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1 Scope

This Linde Standard (LS) defines the operating and the HSE requirements for sea and river logistics service providers (LSP) of Linde Engineering (LE). These requirements shall ensure that LSP are performing their work under consideration of occupational safety, health and environmental protection. Therefore, this document applies to every LSP which operates a commercial ocean-going vessel, heavy Lift vessel (semi-submersible and project cargo vessels), heavy deck vessel, coastal vessel, boats, tugs and barges on the LE business project scope and to all sub-contracted partners of the LSP.

In addition, the LSP is responsible for developing, implementing and maintaining a safety management system which includes the following functional requirements:

- safety and environmental protection policy;
- instructions and procedures to ensure safe operations of vessels/tugs/barges and protection of the environment in compliance with relevant international and flag state legislation;
- defined levels of authority and lines of communication between, and amongst, shore and vessel crewmembers;
- procedures for reporting accidents and non-conformities with the provisions of the *ISM Code*;
- procedures to prepare for and respond to emergency situations;
- procedures for internal and external audits and management reviews.

2 References

2.1 Normative references

This LS contains provisions which, through dated or undated references in this text, constitute provisions of other publications. The normative references are cited at the respective place in the text and the publications are listed below. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the issues valid at the effective date of contract shall apply.

ISO 19011 Guidelines for auditing management systems

ISO 45001 Occupational health and safety management systems – Requirements with guidance for use

ASME B30 series Safety standard for cranes and related equipment

Code of safe working practices for merchant seafarers 2015 edition – Amendment 2, December 2017

IMO International convention for the control and management of ships' ballast water and sediments

International safety management (ISM) code

International ship and port facility security (ISPS) code

DNV-GL Internal Auditor ISM-ISPS-MLC for Shipping Companies Auditor training

Maritime labor convention, 2006, as amended (MLC, 2006)

Maritime & trade ports and terminals guide 2019-2020

MARPOL international convention for the prevention of pollution from ships

NOAA – National weather service - Observing handbook No. 1: Marine surface weather observations

International convention on standards for training, certification and watchkeeping for seafarers (STCW)

SOLAS Training Manual required by Chapter III of SOLAS, Part B, Section V

Code of conduct for suppliers of the Linde Group¹

2.2 Informative references

LS 940-03 List of hazardous work

&AX Q-QP 1041 (EN) Health, safety and environment (HSE) policy

¹ "Code of Conduct for Suppliers of the Linde Group", latest issue for download at www.linde.com/supplier-coc or at http://resources.linde.com/wcms/coc/Linde_supplier_Code_of_Conduct.pdf

3 Abbreviations and definitions

Abbreviations

| | |
|-----------------|---|
| BWM | Ballast water management |
| DPA | Designated person ashore |
| FCE | Functional capacity evaluations |
| HME | Hazardous to the marine environment |
| <i>ISM Code</i> | International safety management code |
| LE | Linde Engineering |
| LSP | Logistics service provider |
| OGV | Ocean going vessel |
| MLC | Maritime labour convention |
| PFD | Personal flotation device |
| PPE | Personal protective equipment |
| SMS | Safety management system |
| SOLAS | Safety of life at sea |
| TSDF | Treatment, storage or disposal facility |
| TWS | Third party waste steward vessel |

Definitions

| | |
|--------------------------|--|
| <i>Abandon vessel</i> | People abandon vessel, if they get off a vessel because it is sinking |
| <i>Cabin's bunk card</i> | Information for each <i>crewmember</i> with his/her responsibilities and duties during vessel's emergency |
| <i>Crewmember</i> | A person who is part of a vessel/tug crew |
| <i>Drill</i> | Drill on board vessels/tugs which play an important role in preparing the crew for emergency situations |
| <i>Emergency towing</i> | Operations to safe disabled vessels with or without a crew on high seas in order to prevent dangers on the sailing area and environment |
| <i>ISM Code</i> | International Safety Management Code providing an international standard for the safe management and operation of vessels and for pollution prevention |
| <i>Launch</i> | Motor boat, which transfers a <i>crewmember</i> or visitors from the vessel to shore or shore to vessel. |
| <i>Man overboard</i> | Exclamation indicating that a crew member or passenger has fallen from the vessel into the water and requires immediate rescue. |
| <i>Risk assessment</i> | Process of evaluating the risk(s) arising from (a) hazard(s), considering the adequacy of controls, deciding whether or not the level of risk(s) is acceptable and determining, if necessary, further controls to achieve an acceptable level of risk. |

4 General requirements

The logistics service provider shall fulfil all legal requirements that apply for his work and only nominate employees that are suitable and qualified for the intended work. When ordering, the logistics service provider shall tell the logistics-contractor-coordinator a responsible contact person. Further to this the logistics service provider shall comply with the "Code of conduct for suppliers of the Linde Group".

5 HSE requirements for vessel

5.1 Risk assessment

In order to avoid any harm to people, environment, disruption of business, cost of incidents and to comply with legal requirements, HSE *risk assessments* shall be undertaken for all work where hazards or environmental aspects might form a potential risk by LSP. The *risk assessment* shall be carried out prior work start.

To carry out an HSE *risk assessment* the following steps are required:

- defining the work system/area
- identifying the hazards/environmental aspects
- evaluating the risk
- identifying suitable control(s)
- implementing control(s)

The *risk assessment* shall be documented and maintained, and the content of the *risk assessment* shall be considered for the daily work planning

5.2 Incident management

The LSP shall maintain a procedure to manage any kind of incident.

Any personnel injury, incident or accident on the LSP's vessels, tugs and barges incidents shall immediately be notified to Linde Engineering (LE) providing the following information:

- location;
- time / date;
- description of the incident;
- photos, witness reports, police reports, etc.

Injuries more serious than a first aid and/or with the potential of a fatality shall be investigated by LSP.

The incident investigation of injuries shall comprise, next to the notification information, a root cause analyses (RCA) and action points/controls assigned to the causes. An investigation report shall be prepared and submitted to Linde Engineering (LE).

5.3 Onboard vessel safety and HSE requirements

The LSP's vessels, tugs, boats and barges shall be designed, operated and maintained to prevent technical and commercial delay in operations and incidents of personnel involved in the whole scope of operations ashore and onboard the OGV or OG vessel. The LSP shall immediately report to Linde Engineering (LE) any personnel injury, incident or accident on the LSP's vessels, tugs and barges.

The LSP should be committed to maintaining the highest possible level of physical and mental health and social atmosphere as well at work for its *crewmembers*. All *crewmembers* should be always proactive to find the ways to maintain or improve work conditions, processes and safe behaviours as an ongoing commitment.

The LSP shall provide all safety and reliability posters to its *crewmembers* and visitors that apply to the vessel and safety and reliability posters shall be displayed in appropriate vessel's/tug's places.

The emergency shut-down system (ESDS) shall always be in operation during the cargo and bunkering operations. After an operational activation of the ESDS, the source of the shut-down should be identified and corrected before the ESDS is reset and operation restarted again.

5.4 Drills and safety training

A SOLAS training manual supplied by the vessel/tugs' owner or a vessel-specific training manual shall be in each crew living room and messroom.

Drills in emergency response techniques shall be held regularly to meet or exceed flag state regulations and guidelines. The vessel's captain shall take advantage of available time in port / anchorage or elsewhere to conduct *drills*, so that the vessel's daily business activities are not delayed, and due dates are not exceeded. Each *drill* shall be planned to ensure that, on a rotating basis, all safety equipment is either used or usage instructions are given. All conducted *drills* shall be recorded in deck/engine logs and *drill* planners as follows:

- fire;
- explosion;
- *abandon vessel*;
- *man overboard*;
- injured personnel evacuation;
- flooding, collision and grounding;
- oil spill;

- enclosed space entry;
- blackout training;
- emergency steering;
- *emergency towing*;
- search *drills*;
- anti-piracy *drills*;
- ship specific safety issues;
- ISPS awareness *drills*.

After each drill whenever possible, the captain, chief engineer or chief officer shall hold a debriefing to discuss the following topics:

- how the *drill* was performed;
- how to improve specific *drill* procedures;
- areas where more training is required;
- the equipment used, including any defects or needed maintenance or replacement.

5.5 Safety rounds

During the hours from sunset to sunrise, safety rounds shall be conducted a minimum of once every four hours when the vessel is underway, anchored or moored. The purpose of safety rounds is to advance the identification of hazards relating to:

- potential fire;
- defective machinery;
- hull and bulkhead integrity;
- malfunctioning safety equipment;
- potential sources of pollution;
- potentially dangerous crew activities.

5.6 Monthly safety meeting

Each month, the captain shall hold a safety meeting to discuss safety concerns and important industry and company safety information and below points shall be followed:

- make sure that all officers and crew attend (without bridge and engine duty);
- allow the crew to discuss safety issues a few days in advance of monthly safety meeting;
- safety issues raised by crew members;
- near miss reports that are applicable to safe operations and procedures;
- important company messages;
- non-conformities that can influence operations or procedures;
- important LSP operational procedures changes that *crewmembers* shall know because of their effect on vessel's/tug's operations or safety;
- dangers for upcoming voyages (e.g. high-risk countries, piracy area passage, danger of cargo).

5.7 Visitors

Each person who is not part of the vessel crew, shall get safety instruction on his/her boarding on the LSP's vessels/tugs from the designated person in charge. The designated person in charge is responsible to pass all required information to visitors as follows:

- vessel's/tug's emergency alarm signals;
- the location of shelter stations;
- boat number in case of abandoning the vessel/tug;
- position of their cabins;
- *cabin's bunk card* with emergency signals and where to go in case of emergency;
- designated shelter location for all extra personnel.

- ISPS information/instruction as follows:
 - registration;
 - ship ID card;
 - findings as undefined packages/bombs, etc.

All visitors shall sign a safety instruction form after completion of the safety instruction and vessel/tug officials shall issue a copy of the signed document.

5.8 Safe personnel transportation

The following guidelines apply to managing personnel transportation (between vessel and shore). Contractors who provide transportation services shall be licensed, insured and certified in compliance with local laws and regulations.

When transportation is necessary, and the port is not recognized as port of call (such as a port of opportunity in an emergency), the captain shall instruct the port agent or site LSP representative to secure services from a contractor who meets the above requirements.

When operational urgency requires using a transportation service that does not meet the above requirements, a traveling *crewmember* and visitor shall examine the transportation boat.

The examination of the transportation boat shall be carried out by using previous experience and discretion to evaluate the apparent boat/crew safety level. The examination shall take the following factors into account:

- operational need;
- observed standards for similar service in similar situations;
- decide or decline to use the service;
- If necessary, submit a nonconformity report to LSP at the earliest opportunity that includes the following information:
 - the appointed agent;
 - the transportation contractor's name;
 - the nature of the situation;
 - a description of any local corrective action taken to eliminate any safety concerns (for example, the agent replacing the contractor).

Crewmembers or visitors shall not use any launch when any conditions are unsafe. Personnel shall not board if they are:

- unfit;
- unwell;
- afraid of heights;
- fatigued.

Crewmembers and visitors transferring between vessels and launches shall always wear:

- general PPE (hard hat; hand protection; safety shoes & pants and long-sleeved shirt - boiler suit);
- a personal flotation device (PFD);
- no loose-fitting clothes (dress, skirt, etc.).

Based upon all local conditions and a *risk assessment*, the captain shall determine the safest method for boarding (pilot ladder/combination ladder, or gangway). The captain shall ensure that personnel safely board and disembark from a launch. In doing so, he shall ensure that:

- Launch services are only used when it is safe to proceed.
- The vessel's/tug's officer shall communicate with the launch skipper and agree that the operation is safe before anyone boards or disembarks from the launch.
- The vessel's/tug's officer shall be present at the rail whenever personnel board or disembark from a launch and he shall:
 - watch the wind and sea conditions as it affects the safety of the people boarding or disembarking;
 - inform the captain of any changes necessary, such as manoeuvring to or making a lee or shifting the position of the pilot ladder and/or accommodation ladder;

- ensure that pilot and/or accommodation ladders are properly rigged;
- ensure that PPE and PFDs are worn correctly;
- control the number of people on pilot ladders and/or accommodation ladders;
- ensure that boarding or disembarking personnel are safely escorted.

5.9 Pilot ladders

Pilot ladders shall be clean and inspected by vessel/tug crew before each use. On long passages, remove each pilot ladder from sunlight and/or cover it with a canvas cover protection.

Replace pilot ladder's damaged steps or damaged spreaders with same types of steps or spreaders, which shall be approved. When the pilot ladders are serviced by the vessel/tug's crew, the crew are not allowed to replace more than two steps or spreaders. Secure replacement of steps or of spreaders shall be carried out in accordance with the manufacturer's instructions.

5.10 Prevention of illness and injury

NOTE Heat/cold related illness can harm the human body and its physiological processes in different ways, while also interacting with pre-existing conditions and chronic diseases. With both exposures, the primary concern is alteration of the body's core temperature beyond a healthy range.

The following factors should be considered when conducting a *risk assessment* or work safety and work hazard analysis or assigning work:

- weather condition;
- work environment;
- type of work performed;
- duration of the planned work;
- *crewmembers*/visitors personal risk factors.

All *crewmembers*/visitors shall be provided with training and *risk assessment* in the prevention of heat/cold related illness before commencing the work and shall be properly dressed for the planned work.

5.11 Personal protective equipment

LSP vessel's and tug's captains shall ensure that all personnel, excluding galley personnel, wear the following PPE all the time as a minimum when working on a vessel/tug/barge deck:

- eye protection - safety glasses transparent or tinted;
- head protection - hard hat;
- hand protection;
- safety shoes - steel toed boots;
- boiler suit or pants and long-sleeved shirt;
- high visibility reflective vest;
- hearing protection required when working in any high noise environment.

Galley personnel shall wear the following PPE as a minimum when working in the galley:

- safety shoes - non-slip;
- chef coat / antibacterial or cook's shirts;
- chef trousers / antibacterial;
- chef apron / antibacterial;
- chef skull cap / antibacterial;
- protective safety kitchen cut protection work gloves.

At no time onboard the vessel personnel may wear loose clothing or jewellery that may catch on moving machinery or stationary machinery. Metal jewellery that can be easily removed shall not be worn near energized electrical equipment.

In public areas inside the vessel's/tug's accommodation during off-duty hours, all personnel shall wear footwear that is either fully enclosed or has a heel strap. For example, "flip flops" are not acceptable, but open toed or open heeled footwear is acceptable if it has a heel strap.

6 Safe work - General

NOTE The LSP is legally responsible for establishing and maintaining a working safe environment where employees and visitors can work safely, without risk to their physical and psychological health.

The vessel's/tug's captains shall have adequate number of officers and crew to make sure that all vessel's/tug's operations are completed safely and carried out as per daily work plan and without incident.

Each *crewmember* shall comply with any legislative requirements and organizational policies and procedures. Also, they shall work in accordance with agreed safe work practices and use all means provided to protect their health and safety.

Each *crewmember* and visitor may use **stop work authority** at any time when they are in doubt or if they observe any unsafe condition or unsafe behaviour.

The captain shall assign a crew member with low English language proficiency with other crew members who have a common language and sufficient English proficiency to provide a "language bridge". The "language bridge" shall not be limited to spoken English but shall also provide help for crew members who have reading difficulties.

Testing of equipment after repairs, specifically steering gear and main engine machinery, shall be coordinated to ensure safety and avoid interfering with vessel/tug operations.

6.1 Daily work planning

The work supervisor shall prepare a daily work plan with prioritization of daily work activities. The daily work plan shall be posted on board. The work supervisor shall focus on safety, available manpower, working hours, use of the right tools for the corresponding tasks, available equipment and spare parts for the planned work and weather condition.

As the first stage of planning LSP goals shall be defined, which will help to evaluate, estimate and create timing (working hours) structure of planned work with developing a contingency plan for unexpected problems. The most of planned daily work activities, also requires permitting, implementing, monitoring and close out in compliance with the LSP operational procedure during planning stage.

All OS & Heavy lift operations shall be carried out during **day light only**.

The daily work plan shall contain:

- intended works for the day;
- potential hazard and suggested suitable control measures to mitigate a hazard during at work. The *risk assessment* shall be analysed, evaluated, adequate tools and verification that all actions and documentation are complete before commencing the work shall be developed;
- verification that all related process safety requirements have been met;
- level of supervision required for the work;
- work permits required for the specific work;
- posted all daily work permits at the worksite or in a recognized location near the work site and main deck alleyway;
- agreement of the simultaneous operations;
- technical condition of the lifting and rigging equipment;
- PPE and tools which will be used for work;
- the latest weather forecast and weather limitations;
- mooring condition/interaction between vessel, tugs and barge;
- available information about vessel's/tug's/barge's Trim and stability criteria and diagrams;
- ballast/de-ballast operations;
- heel requirements during cargo operations;
- watch duties and manpower requirement during operations;
- communication.

Each work task shall be classified as low, medium or high risk and discussed on a daily work meeting prior to commencing the work.

The captain shall ensure that all unscheduled work, which arises after approval and review of the daily work planning, is added to the existing daily work plan and adequately communicated to all departments, if necessary.

6.2 Job safety analysis (JSA)

The JSA is a procedure which helps integrating accepted safety and health principles and practices into a task or job operation.

The JSA addresses the following areas:

- the personnel who do the work know the tasks, the hazards and the mitigations;
- work place conditions and secondary hazards (weather, sea state, traffic, etc.);
- additional control measures (training of designated working personnel shall be completed prior to commence the work);
- the work team has the knowledge, skills and tools to do the work safely.

6.3 Permit to work

The permit to work shall ensure an acceptable level of risk when hazardous work is performed. Therefore, it shall be warranted that the location and timeframe of hazardous work are clearly defined, that the hazards are assessed, and adequate protective measures are defined, and that the work is planned, understood and authorized prior to work start.

The permit to work shall be approved by the captain/chief engineer with implementation of all preliminary work safety and hazard analysis in details. Permit to work shall be conducted for hazardous work as by LS 940-03 list of hazardous work and additional hazards as below:

- lifting heavy cargo;
- underwater work permit if divers are involved;
- bunker operation permit.

6.4 Working at height permit

Personnel involved with working at height shall have experience or formal training in working at height. At least, each person shall have knowledge about the use of personal fall protection systems and the correct selection of anchor points. A *risk assessment* to determine the level of fall prevention or protection is required for work at heights above 1.8 m (6 ft).

Fall protection equipment (full body harness) is required anytime when working above 1.8 m (6 ft). Personnel wearing fall protection equipment shall be fully trained in their use. Double leg, or "Y" lanyards with larger self-locking hooks are required when working at height involves personnel traversing moving on platforms, masts, or cranes.

Work supervisor shall do a safety and hazard analysis before any work at height as follows:

- always consider all deck level (or ground level) alternatives prior to working at height;
- make sure that barricades, covers, guards and protection are in place;
- make sure that personal fall protection is worn when it is not possible to provide barricades, covers, guards, and protection;
- ensure safe access to anchor points and the condition of anchor points;
- When selecting fall protection anchor points the work supervisor shall ensure that:
 - the anchor point is above the head of the worker, where practical;
 - the anchor point shall be positioned so that the path below is free of obstacles or other hazards, and the worker cannot swing or touch the deck below;
 - the anchor point is fixed in a position independent from the point used to support or suspend lifts, loads, platforms, and equipment;
 - the anchor point is highlighted on the JSA and discussed during the toolbox meeting prior to commencing the work;
 - the anchor points are inspected prior to use (i.e. stability, condition, strength, smooth edges);
 - anchor point extensions (e.g. lines, slings, etc.) can be used when there is no useable anchor point due to design of the vessel/tug/barge.

- **inspect the fall protection equipment prior to each use;**
- take fall protection equipment out of service and replace it if the inspection shows evidence of excessive wear/damage or a mechanical malfunction;
- ensure that personnel who wears fall protection shall be 100% tied off while working at height;
- observe any obstructions in the fall path;
- check SWL of the structure on which the work will be done and make sure that the SWL is sufficient;
- ensure safety precautions to prevent personnel and objects falling from the structure;
- ensure, that a rescue plan has been developed for work requiring workers to wear a personal fall protection equipment.

Work shall be stopped, hazard assessed and mitigated when:

- personnel wearing fall protection are not 100% tied off;
- fall protection equipment is damaged and/or defective;
- all preventive safety measures are not implemented (safety barrier of the working place, used defective tools, etc.).

6.4.1 Portable ladders

When personnel have intention to use portable ladders, the work supervisor shall:

- make sure that each portable ladder can support 113.4 kg (250 pounds);
- inspect each portable ladder prior to use;
- mark defective or damaged ladders and immediately remove it from service;
- make sure that portable ladders that will be used for electrical work have vertical components that are made from non-conductive materials;
- portable ladders shall be secured or footed when in use all the times;
- fall protection shall be considered when using portable ladders especially when the work task requires the use of both hands;
- portable ladders shall have readable product data information labels and safety instruction in English.

6.5 Working near the vessel's/barge's side

When personnel plan to work closer than 0.9 meters (3 feet) of the vessel's/barge's side without guardrail, the work supervisor shall assess the hazards associated with the work and the worksite conditions and decide whether a personal flotation device (PFD) or a personal fall protection equipment is necessary.

When working near the vessel's side the work supervisor shall make sure that all personnel wear:

- standard PPE;
- personal floatation device (PFD);
- personal fall protection equipment if necessary;
- make sure that work over the vessel's side completely outboard of the vessel/barge is conducted only in the following circumstances: Rigging or securing gangway/pilot (accommodation) ladder or another appropriate platform.

7 Safe work - Simultaneous operations

Simultaneous operations are two or more of the following operations on the vessel/tug/barge that are ongoing at the same time as cargo operations, ballasting/de-ballasting ballast tank; hot work, mooring and anchoring operations, diving operations, maintenance of critical equipment (cranes, windlass, hydraulic power units, etc), enclosed space entry, etc.

Simultaneous operations are operations with potential conflicts, risks or hazards that are close enough to have a negative impact on the safety of adjacent operations.

Simultaneous operations of high-risk works should be avoided through planning and advanced scheduling.

If simultaneous operations are necessary, the following shall be carried out:

- LSP representative and captain shall agree a safe daily work plan prior loading, transshipment and offloading operations;
- The captain shall issue a daily work plan template;
- The following information shall be included in the daily work plan:
 - designated simultaneous operation's supervisor(s);
 - emergency response contact person (captain);
 - identified hazards and applicable mitigations;
 - agreed methods of communication;
 - dedicated manpower for each operation;
 - job safety analysis for works that are not low risk;
 - post the daily work plan on main deck alleyway.

7.1 Lifting and rigging of OS heavy cargo items

LSP and vessel's captain shall make sure that vessel's lifting equipment are correctly inspected, maintained, tested and operated for safe work at all the times. The captains shall establish a controlled inspection, maintenance and replacement program for all rigging and lifting wires, slings, hooks, jacks, hoists and their related attachments as per manufacturer's guidelines and regulatory requirements.

The captain and chief officer shall:

- do a full daily inspection to make sure that lifting equipment is in good working order;
- replace all defective equipment;
- make sure that equipment is used correctly and the safe working load (SWL) is within the specified limits of the manufacturer and that the lifting operation conforms to industry practices, LE and LSP standards;
- test all operating modes according to the manufacturer's instructions;
- identify hazards that are related to the work and take precautions;
- make sure that the applicable personal protective equipment (PPE) is worn. Worker shall wear a safety harness and an approved lanyard when they work at height;
- make sure that the correct handling tools are used;
- **make sure that NON-certified and MODIFIED equipment are not used;**
- check the weight of the load and identify position of centre of gravity before lifting the load;
- mark areas for lifting and lowering that are within the crane's boom weight/radius/angle ratio indicator reach;
- make sure that the lift path and laydown areas are safe and clear of obstructions;
- attach loads correctly and make sure that it is free of restraints such as ice, sea fastenings, and hold-down bolts;
- do not overload lifting equipment;
- check that only qualified person shall operate/handle with crane and lifting equipment;
- make sure that a contractor's crane operator's certificate matches with the contract and industry standard;
- give instructions to personnel about the safe handling procedures of materials or cargo;
- make sure that lifting equipment and work areas are safe and tidy;
- maintain handling tools regularly;
- replace wire slings and rope slings when they show signs of wear;
- focus on the load that is being lifted until it is disconnected from the lifting equipment;
- keep a safe distance from a suspended load and from ropes and cables that are under strain;
- make sure that personnel do not use a part of body to hold unsecured loads;
- make sure that personnel keep their hands and their fingers away from the path of lifts;
- make sure that the crane operator is certified and knows the procedures and the signals for the operation;

- allow only authorized personnel into the work area and make sure that a person doesn't walk under a suspended load;
- ensure that crane operators always have eye and radio communication contact to the signal person during crane operations;
- make sure that tag lines are always used to guide suspended loads;
- make sure that personnel do not loop tag lines around their wrists, arms or other body parts;
- make sure that personnel keep all sections of the tag line, including slack, in front of the body, between the handler and the load;
- accept the certified crane operator's decision not to lift a load if the crane operator thinks that it is a danger;
- make sure that the signal person uses standard signals as described in crane operation – lifting and rigging manual;
- make sure that scupper plugs are in place before commence lifting operation and hatch cover movement.

7.2 Certifications and marking of wire ropes, chains and hooks

Wire rope, chain and every hook shall be marked with a small plate or ring securely attached, which shall carry information of the manufacturer or his authorized representative. The manufacturer or his authorized representative shall ensure that every length of wire-rope and chain and each hook complies with the characteristics listed in the certificate as follows:

- the name and address of the manufacturer or his authorized representative;
- the nominal diameter of the wire-rope;
- the length of the wire-rope delivered;
- the average mass per meter;
- the mode type and direction of lay of the cable;
- length of the lay of the cable;
- the construction (composition of the wire-rope, nature and composition of the core of the wire-rope, number of strands, number of wires); including the drawing of cross-section with principal dimensions;
- the characteristics of the steel (class or quality);
- the nominal tensile breaking strength of the wires;
- the lowest practical resistance of the wire-rope to breakage under tension;
- the minimum practical tensile breaking strength of the wire-rope;
- information on the nature of the protection against internal and external corrosion (in the case of galvanizing, the quality of the zinc coating shall be stated);
- the certificate that the wire-rope is made in a single piece and that its characteristics are constant throughout its length;
- information on the nature and methods of the tension, torsion and bending tests, and the results thereof;
- the temperature limits for use of the wire-rope;
- maintenance and inspection instructions.

7.3 Toolbox meeting

The work supervisor shall ensure that a toolbox meeting is held when one or more of below occurs:

- every time before a new work is started;
- if there is a change in work personnel;
- immediately before the work is started, if "stop work" was performed;
- make sure that the toolbox meeting takes place at the worksite if possible and that all the applicable topics are discussed;

A toolbox meeting is a final discussion with all personnel who carries out the work and the personnel who will be affected by the work (including the work supervisor and contractors) about the work that will be done. During toolbox meeting, involved work personnel shall discuss all applicable topics as:

- work tasks;
- work hazards and control measures – hazard identification skills;
- work permits, if applicable;
- roles and responsibilities;
- JSAs review;
- roles and responsibilities;
- communication plan;
- stop work authority.

Workers shall apply stop work authority at any time if:

- work conditions or scope changes;
- the plan cannot be obeyed;
- personnel in the work group change;
- PPE requirements change;
- equipment failure or damage is identified;
- additional hazards are identified during the work;
- there are signs that something is not correct or if worker think that something is not correct;
- weather condition change (wind speed/direction, swell, storm, etc) that can cause a hazard to the safety of personnel or the vessel, tug and barges;
- check and correct all before re-start of operations.

7.4 Work in progress as per daily work plan

The work supervisor shall follow daily work plan without deviation from the plan or shortcuts. If there is a stop work authority by worker, the work supervisor shall do the following:

- regarding any problems that occurred during the operation: He shall re-assess the original daily work plan and determine the mitigations that are necessary to continue the work safely;
- if the mitigation is not in the scope of the original daily work plan and changes are significant, the work supervisor shall cancel all daily work permits and return to the daily work planning stage;
- get approval from the captain to continue the work.

7.5 Close out of the daily work activities

The work supervisor shall close out each daily work activity by the end of the day as follows:

- status of work;
- sharing lessons learned, discussed gaps identified and agreed corrective actions and improvements to the same or similar work in future;
- returning all closed daily permits to the vessel's/tug's file;
- create required updates to LSP ISM documentation by:
 - creating a non-conformity with recommendation of the corrective action addressing all necessary changes to the LSP operational procedures;
 - reporting the use of stop work authority through incident reporting and management system and discuss it on the following daily work meeting.

8 Safe work - Mooring, unmooring and anchoring operations

LSP shall ensure that all vessel's/tug's captains and *crewmembers* are well trained and familiar with mooring, unmooring and anchoring operations. Before vessel's/tug's arrival at port/anchorage, the captains shall hold a meeting with crew members so that the officers and crew involved in operations are given all required information to enable them to conduct operations in a safe and efficient manner. The following actions shall be carried out as follows:

- adequate supervision and procedures shall be at place;
- suitable planning;
- all mooring equipment and machinery are checked and tested prior mooring, unmooring and anchoring operations;
- proper internal/external communication;
NOTE Typical mooring and unmooring operations may involve a number of external parties such as pilots, tugs and mooring boats. The involvement of so many different groups may cause issues with communication especially if language barriers are a factor.
- enough members in the mooring/anchoring stations;
- crew have the correct personal protective equipment (PPE);
- captains shall follow specific harbour master requirements relating to mooring, unmooring, anchoring, surrounding traffic and tidal/weather conditions and forecast.

8.1 Mooring and unmooring operation

The captain shall discuss and agree the mooring/unmooring plan with the pilot (bay, river or harbour) before operation commences. Any further information received from the pilot shall be passed on to all officers involved in the operation. In preparation for the mooring/unmooring, the captains shall collect all available information as follows:

- the number and position of tugs;
- confirmation that all personnel remain in a safe position, clear of the tug line;
- the bollard pull of the tugs shall not be more than the safe working load (SWL) of the mooring equipment;
- the use of either the tug's or the vessel's towing lines (rope, rope tail, or wire);
- confirmation that the tug line messenger is handled in a controlled manner when making fast or letting go.
- the number and sequence of mooring lines;
- the use of mooring boats (if applicable);
- method of communicating with tug and mooring boats;
- quantity, size and type of heaving lines and messengers and whether messenger lines are to be used with specific reasons for their use;
- local weather forecast during operation;
- tide and current conditions;
- minimum under keel clearance (UKC);
- air draft;
- arrangement of anchors and if they will be required for mooring or in any emergency;
- the position where anchors will be dropped if required;
- number and allocation of *crewmembers* at each mooring station.

8.2 Anchoring operation

Anchoring is a risky operation and by following a proper procedure this risk can be reduced to a manageable level. The captains and deck officers shall know the limits of the vessel's/tug's anchoring equipment, including the following information:

- the lowering and the hauling speed of the windlasses;
- the length of chain for each anchor;
- the maximum windlass lift weight with regard to the length of anchor's chain and anchor weight;
- the maximum depth of water the vessel/tug can anchor.

The captain shall have a pre-anchoring meeting with the officer in charge of the anchoring operation and following topics shall be discussed:

- the anchoring position;
- the expected depth of water under the keel;

- local weather conditions, sea state and current;
- other anchored vessels in vicinity planned anchor position;
- proximity of anchored vessels and swinging circles;
- the method of approach to anchorage and method of anchoring operation;
- which anchor will be used (both anchors shall be cleared from lashing and ready for use);
- length of anchor's chain that will be used;
- the properties of the sea bed;
- methods of communication.

An experienced deck officer shall supervise anchoring operation and should only assign trained crew members to anchor work. The officer shall check the communications with the bridge before commencing operation.

9 Environment - Garbage management plan

The LSP shall have a garbage management plan in a place that meets all requirements of MARPOL, Annex V. The MARPOL regulation provides guidelines for development of the garbage management plans which shall contain clear instructions for the management of all kind of waste from the vessels/tugs/barges.

Each LSP's vessel and tug shall keep accurate and up-to-date records in the garbage record book of processing, storage and disposal of the waste. In the garbage log book all waste shall be reported according to the following categories:

- A Plastics
- B Food waste
- C Domestic wastes
- D Cooking oil
- E Incinerator ashes
- F Operational wastes
- G Animal carcass
- H Fishing gear
- I Electronic waste
- J Cargo residues (non HME - hazardous to the marine environment)
- K Cargo residues (HME)

Display placards shall notify the crew and visitors of compliance with the vessel's garbage management plan.

9.1 Waste disposal - Third party waste steward vessel (TWS)

All hazardous wastes generated on the LSP vessels or tugs shall be disposed at selected-for-use (SFU) facilities in accordance with TWS.

Vessel's and tug's captains shall offload hazardous wastes only at the ports and dispose at the SFU where received hazardous wastes will be passed through special treatment, storage or disposal (TSDF) in the facility.

The following hazardous wastes shall be offloaded at a TWS SFU facility:

- Chemicals;
- condensate;
- fire-fighting foam (AFFF and protein-based);
- gas cylinders;
- medicines;
- oil filters;
- oily slops;
- oily sludge;
- paint;
- paint thinner;

- pyrotechnics;
- solvents;
- waste oils (for example, compressor, engine, etc.).

Table 1: Simplified overview of the discharge provisions of the revised MARPOL Annex V which entered into force on 1 January 2013

| Type of garbage | Ships outside special areas | Ships within special areas | Offshore platforms and all ships within 500 m of such platforms |
|---|---|--|---|
| Food waste comminuted or ground | Discharge permitted ≥ 3 nm from the nearest land and <i>en route</i> | Discharge permitted ≥ 12 nm from the nearest land and <i>en route</i> | Discharge permitted ≥ 12 nm from the nearest land |
| Food waste not comminuted or ground | Discharge permitted ≥ 12 nm from the nearest land and <i>en route</i> | Discharge prohibited | Discharge prohibited |
| Cargo residues ² contained in wash water | Discharge permitted ≥ 12 nm from the nearest land and <i>en route</i> | Discharge prohibited | Discharge prohibited |
| Cargo residues ² not contained in wash water | | Discharge only permitted in specific circumstances³ and ≥ 12 nm from the nearest land and <i>en route</i> | Discharge prohibited |
| Cleaning agents and additives ² contained in cargo hold wash water | Discharge permitted | Discharge only permitted in specific circumstances³ and ≥ 12 nm from the nearest land and <i>en route</i> | Discharge prohibited |
| Cleaning agents and additives ² contained in deck and external wash water | | Discharge permitted | Discharge prohibited |
| Carcasses of animals carried on board and which died during the voyage | Discharge permitted as far from the nearest land as possible and <i>en route</i> | Discharge prohibited | Discharge prohibited |
| All other garbage including plastic, domestic wastes, cooking oil, incinerator ashes, operational wastes and fishing gear | Discharge prohibited | Discharge prohibited | Discharge prohibited |
| Mixed garbage | When garbage is mixed with or contaminated by other substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply. | | |

² These substances shall not be harmful to the marine environment.

³ According to regulation 6.1.2 of MARPOL Annex V, the discharge shall only be allowed if: (a) both the port of departure and the next port of designation are within the special area and the ship will not transit outside the special area between these ports (regulation 6.1.2.2); and (b) if no adequate reception facilities are available at these ports (regulation 6.1.2.3)

10 Environment - Ballast water management (BWM)

Ballast water shall be managed in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) in order to remove, render harmless, or avoid the uptake or discharge of aquatic organisms and pathogens within ballast water and sediments.

The LSP and operators shall have an International BWM Certificate. To obtain the certificate, a vessel shall have a BWM plan addressing procedures for ballast water (BW) exchange, BW treatment or both. If a BWM System is installed, then approved technical documentation for the BW treatment system installation shall be available on board.

Also, a ballast water record book (BWM) is required, and the vessel shall employ the chosen BWM method and keep the ballast water record book up-to-date. The chief officer shall always keep the ballast water record book up-to-date.

11 Safety in galley

The galley is one of the most critical compartments on board vessel/tug providing to crew members (and if applicable to passengers) the required food and beverage services daily. Maintaining the proper quantity and a high quality of food and beverage is of high importance for the crew members considering that both their performance at work and health depend on. The galley is subject to frequent external/internal MLC inspections; therefore, galley's staff shall keep the galley in such a condition that no food borne diseases can be caused, which can put the crew and others in danger and consequently LSP to face unexpected costs.

Any food spoilage or contaminated food can cause food poisoning; therefore, it is vital for galleys to follow proper hygiene in order to maintain food of high quality.

The chief cook and stewards shall oversee all catering activities to ensure:

- safe working practices in food loading, storage and preparation;
- follow detailed personal hygienic rules;
- storage compartments should be clean, free of pests or insects, with adequate temperature;
- cleanliness of the galley, especially the sanitation of food-contact surfaces and food preparation and storage equipment;
- catering personnel shall be trained and focused as per Maritime Labour Convention, 2006, as amended (MLC, 2006);
- health and safety issues in galley area to be highlighted during food preparation and equipment use;
- adequate guidance by posters and instructions.

12 Medical care and emergency response

Medical exams and functional capacity evaluations (FCEs) are required to make sure that vessel's and tug's *crewmembers* are fit for duty. If a *crewmember* suffers either illness or an injury from accident at sea and river, the captain shall make sure that the person receives timely and appropriate treatment. First aid shall be given if applicable and the captain shall submit a medical report to LSP as soon as possible. The LSP shall immediately inform Linde about medical issues (illness or injury) of the *crewmembers* and appropriate medical treatment that the *crewmembers* received.

12.1 Health and personal protection

The vessel/tug captain shall maintain a safe work environment and be aware if some *crewmembers* take a medication that may affect performance or safety and shall notify LSP. The LSP shall notify Linde regarding *crewmembers* who take a medication that may affect performance or safety. The LSP provides the personal protective equipment (PPE) necessary to meet the requirements of the personal protective equipment guidelines to all crew members.

All mariners are required to carry onboard vessel/tug their current and updated documentation as follows:

- yellow card - medical record of immunizations;
- valid medical fitness certificate of any medical clinic that provides medical treatment or examinations for mariners.

12.2 Cabin inspection

The vessel/tug captain or designated officer conducts routine inspections of all cabins in accordance with flag state requirements or shall conduct cabin inspections at least once a month.

During the cabin's inspection, the captain verifies that each cabin is maintained in a healthful, safe and sanitary condition. Any issues identified during cabin inspection shall be addressed as follows:

- maintenance issues are notified to the chief engineer for rectification;
- housekeeping issues are brought to the attention of the crew member for immediate rectification.

12.3 Drug and alcohol policy

The LSP shall be committed to maintaining a drug-free workplace for its employees. Therefore, the LSP shall forbid:

- the use, sale or possession of illegal drugs;
- the abuse or unauthorized use of alcohol;
- random test of current employees and contractors as a warning to drug use or alcohol abuse.

The LSP shall maintain control over the use of alcohol on board vessels/tugs. This includes:

- inventory accounting;
- reasonable-cause testing;
- random searches of vessels, employees and others onboard vessel/tug.

The LSP shall ensure that its employees fully comply with applicable flag state or port state regulation regarding the control and use of drugs and alcohol. LSP shall immediately inform LE in case of any violation of the LSP's drug and alcohol policy.

12.4 Emergency response

If an ill or injured person on a vessel requires a medical evaluation or treatment that is not available on the vessel, the vessel's/tug's captain shall:

- immediately call LSP's designated person ashore (DPA) who shall urgently organize medical assistance together with local LSP's port agent, coastguard office or hospital;
- collect necessary medical information about the patient using "the first call medical advice checklist";
- get medical advice from "radio medical advice for vessels at sea";
- in addition, if necessary, use another nearest (local) professional medical advisory service that is available.

If medical advisors or shoreside medical personnel who are treating the vessel's/tug's patient recommend repatriation, the captains shall divert the vessel/tug route toward the nearest port in which qualified medical assistance is available. The captain shall work with the LSP's DPA to finalize the repatriation plan. The LSP shall immediately inform Linde about an emergency action plan.

13 Personnel and asset integrity management

13.1 Mariners licenses and certificates

All LSP's *crewmembers* shall possess licenses and certificates issued by flag states and other authorities. These documents provide written evidence of skills and experience in marine/river operations for each *crewmember* who is employed by LSP on the vessel or tug.

The LSP shall check and organize required trainings for *crewmembers* to ensure that their licenses and certificates are always up-to-date, valid and unrestricted.

The LSP shall provide a list of vessel/tug *crewmember's* names and a list of the certificates with detailed certificate info and number, validation date and authority of issuance to Linde minimum 2 months before commence loading, transshipment or off-loading operations.

All crewmembers employed onboard the LSP's vessel/tug, shall always maintain their licenses and certificates current, valid and unrestricted. LSP's crewmembers and other persons shall carry these documents while employed onboard of LSP's vessel/tug.

13.2 Asset integrity management system

NOTE An asset integrity management system summarizes the ability of an asset to perform its required function whilst protecting health, safety and environment.

Asset integrity management system performance standards shall be set, in alignment with reliability requirements for the inspections, tests and preventative maintenance of integrity critical assets.

The structural integrity of LSP's vessels/tugs/barges shall be maintained to a sufficiently high standard to prevent facility failures with significant impact to personnel, the environment, the asset or project's logistic schedule.

The scope of integrity activities shall include:

- instrumentation and control;
- lifting and rigging equipment;
- electrical systems;
- hull and structure;
- machinery;
- safety and utility systems.

For each integrity critical asset, integrity critical tasks shall be identified and defined during monthly, quarterly or annual maintenance meetings. Integrity critical tasks comprise specific inspection, test, frequency of the tests and maintenance activities.

Metrics and validation criteria shall be developed and applied to measure conformance with the asset integrity management system program and to verify the performance and effectiveness of the program.

13.3 Asset integrity work plans

Asset integrity work plans shall include the following:

- inspection;
- testing;
- maintenance program.

The maintenance program is to maintain the functionality of a system or asset in a safe, cost-effective and reliable way. The maintenance program shall be based on:

- manufacturers' guidelines;
- classification and flag state requirements;
- LSP requirements;
- analysis of the failure modes of the equipment and the effects on the functionality of the system.

All LSP's vessels/tugs/barges shall be maintained in compliance with regulatory and standard industry requirements. Where the consequence of the equipment failure is unacceptable, maintenance shall be grounded by condition or predictability of failure which shall be achieved either by based maintenance or preventative maintenance (scheduled).

NOTE 1 Based maintenance is a predictive maintenance methodology where maintenance is performed on equipment only after one or more indicators show that equipment performance is deteriorating or that failure is predictable. This is accomplished by using surveillance techniques, for example vibration monitoring, performance monitoring, oil analysis, etc.

NOTE 2 Preventive maintenance is a regularly planned work, either calendar based, or meter based, for a specific asset, location, or system onboard the vessel at a defined interval. Preventative maintenance is applied to equipment where based maintenance cannot be used due to regulations, criticality or risk. Maintenance includes inspections, tests, cleaning or replacement of components at defined intervals.

13.4 Certifications

All LSP's vessels/tugs/barges certifications shall be maintained in compliance with all relevant laws, rules and regulations according to the applicable flag states, classification societies and government bodies.

The LSP shall ensure that each vessel/tug/barge maintains classification and up-to-date flag state certificates as required by law.

14 Audits

NOTE The *ISM Code* paragraph 12.1 states: "The Company should carry out internal safety audits onboard and ashore at intervals not exceeding 12 months to verify whether safety and pollution-prevention activities comply with the safety management system (SMS)". In exceptional circumstances, this interval may be exceeded by not more than three months.

14.1 Internal ISM, ISPS and MLC audit

Internal audits shall be carried out according to the corresponding audit process:

- Regular internal audits shall be performed throughout the LSP on a regular basis, in all vessels/tugs/barges included on the company's document of compliance;
- Special internal audits shall be individually designed and performed as necessary to achieve specific objectives, such as to verify conformity in areas of LSP's concern.

14.2 Linde (External) ISM and MLC audit

Linde reserves the rights to carry out a separate ISM & MLC audit for determining, measuring and monitoring operationally and safety performance and continuous improvement programs of the current and prospective business partners (LSP). In general, LE (external) audit will be performed in a manner similar to the performance of Internal Auditor ISM-ISPS-MLC for shipping companies' program. The assigned auditor shall plan, organize and perform second-party audits according to the guidance contained in ISO 19011:2011, guidelines for auditing management systems.

The LSP's representative and captain shall:

- escort the external (Linde or any other auditor designated by Linde) auditor through vessel's/tug's departments;
- escort the external (Linde or any other auditor designated by Linde) auditor in visiting LSP's barges;
- ensure that the auditor has access to information, records, vessels/tugs/barges and personnel certificates, and physical areas, as the auditor requests;
- advise the auditor of any safety considerations;
- participate in interviews of other employees only as the auditor requests;
- help the auditor to develop an accurate and full knowledge of the conditions;
- ensure access to the port state inspection reports and last internal ISM and MLC audit report. The ISPS part of report shall be excluded.

The external auditor **has no authorization to carry out ISPS part of audit and access to the ISPS documentation**. Each auditee shall inform the auditor is about the auditee's operations and the details of procedures on which the auditor shall focus.

A regular external audit shall include:

- An opening meeting to introduce the auditor, the auditees and the audit process and also to discuss the audit plan, any safety considerations and any initial concerns of the auditor or auditee;
- Interviews, observation of operations and conditions, and review of documents, based on audit criteria;
- during or after the external audit, the auditee and the auditor may discuss corrective actions;
- a closing meeting to confirm audit findings and to discuss subsequent action.

Before departing a vessel/tug, the Linde auditor should provide a draft audit report for the vessel/tug captain. Also, the Linde auditor will send the final audit report to the LSP within one week of completed audit.

The LSP shall inform Linde within one month after Linde's audit about vessel's/tug's audit correction action plans and completions of the corrective action plans which have been determined in the audit report (due date).