equipment provided for use at work is:

- strong and stable enough for the particular use and marked to indicate safe working loads
- positioned and installed to minimise any risks
- used safely, i.e. the work is planned, organised and performed by competent people
- subject to ongoing thorough examination and, where appropriate, inspection by competent people

7.5 Equipment and accessories that are exposed to conditions that can cause deterioration and that could lead to dangerous situations must:

- be thoroughly examined
  - in the case of lifting equipment for lifting persons, or an accessory for lifting, at least every 6 months
  - in the case of other lifting equipment, at least every 12 months
  - in either case, in accordance with an examination scheme; and each time that exceptional circumstances which are liable to jeopardise the safety of the lifting equipment have occurred
  - if appropriate for the purpose, be inspected by a competent person at suitable intervals between thorough examinations

7.6 It is good practice to identify that all lifting equipment and lifting accessories are within the correct inspection period by use of colour tags.

7.7 If there is any doubt as to the suitability of lifting equipment and lifting accessories, they must be removed from use. The term “load” within LOLER includes lifting a person and it is good practice prior to lifting personnel to undertake a daily pre-work inspection of the equipment and accessories concerned.

7.8 Always have lifting equipment thoroughly examined following “exceptional circumstances”, e.g. if it is damaged or fails, is out of use for long periods, or if there is a major change in how it is used which is likely to affect its integrity.
7.9 Further general advice and guidance can be found on the HSE and MCA web pages – see A simple guide to LOLER http://www.hse.gov.uk/pubns/indg290.pdf and the references at the end of this document

8 PLANNING OF CARGO OPERATIONS

8.1 In order to ensure that operations are conducted safely they need to be properly planned. Additional guidance can be found in the Bulk Loading and Unloading (BLU) Code and Manual and MCA Safe Loading and Unloading of Bulk Carriers Guidance. http://www.mcga.gov.uk/c4mca/safe_loading_and_unloading_of_bulk_carriers_2003.pdf

8.2 RECORDS

8.2.1 A record should be made for each ship visit which may include: the ship load/discharge plan; landside storage arrangements; personnel, plant and equipment involved; any specific traffic routes and any other hazards. Where appropriate, information should be given to the personnel involved as part of a “tool box talk”.

8.3 DANGEROUS GOODS

8.3.1 Where bulk cargo is also a hazardous substance, the requirements of the Dangerous Substances in Harbour Areas Regulations 1987, the International Maritime Solid Bulk Cargoes Code, the International Maritime Dangerous Goods Code and other relevant legislation, which may apply to the transport, storage or handling of the cargo, must be considered.

8.3.2 Terminal operators should also consult the appropriate Material Safety Data Sheets for the commodities being handled.

8.3.3 Storage of some commodities in specified amounts may require compliance with the Control of Major Accident Hazard Regulations 1999 (COMAH) as amended.

8.4 INSPECTING THE CARGO

8.4.1 Prior to loading or unloading operations commencing the cargo should where possible be inspected. Such an inspection should ensure that the cargo is in a safe condition to be handled. It is possible that bulk cargoes can spontaneously combust, develop hot spots, emit dangerous gases, liquefy, develop biological hazards and become unstable.

In situations when the cargo cannot be properly inspected until loading commences, such as when loading direct from delivery vehicles it should where possible be monitored during loading/unloading.
8.5 SITE CONDITIONS

8.5.1 The condition and location of the site chosen for cargo storage on port premises must be fit for purpose. It should be suitable to accept the weights and configurations of the ship’s cargo and also to accept vehicles used in the operation.

Site hazards include:

- ground condition and suitability – the ground should be of suitable construction and well maintained
- cargo size, cargo weight, height and size of stows/heaps and quay/ground loading
- angles of repose, stack integrity and likelihood to flow
- obstructions in the handling area - waste materials/ plastic banding, unused bearers, discarded packaging, other cargo and fixed immovable objects, such as lighting towers, bollards and pillars, which may present additional risks
- pedestrians being struck by moving vehicles and moving cargo in the handling area. It is therefore essential that all non-authorized personnel are controlled
- lighting conditions
- working in close proximity to other operations or activities, for example, public rights of way and third party premises/activities
- adverse weather conditions
- equipment such as conveyer systems, storage bins, hoppers, stacker reclaimers
- rail loading and unloading operations and shunting

Figure 2 - Stacker reclaimer at a coal terminal
8.6 WORKING AT HEIGHT

8.6.1 Comprehensive guidance on reducing risks from work at height, the hierarchy of controls and the use of personal protective equipment such as work restraint systems (fall arrest, fall prevention or work positioning) can be found on the HSE website at http://www.hse.gov.uk/falls/index.htm, and in the brief guide to the Regulations http://www.hse.gov.uk/pubns/indg401.pdf

8.6.2 The Regulations set out a simple hierarchy for managing and selecting equipment for work at height and for determining how to work at height safely. The hierarchy has to be followed systematically and only when one level is not reasonably practicable may the next level be considered. It is not acceptable to select work equipment from lower down the hierarchy (eg personal fall arrest, such as harnesses and lanyards) in the first instance.

Duty holders must:

- avoid work at height where they can
- use work equipment or other measures to prevent falls where they cannot avoid working at height
- where they cannot eliminate the risk of a fall, use work equipment or other measures to minimise the distance and consequences of a fall should one occur

8.6.3 There are several types of personal fall protection systems and equipment. Users of these systems require high levels of training and appropriate close supervision and should refer to the guide to Selecting, using and maintaining personal fall protection equipment to ensure that the right type of fall protection equipment is used.


8.6.4 Personnel should not be put at risk from falls. If a safe means of access to the cargo/vessel is not available, consideration should be given, subject to a risk assessment, in accordance with the Work at Height Regulations 2005, to the provision and use of alternative access arrangements. An appropriate personnel carrying cage, lifted by crane in accordance with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998 is an example of a suitable alternative access arrangement.
8.6.5 Personnel required to work on cargo may be presented with stows for loading or discharge with one or multiple shear drops, for example scrap metal cargoes. Where this situation arises the risks associated with working at heights must be assessed. Examples of control measures available to mitigate the risks associated with working at heights may include the use of safety nets, man lifting baskets, lifelines with safety harnesses or fall arrestors.

8.6.3 Procedures must be provided and maintained to ensure that loads (grabs) are not lifted over the heads of personnel.

8.6.6 The ship should be loaded or discharged in such a manner to reduce the risk of falls to the lowest level reasonably practicable. It should be borne in mind that the height and configuration of the cargo stow is constantly changing and therefore so is the risk.

8.6.7 The risks of slips and falls when walking across cargo stows may be increased in adverse weather where high temperatures, snow, ice and rain conditions prevail. The risk of slipping/falling in these conditions may be reduced by wearing appropriate footwear. Another alternative could be to de-ice/clear cargo tops or to wait for improved climatic conditions.
8.7 LIFTING OPERATIONS

Factors to consider in planning and carrying out slinging and lifting of loads include:

- fixed quayside cranes, ships cranes or derricks and mobile cranes are commonly used to load and unload cargos. Lifting equipment and lifting accessories should be included in lifting operation risk assessments

- a competent person should ensure that the strength and stability of the lifting equipment and accessories continues to be adequate for the task for which the equipment is intended

- procedures should be established and followed for the selection and use of suitable lifting equipment and accessories. Certain lifting operations may require specialist training and/or advice

- lifting operations must be planned by a competent person, who should have adequate practical and theoretical knowledge and experience of planning lifting operations

- when selecting lifting equipment and accessories to handle cargo that has been stowed unprotected, allowance should be made for products that may have absorbed moisture. Absorbed moisture can significantly increase the nominal weight of the cargo/pack

- the weight of the cargo to be lifted should be confirmed or estimated so that the safe working load (SWL) of the lifting equipment and accessories will not be exceeded. It may be necessary to determine the density, specific gravity or stowage factor of the cargo to establish the weight of cargo within a grab

- lifting equipment and accessories should be suitable for the task

- slingers should be competent in the selection and use of equipment and safe slinging methods appropriate to the cargo

- suitable lifting accessories should be selected for cargo with sharp edges where there is a risk of the cargo cutting into the slings or the slings damaging the cargo

- a visual check of all lifting equipment and accessories to be used should be carried out by a competent person prior to use. Lifting equipment/accessories which show signs of damage must be segregated from the operation for further examination, repair or disposal. If there is any doubt over the integrity of any lifting equipment or accessory it should not be used

- lifting accessories (including pre-slung cargo and one trip slings) should also be checked for damage by the slingers before attaching the load
before sending cargo or handling equipment into or out of a vessel the load should be
test lifted so that the total weight is taken up by the lifting equipment. This will result in
the load “floating” and a check can then be made of the balance, stability and general
security of the load from a relatively safe position. If there are any doubts about the
safety and security of the lift then the load must be set down and the lifting
accessories re-positioned followed by further “re floating” and re-checking

slingers should be made fully aware that if there is any doubt over the integrity of any
sling then it should not be used and the issue should be reported to the supervisor or
person in charge of the operation.

all loads to be lifted must:
  o be held securely by the lifting accessories
  o be slung so that it will not suffer collapse, change of form or posture or internal
displacement when subjected to jerks, swings or bumps
  o not damage or be damaged by the lifting accessories

as a general principal: “the load should be as safe in the air as it was on the ground”

port operatives involved in trimming or slinging must be in a place of safety during
lifting operations, no one should stand on or under the load at any time. If a crane
operator is unsure that operatives are in a safe position then the lift should be
suspended until it is safe to continue. No-one should stand on or under the load while
it is being lifted

where the integrity of a load is compromised a safe method of re-slinging must be
devised by a suitably competent person. The safe method should ensure that
operatives are not put at risk while re-slinging is undertaken

a suitable landing site should be prepared as part of the pre-planning stage of any
lifting operation. The site should be kept free of debris to minimise slips, trips and falls
during the unloading operation and a final clear-up should leave the area clean and
ready for future use

the lifting route should be planned to avoid cargo passing over hazardous plant and/or
other material to minimise possible secondary hazards from impact

housekeeping standards and arrangements should be included in the safe system of
work to ensure that the work area is maintained clear of items which may present
risks such as slips, trips and falls

vessel roll should be included in the risk assessment, where relevant, as this has the
potential to affect cargo stability. The potential for other cargo movement may be also
exacerbated when heavy loads are lifted into or out of adjacent hatches. Rocking of
the vessel whilst on the berth e.g. longitudinal movement caused by other passing vessels should also be considered

- when multiple packages are to be slung consideration should be given to the use of cargo nets, netted pallet trays or cargo bins
- “reeving” should be avoided and only used in exceptional circumstances as it damages the uniformity of the load. Moreover, the use of a single wire on a single pack should be avoided as there is a danger of the timber slipping from the sling (spearing)
- multi-bundle slinging should avoid varying sizes of bundle
- lifting equipment and lifting accessories must be monitored during use and if there is any doubt as to their suitability they must be removed from use. In addition, any equipment or accessories used to lift personnel should have a daily pre-use check.
- where an operator is familiar with the principles of a type of equipment but is unfamiliar with the specific piece of equipment, consideration should be given to providing the operator with a period of familiarisation on the specific equipment’s operation
- when handling equipment (e.g. loading shovels, bulldozers or excavators) is being lifted into or out of ship’s holds, selection and use of equipment, accessories and safe slinging methods should be appropriate to the lift. Lifting points on handling equipment should be suitable, fit for purpose and inspected as required
- In some cases grabs are fitted with lifting points and tested for lifting equipment such as loading shovels. When using this type of lifting arrangement care should be taken when lowering off, to avoid the equipment being lifted being struck by the grab
- personnel should not be lifted into or out of ship’s holds in plant and equipment. If it is necessary to lift personnel into or out of a ship’s hold due to ships access being unavailable, a suitable personnel basket should be used along with a crane and ancillary equipment inspected as required by LOLER for lifting persons

8.8 VESSEL LIFTING EQUIPMENT AND ACCESSORIES

8.8.1 The merchant shipping version of LOLER applies to all British registered vessels and all foreign registered vessels whilst in UK territorial waters, therefore similar standards as stated above are imposed on all vessels in UK ports.

8.8.2 Before using ships’ lifting equipment or accessories, the ships’ documentation must be checked to confirm that thorough examination and inspection of the lifting equipment and accessories concerned complies with LOLER. It is also prudent for a competent person to
undertake a visual examination of ship lifting equipment and accessories where possible.

8.8.3 Where appropriate, consideration should be given to the operator undertaking a pre-use operational check and a period of familiarisation on the specific equipment concerned before putting into use.

8.8.4 There is no longer a requirement for periodic proof load testing of lifting equipment and accessories under LOLER, unless specified by the competent person as a requirement within the equipment’s examination scheme.

8.9 COMPETENCE, INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION

8.9.1 All persons engaged in work must be trained and assessed as competent for the role that they are required to perform by a competent person. These persons must have their fitness for work assessed against the requirements for each task being performed and consideration should be given to the requirement for a drug and alcohol monitoring system to be in place.

8.9.2 All persons involved in handling operations must: be provided with adequate information, instruction, training and supervision. This is particularly important where Non-permanent employees (NPEs) are utilised who may be generally competent but have limited experience of the particular lifting operation or type of cargo to be handled.

8.9.3 All persons involved in handling operations must know who is in charge. This is particularly important where NPEs are working alongside permanent employees.

8.9.4 Supervisors should be trained, competent and experienced in the safe lifting and slinging practices associated with the load(s) to be handled and/or have access to relevant competent advice and assistance.

8.9.5 For routine lifting operations the planning of each individual lifting operation will usually be a matter for the people using the lifting equipment such as the slinger or equipment operator. The person carrying out this part of the planning exercise should have appropriate knowledge and expertise.

8.9.6 The “Load Handler” or “Slinger” should have the necessary competence to select suitable accessories. They should receive adequate information and have practical experience on the principles of:

- selection, use, care and maintenance of lifting accessories
- limitations of use
- methods of slinging loads
• methods of rating multi legged slings
• interpretation of markings on lifting accessories
• de-rating of lifting accessories for particular weather conditions

8.10 COMMUNICATION

8.10.1 Clear lines of communication must be established and maintained between all those involved in the lifting operation. Visual and voice communications from the banksman to the crane operator must be clear, agreed and understood. Where voice communication cannot be established then an agreed system for the use of hand signals must be followed, see Health and Safety (Safety Signs and Signals) Regulations 1996 – schedule 1.

8.10.2 Guidance on crane signals can be found in BS 7121 – Code of Practice for Safe Use of Cranes – Part 1, General”. Banksmen should be trained and competent. A banksman should not be engaged in any other role during the lifting operation. The banksman should stand in a secure position, where he can see the path of the load and also be in a position, wherever possible, where he can be clearly seen by the crane operator, especially in situations where the lifting operation requires the use of hand signals. In situations where the banksman cannot be seen, radio communications or two banksmen should be used.

8.10.3 Where a banksman is actively involved in slinging/unslinging it is important that throughout the lift, the banksman is focused on the lifting operation and the crane operator is in no doubt as to who is providing the instructions.

8.10.4 The crane driver should normally only accept instructions from one nominated person, whether by voice or through hand signals. The exception to this rule is the emergency stop signal, (see Figure 5), which any operative may give at any time to override the previous signal.

Figure 5 – Emergency STOP Signal
8.11 BULK CARGO HANDLING PLANT

8.11.1 Plant used in general cargo handling may include:

- loading shovels of varying sizes and attachments
- tug-masters or lorries (internal shunt units)
- excavators
- bulldozers
- hoppers
- conveyors
- stacker/reclaimers
- cranes
- ship loaders/unloaders
- suction unloaders
- screw/displacement unloaders
- chutes/spouts/throwers

Figure 6 - Bulldozers and loading shovels may be used in ships holds and on the quay side or in storage sheds

8.11.2 All plant used for the movement of cargo should be suitable for the operation.

8.11.3 When using loading shovels for loading or discharging it is essential to consider not only the lifting capacity of the truck but also the size of the bucket and the ground on which the truck is being used. Equipment drivers must be trained, competent and authorised.
8.11.4 In situations where mobile machinery has to be operated on top of cargo and there is a risk this machinery overturning, sliding, falling or becoming damaged, a suitable area should be prepared prior to lifting the truck in to ensure it can be operated in a safe manner.

8.11.5 When cargo is being transported to and from vessels and or stowage locations by tipper or similar equipment then cargo stability and security of the trailer must be considered. Where appropriate tipper trailers should be sheeted.

8.11.6 Fixed mechanical systems such as conveyors, loaders/unloaders, cranes etc present significant hazards during cargo handling operations. However when this equipment is being maintained rigorous systems such as permits to work may need to be in place to ensure safety of staff involved.

8.11.7 Cargo handling equipment should be maintained and inspected in accordance with the Provision and Use of Work Equipment regulations 1998, The Lifting Operations and Lifting Equipment regulations 1998.

8.11.8 Access control to fixed plant installations may be required to ensure safety of personnel.

9 PLANNING FOR SAFE HANDLING – SPECIFIC ASPECTS OF LOADING OPERATIONS

9.1 VESSEL LOADING PLAN

9.1.1 A vessel loading plan should be available for all but the simplest of loading operations. Plans
are prepared in consultation with the master or chief officer of the ship and/or the terminal representative.

9.1.2 Loading risks should be assessed by competent persons. Possible risk factors include:

- the risks to the health and safety of personnel involved in the cargo handling operations including the risks associated with the cargo handling
- safe means of access and egress to and from the ship’s holds at all stages of loading; i.e. there may only be hold ladders fitted at one end of the hold and the load plan should therefore be designed to ensure that access to it does not become restricted during the cargo handling operation
- safe means of access and egress to and from tops of cargo stows such as during trimming operations
- the safety of personnel entering ships compartments, with particular regard to build up of toxic gases, oxygen depletion, dusts and ill health effects from cargoes
- the safety of third party personnel not involved in the cargo handling operation including the safety of the vessel's crew
- safe means of access and egress for cargo surveyors or inspectors
- the rate and order in which the ship’s holds are to be loaded or unloaded. The ship will require all cargo operations to be undertaken in a manner, which complies with the vessel's loading/unloading procedures as required by the International Safety Maritime code (ISM). This may require cargo handling to be suspended whilst ballasting/de-ballasting takes place. Particularly with large vessels the ship’s Master will need to ensure the stresses imposed on the ship’s hull are at all times acceptable

10 PLANNING FOR SAFE HANDLING – SPECIFIC ASPECTS OF DISCHARGING OPERATIONS

10.1 SPECIFIC ASPECTS OF DISCHARGING

10.1.1 Ships often arrive in ports for discharge without providing the cargo handler prior notification of how the ship is stowed. Discharging risks should be assessed by competent persons. Possible risk factors include:

- working at heights due to cargo being on tank tops, access platforms or other high areas within the hold
- the safety of personnel entering ships compartments, with particular regard to build up of toxic gases, oxygen depletion, dusts and ill health effects from cargoes
• manual handling during cleaning out operations
• shifted cargo during sea passage
• the potential for cargo shift during discharge
• the condition of cargo and deterioration on passage, e.g. water ingress
• cargo liquifying or solidifying

10.1.2 Good communication between ship, terminal and or shipping agents is important to ensure that no issues are overlooked.

10.1.3 The Safe Loading and Unloading of Bulk Carrier Regulations 2003 along with the Blu Code, Blu Manual and International Maritime Solid Bulk Cargoes (IMSBC) Code, provide a framework for the handling of cargo to & from this type of vessel. However these deal principally with the safety of the ship. The purpose of this document is to focus primarily on the safety of those involved in the loading and unloading operations. However there is some commonality in the methodology used to achieve these goals, both the Blu Code and the Safe Loading & Unloading of Bulk Carrier Regulations require operations to be planned and agreed between the ship and terminal. Such an agreement ensures that all parties know what is going on and allows operations to be undertaken safely.

10.1.4 The requirements of the Safe Loading & Unloading of Bulk Carrier Regulations for terminals handling ships that come under the definition of a “Bulk Carrier” such as a terminal operations manual, nominated terminal representative, agreed loading/unloading plan and holding an accredited quality management system go a long way to ensuring operations are conducted in a suitable manner.

• the Safe Loading & Unloading of Bulk Carrier Regulations 2003 define a bulk carrier as any ship of over 500 gross tonnes or more:
  • constructed with a single deck, topside tanks and hopper side tanks in cargo spaces and intended primarily to carry dry bulk cargo in bulk; or
  • an ore carrier, where “ore carrier” means a sea-going single deck ship having two longitudinal bulkheads and a double bottom throughout the cargo region and intended for the carriage of ore cargoes in the centre holds only; or
  • a combination carrier mean a tanker designed to carry oil or alternatively solid bulk cargo

10.1.5 Notwithstanding the definition above dry bulk cargoes may be carried in ships that do not meet this definition. Consequently terminal operators must risk assess each operation on its own merits and determine what controls are required to ensure operations are managed in a
However the terminal remains responsible for the safety of its staff and must ensure that adequate risk assessments and safe systems of work are in place to ensure that the operations can be undertaken safely. Some bulk cargoes may not be covered by some or all of this legislation - an example of this is grain cargoes, which are covered by the Grain Rules.

Dry bulk cargoes may also create problems that affect the environment and it is important that terminals engaged in handling this type of cargo give consideration to the impact on the environment of their activities. Such controls will generally go hand in hand with the safe handling of these products.

**Figure 9 - Use of water spray to dampen dusty cargo**

### 11. RELEVANT LEGISLATION AND GUIDANCE

**11.1** Relevant legislation and guidance includes:

- Code of Practice on Safety and Health in Ports (ILO 152) – International Labour Organization (ILO), 2005
- ICHCA guides – please refer to publication list at [http://www.portskillsandsafety.co.uk](http://www.portskillsandsafety.co.uk)
- HSE Guidance on Confined Space Working
http://www.hse.gov.uk/confinedspace/

- International Maritime Dangerous Goods Code (IMDG) 2006 edition (incl amendment 33-06)
- Managing H&S in Dockwork HSG 177
- International Maritime Solid Bulk Cargoes (IMSBC) Code
- Lifting Operations and Lifting Equipment Regulations (LOLER) 1998, in particular Regulations 8 (Organisation of Lifting Operations) and 9 (Thorough Examination and Inspection)
  http://www.opsi.gov.uk/si/si2006/20062184.htm
- MCA Safe Loading and Unloading of Bulk Carriers
- Management of Health and Safety at Work Regulations 1999, Regulations 3 (Risk Assessment) and 11 (Co-operation and Coordination)
- Provision and Use of Work Equipment Regulations (PUWER) 1998
- Merchant Shipping and Fishing Vessel (Lifting Operations and Lifting Equipment) Regulations (LOLER) 2006
  http://www.opsi.gov.uk/si/si2006/20062184.htm
- Merchant Shipping and Fishing Vessel (Provision and Use of Work Equipment) Regulations (PUWER) 2006
  http://195.99.1.70/si/si2006/20062183.htm
- Merchant Shipping (Safety at Work)(non UK Ships) Regulations 1988
  http://www.opsi.gov.uk/si/si1988/Uksi_19882274_en_1.htm
- Merchant Shipping (Means of Access) Regulations 1988
• Port Marine Safety Code (PMSC)
• Maritime Coastguard Agency (MCA) Working at Sea
  http://www.mcga.gov.uk/c4mca/mcga07-home/workingatsea.htm
• International Labour Organization’s (ILO) Code of Practice on Safety and Health in
  Ports (ILO 152)
• Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002
  http://www.hse.gov.uk/fireandexplosion/dsear.htm
• Control of Substances Hazardous to Health Regulations (COSHH) 2002
  http://www.hse.gov.uk/coshh/index.htm
• Control of Major Accident Hazards Regulations (COMAH) 1999
  http://www.hse.gov.uk/comah/
• Electricity at Work Regulations 1989 and guidance on electrical safety
  http://www.hse.gov.uk/electricity/index.htm
• Control of Vibration at Work Regulations 2005
  http://www.hse.gov.uk/pubns/indg175.pdf
• HSE Whole Body Vibration in Ports Information Paper

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