Safety in Ports Guidance

SiP 002: General Cargo

PORT SKILLS & SAFETY
IMPROVING STANDARDS THROUGH COLLABORATION

NAUTILUS INTERNATIONAL

unite theUNION

Produced in conjunction with the Health and Safety Executive.

Published: April 2025

Contents

Version control

First published	September 2018
This version	April 2025

1. Disclaimer

This publication has been made available under the public sector information license and may be used by third parties. It may not be altered in anyway or used outside the terms of the Open Government Licence. www.nationalarchives.gov.uk .

External links are provided to enhance information, but Port Skills and Safety Ltd (PSS) does not guarantee the accuracy of any external links.

Regulations in this document are referred to by title but not year, as they may have been amended post publication. The reader should always seek the current version.

Following this guidance is not a legal requirement, however, by following the guidance, users may ordinarily expect to be doing enough to comply with the law. HSE and other government-appointed inspectors who seek to secure compliance with the law and may refer to this guidance in their investigations.

This document provides guidance only and due care and attention must be given to any operation being conducted.

The Safety in Ports Guidance is made available to all interested parties for the general improvement of safety in ports. However, members of PSS will find supplementary resources in the members section of the website.

2. Introduction

The guidance covers the handling of general cargo, and whilst it makes reference to legislative requirements and general operations (e.g., lifting operations and work equipment practices) the overall application details of such legislative expectations are provided within SiP000.

The following SiP guidance are referenced within this document and be used in conjunction with this SiP:

- SiP000 Regulatory Framework.
- SiP015 Confined Spaces in Ports.
- SiP009 Lighting.

This SiP is for generic bulk cargoes, the following cargoes are covered in a specific SiP:

- SiP003 Container handling
- SiP004 Timber handling
- SiP007 Loading & unloading of dry bulk cargo
- SiP022 Biomass wood pellet and chip

The Safety in Ports guidance suite is available from the PSS website: www.portskillsandsafety.co.uk.

3. General cargo

General cargo is often referred to as “break-bulk” cargoes and includes (among others):

- Construction steel or other metals.
- Steel sections, pipes, plates, coiled steel products (rod and wire), semi-finished metallic billets and slabs and various other tubes in bundles or loose.
- Bundles or ingots of raw or processed metals.
- Drums, cases, pallets, bundles of manufactured goods or raw materials and bags or big-bags, Intermediate Bulk Containers (IBCS) of raw or manufactured chemicals.
- Some types of forest product e.g., paper, pulp, wood etc.
- Baled waste e.g., Refuse Derived Fuel (RDF).
- Project cargoes.
- Scrap steel or other metals

General cargo may also be stowed on vessels with parcels of bulk cargo. In some cases, general cargo may be over-stowed directly onto bulk cargo.

4. Vessel loading and discharge plan

A vessel un/loading plan should be available for all loading operations. Plans are usually prepared in consultation with the Master or Chief Officer of the ship and/or the cargo handling supervisor, and in conjunction with the vessel agent. This plan should be made available to the port as far in advance as possible for risk assessment. The plan should be communicated to all personnel involved in the loading operation. This can be done as part of the toolbox talk or pre-shift briefing.

A vessel loading/discharge plan should consider but not be limited to:

- The risks to the health and safety of personnel involved in the cargo handling operation including the risks associated with cargo securing or un-securing in the loading and discharge ports.
- Safe means of access and egress to and from the ship's holds at all stages of loading, ie, 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 or blocked during the cargo handling operation.
- Safe means of access and egress to and from the top of cargo stows.
- Walking on the top of cargo stows and the transfer of personnel from one stow to another.
- The safety of third-party personnel not involved in the cargo handling operation including the safety of the ship's crew.
- Safe means of access and egress for lashing/rigging gangs.
- Safe means of access and egress for cargo surveyors or inspectors.
- All cargo has known weight.
- The stability requirements of the vessel.
- Whether it may be necessary to temporarily remove other cargo from the vessel in order to make the operation safer.
- Emergency plans, including evacuation of personnel from the cargo. See SiP 016 for information.

Where the port is responsible for loading the vessel, the loading plan should be made available to the discharging port. It is good practice to consider how the cargo will be discharged in the receiving port. It may be necessary to provide a *key*, so that cargo handlers at the port of discharge can break into the stow. This is often a section of cargo that has been *pre-slung* to facilitate safe *breaking in*.

The person in control of the discharge should undertake a dynamic risk assessment to deal with any changes or unusual circumstances. The loading plan should also be reviewed and amended as appropriate throughout the operation to reflect possible changes/additions to the cargo or vessel or conditions.

It is also useful to discuss with the Master, what previous cargoes have been stowed to understand where there may be increased risks (such as Co2 levels etc).

5. Shoring the cargo

The type and quantity of dunnage required for the stow will vary according to the type of cargo and handling equipment. For example, if all cargo is pre-slung then dunnage may not be required. However, in most cases some dunnage will be required and the following should be considered:

- The process of placing or removing dunnage and any surplus materials should be carefully considered in advance with a full risk assessment.
- The suitability of softwood dunnage and its ability to support the weight of heavy or dense loads.
- The requirement to provide suitable and sufficient packing or spacers to prevent cargo damage or to cover/fill gaps in the cargo stows.
- The suitability of dunnage to protect awkward shaped cargo, e.g., flanged pipes, from contacting the bulkheads and coamings.
- The suitability of dunnage and shoring to facilitate safe and secure stowage in non-box shaped holds.
- The suitability of dunnage to allow the safe withdrawal of lifting equipment.
- Provision and maintenance of safe access routes taking into account any shoring and chocking that may be required to leave access to hold ladders/other egress points.
- Any activities involving the cutting or shaping of dunnage (e.g., use of chainsaws, circular saws etc.) should be undertaken safely following an assessment of the task.

6. Discharging without a loading plan

Where ships arrive for discharge without providing the cargo handler prior notification of how the ship is stowed, or the plan is incorrect, a risk assessment should be conducted before discharge commences, this should include consideration of the following:

- Safe access to and across the cargo.
- Working at heights due to the cargo being stowed in isolated high stows.
- Working on uneven cargo stowage, void areas, unstable shoring and dunnaging.
- Shifted cargo during sea passage.
- The potential for cargo shift during discharge.
- The condition of lifting accessories associated with pre-slung cargo.
- The safety, adequacy and security of dunnage and shoring.
- Over tensioned securing systems.
- Access to enable slinging of cargo for lifting.

7. Inspecting load and lifting equipment certificates

In addition to the general guidance of SiP000, if ship's lifting equipment is to be used during the cargo operation, this must be checked by the port before use. Associated certificates of test or thorough examination should also be reviewed.

If the ship's crane is to be used it should comply with UK regulations and have been regularly examined, inspected and tested by a competent person. The crane should also be checked by the operator before use.

8. Access to cargo

Access across cargo stows presents the risk of slips, trips or falls. Care should be taken not to step into or jump over any gaps. When working on cargo that has a curved or uneven surface, (e.g., pipes, rails or constructional steel etc.) consideration should be given to the use of suitable wooden staging boards (Youngman's type), aluminium walkways or other suitable methods. Consideration should also be given to the need for atmospheric testing of the hold to ensure it is safe to access as certain cargos (e.g., timber, steel) can cause oxygen depletion or the build-up of toxic gases, see SiP015 Confined Spaces in Ports.

The risk of slips, trips and falls when walking across cargo stows may be increased when adverse weather conditions prevail (e.g., extreme high temperature, snow, ice etc.),and cargoes arriving during the winter months or from Baltic Ports may be covered in ice. Appropriate footwear (e.g., those with studs or chains) should be provided to reduce the risk of slipping and should include consideration of the individual's circumstances and potential for damage to the cargo. Other options may include de-icing, clearing cargo tops, or waiting for improved conditions. Care should also be taken when walking on wrapped cargoes, particularly when wet, as this type of stow can be very slippery.

During operations, be aware of any changes to the plans and have an ongoing job hazard assessment or dynamic risk assessment.

If a safe means of access to the cargo or cargo hold is not available from the vessel, consideration should be given to the provision and use of alternative access arrangements. A risk assessment should be undertaken in accordance with the Work at Height Regulations. An appropriately rated personnel carrying cage, lifted by crane in accordance with the requirements of the Lifting Operations and Lifting Equipment Regulations, is an example of a suitable alternative access arrangement.

It is **not** accepted practice to lift personnel inside plant and equipment.

9. Lifting accessories

There are many different types of lifting accessories to assist the handling and lifting of general cargo. A competent person must assess and select appropriate lifting accessories for the cargo to be handled.

Typical lifting accessories include but are not limited to:

- Magnets.
- Automatic or semi-automatic hooks or clamps.
- Drum hooks/tongs.
- Specialist spreaders or frames with multiple attachments (for multiple lifting of pipes, bags etc.).
- Vacuum clamps.
- Callipers.
- Chain reeved horizontal plate clamps with and without strong backs.
- Plate clamps.
- Specialist rigs (e.g., *Jensen* slings for lifting multiple paper reels).
- Complex rigs for lifting awkwardly shaped cargoes, e.g., car and vehicle lifting bars, combine harvester nets.

10. Multiple trip slings

Multiple trip or multi-use use slings are used to lift items such as steel, packs of timber, pallets etc and are used repeatedly (for more information on timber see SiP004). They are typically webbing, rope, wire or other suitably strong material. They are often the property of the vessel, charterer or other party and should be removed and sent back to the consignor for re-use.

They must comply with LOLER regulations and be subject to a "thorough examination" or inspection. Proof of this should be received prior to the vessel arrival and confirmation sought that any certification is valid and accurate. When such a cargo arrives at the port, each sling should be visually inspected by a competent person and the load subject to a test lift prior to unloading. If there is any doubt in the integrity of the slings, then the load should be re-slung with approved slings.

Labels on multi-trip slings should include sufficient information to identify the slings and ensure a safe lift. Typically, the following information will be found on a sling:

- Safe working load in straight lift in the case of single leg or endless slings, or for multi-leg slings having an angle of zero to 45 degrees.
- Material, e.g., manila, polyester etc.
- Reference number of the sling and grade of fittings.
- Nominal length in meters.
- Manufacturer's name, symbol, trademark or other unambiguous identification.
- A traceability code.
- Number and part of BS, EN or similar compliant standard.

11. Pre-slung cargo and single one-trip slings

Pre-slung or one-trip slings accompany a item of cargo from the manufacturer to its ultimate destination. They can be permanently attached to the primary load carrying device, or the load itself. They are often specifically designed for the item to be lifted and are only to be used for lifting that particular item

Single use slings must display their Safe Working Load (SWL). They should also specify:

- The requirements for use (ie not for re-use).
- International colour codes for the materials used.
- Identification batch numbers.
- Information about relevant test standards (BS EN 1492; ANSI B30.9 etc).

Sling batches tend to be mixed so certificates must cover all slings used. The test rating of multi-trip slings is 7:1 but one-trip slings are often much less. In 2019 Associate British Ports conducted load testing on various one-trip slings. The results of this testing found that many slings broke at a much lower load than specified on the safety certificate. Members can find the results of these tests on the PSS website.

One-trip slings must be destroyed on arrival at their final destination and never re-used nor returned to the ship/consignor. If there is any question in the integrity of the slings, then the load should be re-slung by a person competent to do so.

One-trip slings should be disposed of at the end of the trip and should never be reused, where the ship requests the slings are returned they should only be returned for disposal, not re-use.

12. Heavy or specialised lifts

Heavy or specialised lifts require specific and detailed planning, this can include lifts by ship's cranes, heavy-lift derricks, mobile harbour cranes or other cranes. Certain cargoes may require specifically trained personnel to advise on the safe systems of work to follow. Examples of these include Explosive Security Officers, Radiation Protection Advisor/Supervisors and Dangerous Goods Safety Advisors.

In some case it may be preferential to contract a specialist lift company. Points to consider include:

- Availability of a lifting plan.
- The known or calculated weight of the load to be lifted.
- The load must be lifted evenly, taking into account the centre of gravity thus avoiding additional stress on the lifting equipment.
- Knowledge of any size/shape restrictions for landing and subsequent transport from the loading area.
- The use of any specialised equipment or personnel.
- The safe working load of all lifting equipment and lifting appliances to be used.
- Instructions for assembling lifting frames for awkward sized or shaped loads.
- Test certification and/or method statements for lifting equipment supplied by the cargo manufacturers, shippers or receivers.
- The method of attaching the lifting equipment to the load.
- Safe access and egress for personnel attaching and removing the lifting equipment.
- The effects of vessel roll and other cargo stability.
- The requirement for specialist transport.
- The management of vehicle movements on the quayside.
- The load capacity of the quayside and storage area should be verified by civil or structural engineer.
- Quayside pad loadings for large mobile cranes.
- Specialised safe systems of work for tandem lifting, taking into account the capability of the quay to support the crane, cargo and crane ballast. A temporary works design may be required from a competent civil engineer to demonstrate this.
- Whether the lifting equipment has to remain with the load on voyage.
- The need to review the risk assessment if operations have to be adjusted after the original planning stage.

13. Plant and equipment

Plant used in handling general cargo may include:

- Lift trucks of varying sizes and associated attachments (RDF, bail clamps etc).
- Tractor units / Internal Movement Vehicle (IMV).
- Roll-trailers.
- elf Propelled Modular Transport (SPMT).

All mobile plant used for the movement of cargo should be suitable for the operation. Operators must be trained, competent and authorised by the port. This also includes the hiring of third parties. Members can find more details about measuring competency on the PSS website.

When using handling plant such as lift trucks it is essential to consider:

- The type and capacity of the lift trucks including safe operating height as well as the size and spread of the forks.
- The height of the stow.
- Hazards associated with working down to a halfway point in a stow.
- The suitability of the surface on which lift trucks will be expected to operate on.
- The provision of running in plates where the operating surface is unsuitable for vehicle working.
- Safe means of access and egress to the workplace.
- The axle loads and spacing of the plant and the ability of the infrastructure to support these, consideration should be applied when the plant travels over buried services, over bridges or adjacent to other structures to ensure that these are capable to support the loads imposed.
- The construction of the vessel where hazards may be introduced by deep hatch wings, overhangs, 'tween decks, corrugated bulkheads, cargo lockers, deep tanks etc.
- Lighting levels, see SiP009 Lighting.

When using cranes, refer to the Recommended minimum safety features for quay container cranes by TT Club, or where slings are being applied on the quay, bearers can be used to place cargo on to allow access. Operators may also use the forks of a suitably rated lift truck to raise the cargo high enough to allow slings to be placed underneath. This should be considered in the risk assessment.

In situations where handling equipment such as lift trucks have to be operated on top of cargo and there is a risk of overturning and/or damage to the trucks (caused by the gaps created in the cargo stows) then the gaps must be covered by suitable plates (often called running in plates). To minimise the possibility of vehicle skidding anti-slip materials can be used on the plates. It is also good practice to paint the edges of steel plates, so they are more visible.

Where lift trucks or similar plant are lifted on board vessels for use on the vessel, they should be fitted with certified lifting points. When cargo is being transported by roll-trailer or similar equipment, cargo stability and security whilst positioned on the trailer must be considered.

When people and plant are working together in close proximity in the hold of a vessel or on a quayside, suitable controls should be in place to protect pedestrians from vehicle movement. It is essential that the driver remains aware of where operatives are and that operatives stay well clear of the plant working area. Drivers should cease work if they lose sight of operatives working in the area and wait until they know it is safe to continue operations.

14. Cargo storage areas

The condition and location of the site chosen for cargo storage should be fit for purpose and included as part of the risk assessment for the operation. It should be suitable to accept the weights and configurations of the ship's cargo as well as vehicles and equipment used in the operation. It should be checked before unloading begins to make sure it is safe to proceed.

Factors to consider include but are not limited to:

- The ground-bearing capacity should be suitable for purpose, of sound construction and well maintained.
- Cargo size, cargo weight and loading places on the quay.
- The characteristics of the cargo being handled such as permissible stack height, quantities and stability.
- Obstructions in the handling area, waste materials/plastic banding, unused bearers, discarded packaging, other cargo and fixed immovable objects, such as bollards and pillars.
- Risk to pedestrians of being struck by moving vehicles or moving cargo in the handling area. It is essential that access for non-authorised personnel is controlled and a traffic management plan prepared to assess this (See SiP001).
- Lighting conditions (see SiP 009).
- Proximity to other operations or activities (public rights of way / third-party premises / other discharging activities etc.).
- Weather conditions.
- Means of ignition which should be prohibited or controlled according to the risk assessment and cargoes being handled.
- Potential pollution pathways for rainwater or firefighting water that comes into contact with the stored cargo.

15. Appendix 1: Safety in Ports guidance

SiP000 Guidance framework

SiP001 Workplace transport – planning & terminals

SiP002 General cargo

SiP003 Container handling

SiP004 Timber handling

SiP005 Mooring operations

SiP006 Transfer of bulk liquids & gases

SiP007 Loading & unloading of dry bulk cargo

SiP008 Storage of dry bulk cargo

SiP009 Lighting

SiP010 Workplace transport – StoRo & RoRo operations

SiP011 Sources of occupational health information

SiP012 Ro-Ro passenger and cruise operations

SiP013 Management of non-permanent employees

SiP014 Safe access and egress

SiP015 Confined spaces in ports

SiP016 Emergency planning in ports

SiP017 Guidance on fitness for work and health surveillance

SiP018 Safety induction and training

SiP020 Water safety

SiP021 Access to small craft

SiP022 Biomass

16. Appendix 2: Other links referred to in this documents

The links contained in this SiP are provided here for ease of reference. Port Skills and Safety has no control over the content of external websites and the documents referred to may move or no longer be available from those organisations.

Work at Height Regulations:
https://www.legislation.gov.uk/uksi/2005/735/contents

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

HSE guidance on thorough examinations and inspections of lifting equipment:
https://www.hse.gov.uk/work-equipment-machinery/thorough-examinations-lifting-equipment.htm

Recommended minimum safety features for quay container cranes:
https://www.ttclub.com/news-and-resources/publications/article/crane-safety-recommendations/

PSS competency framework (PSS members only)
https://www.portskillsandsafety.co.uk/skills/competency-framework/

Associate British Ports conducted load testing (PSS members only)

17. Appendix 3: Further information and guidance

These links are provide to enable members to find further information and are correct at the time of publication. Port Skills and Safety has no control over the content of external websites and the documents referred to may move or no longer be available from those organisations.

SiP002 version with photographs (PSS members only)

HSE guidance on rider-operated lift trucks:
http://www.hse.gov.uk/pubns/books/l117.htm

HSE guidance on working with chainsaws:
http://www.hse.gov.uk/treework/safety-topics/chainsaw-operator.htm

HSE guidance on Handling Containers with Slewing Cranes:
http://www.hse.gov.uk/foi/internalops/sectors/cactus/5_05_09.pdf
https://www.hse.gov.uk/foi/internalops/sims/cactus/5_05_09.htm

HSE Whole Body Vibration in Ports Information:
https://www.hse.gov.uk/vibration/assets/docs/ports.pdf

International Maritime Dangerous Goods Code (IMDG):
The International Maritime Dangerous Goods (IMDG) Code (imo.org)

Example checklist for planning vessel arrival and discharge (PSS members only)