<table>
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<th><strong>Title:</strong></th>
<th>LNAS Marine Manual</th>
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<tr>
<td><strong>Document no.:</strong></td>
<td>LNAS-LUN-J-TF-2001</td>
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<td><strong>Document date:</strong></td>
<td>09.05 2017</td>
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<td>04</td>
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<td><strong>Document status:</strong></td>
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<tr>
<th><strong>Authors:</strong></th>
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<tr>
<td>S.Hertzberg / A.Kelley / B.Hoff</td>
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<th><strong>Approved:</strong></th>
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<td>E.S. Jenssen</td>
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Revision status

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<tr>
<td>01</td>
<td>20.06.2014</td>
<td>First issue</td>
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<tr>
<td>02</td>
<td>22.12.2014</td>
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<td>Changed name to &quot;LNAS Marine Manual&quot;</td>
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<tr>
<td>04</td>
<td>09.05.2017</td>
<td>General update, more focus on SAR training, fuel reporting.</td>
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Preface

This information has been prepared to provide vessels and marine personnel with an introduction to logistics operations, stand-by duties and other marine activities performed by or on behalf of Lundin Norway AS (LNAS).

The main purpose of this document is to define marine and logistics standards, requirements and expectations to ensure safe and efficient operations.

LNAS is dependent on you, your crew and vessel to make this operation a safe one. We expect you to be professional in what you do and we will support you as best we can to make sure that you can do your job in a safe and efficient manner. Please provide us with any feedback you may have to this document in order for us to improve the quality and usability.

We expect the Master or any crew member to STOP any activity if they are not comfortable with a situation and believe it cannot be completed safely.

If you have any questions or concerns related to logistics or marine activities on behalf of Lundin Norway AS, be addressed to your marine contact.

Welcome to our team, we look forward to working with you!

With kind regards,

Erik Sverre Jenssen
Field Development Manager
Lundin Norway AS
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1 Introduction

1.1 Purpose and Scope of Document

The purpose of this document is to supplement the latest valid revision of the Guidelines for Offshore Marine Operations (GOMO), and NOROG/NSA "Operational Manual for offshore service vessels - Norwegian Continental Shelf" when performing operations for or on behalf of Lundin Norway AS on the Norwegian Continental Shelf (NCS).

In addition to this, there will normally be specific requirements that apply when performing work in arctic conditions, work in environmentally sensitive areas, or when undertaking specific "non-routine" work, such as diving operations, etc.

In the event of an emergency situation, specific emergency preparedness requirements may apply, normally documented in an emergency preparedness bridging document.

A copy of the latest valid revision of GOMO, the NOROG/NSA operational manual, and this manual should be available at all locations where activities for which they are responsible are undertaken, and on all vessels supporting such operations.

The document hierarchy is shown in the figure below.
## 1.2 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Able Body Seamen / Able Seamen</td>
</tr>
<tr>
<td>AHTS</td>
<td>Anchor Handling Tug Supply</td>
</tr>
<tr>
<td>AIS</td>
<td>Automatic Identification System</td>
</tr>
<tr>
<td>ARPA</td>
<td>Automatic Radar Plotting Aid</td>
</tr>
<tr>
<td>CCR</td>
<td>Central Control Room</td>
</tr>
<tr>
<td>CPA</td>
<td>Closest Point of Approach</td>
</tr>
<tr>
<td>CV</td>
<td>Curriculum Vitae</td>
</tr>
<tr>
<td>DFU</td>
<td>Defined Situations of Hazard and Accident</td>
</tr>
<tr>
<td>DSHA</td>
<td>Definerte fare og ulykkessituasjoner</td>
</tr>
<tr>
<td>DP</td>
<td>Dynamic Positioning</td>
</tr>
<tr>
<td>DPO</td>
<td>Dynamic Positioning Operator</td>
</tr>
<tr>
<td>DPR</td>
<td>Daily Progress Report</td>
</tr>
<tr>
<td>ECR</td>
<td>Engine Control Room</td>
</tr>
<tr>
<td>EDH</td>
<td>Efficient Deck Hand</td>
</tr>
<tr>
<td>EP</td>
<td>Emergency Preparedness</td>
</tr>
<tr>
<td>ERO</td>
<td>Emergency Response Organisation</td>
</tr>
<tr>
<td>ETA</td>
<td>Estimated time of arrival</td>
</tr>
<tr>
<td>FFi</td>
<td>Fire Fighting</td>
</tr>
<tr>
<td>FMEA</td>
<td>Failure Mode and Effect Analysis</td>
</tr>
<tr>
<td>FPSO</td>
<td>Floating Production Storage and Offloading</td>
</tr>
<tr>
<td>FRC</td>
<td>Fast Rescue Craft</td>
</tr>
<tr>
<td>GOMO</td>
<td>Guidelines for Offshore Marine Operations</td>
</tr>
<tr>
<td>H2S</td>
<td>Hydrogen Sulphide</td>
</tr>
<tr>
<td>HAZID</td>
<td>Hazard Identification</td>
</tr>
<tr>
<td>HAZOP</td>
<td>Hazard and operability Analysis</td>
</tr>
<tr>
<td>HSE</td>
<td>Health, Safety and Environmental</td>
</tr>
<tr>
<td>IMCA</td>
<td>International Marine Contractors Association</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods code</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>IMR</td>
<td>Inspection Maintenance Repair</td>
</tr>
<tr>
<td>JRCC</td>
<td>Joint Rescue Coordination Centre</td>
</tr>
<tr>
<td>LARS</td>
<td>Launch And Recovery System</td>
</tr>
<tr>
<td>LEL</td>
<td>Lower Explosion Limit</td>
</tr>
<tr>
<td>LNAS</td>
<td>Lundin Norway AS</td>
</tr>
<tr>
<td>MGO</td>
<td>Marine Gas Oil (fuel)</td>
</tr>
<tr>
<td>MOB</td>
<td>Man Over Board</td>
</tr>
<tr>
<td>NCS</td>
<td>Norwegian Continental Shelf</td>
</tr>
<tr>
<td>NDT</td>
<td>Non Destructive Testing</td>
</tr>
<tr>
<td>NMO</td>
<td>Norwegian Maritime Organization</td>
</tr>
<tr>
<td>NOROG</td>
<td>Norwegian Oil and Gas Association</td>
</tr>
<tr>
<td>NSA</td>
<td>Norwegian Shipowners Association</td>
</tr>
<tr>
<td>OIM</td>
<td>Offshore Installation Manager</td>
</tr>
<tr>
<td>OLF</td>
<td>Oljeindustriens Landsforening (Norway Oil Industry Association, now NOROG)</td>
</tr>
<tr>
<td>OPC SE</td>
<td>Statoil Operation Surveillance &amp; Emergency</td>
</tr>
<tr>
<td>POB</td>
<td>Personnel On-Board</td>
</tr>
<tr>
<td>PSA</td>
<td>Petroleum Safety Authority</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>PSV</td>
<td>Platform Supply Vessel</td>
</tr>
<tr>
<td>QC</td>
<td>Quality Controller</td>
</tr>
<tr>
<td>ROB</td>
<td>Remaining On Board</td>
</tr>
<tr>
<td>ROV</td>
<td>Remotely Operated Vehicle</td>
</tr>
<tr>
<td>SAR</td>
<td>Search And Rescue</td>
</tr>
<tr>
<td>SBV</td>
<td>Stand By Vessel</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective Catalytic Reduction</td>
</tr>
<tr>
<td>SJA</td>
<td>Safe Job Analysis</td>
</tr>
<tr>
<td>SMC</td>
<td>Safe Manning Certificate</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Management System</td>
</tr>
<tr>
<td>SOW</td>
<td>Scope of Work</td>
</tr>
<tr>
<td>SSDR</td>
<td>Semi-Submersible Drilling Rig</td>
</tr>
<tr>
<td>STCW</td>
<td>International Convention for Standards of Training, Certification and Watch keeping for Seafarers (IMO Convention 1978 and as subsequently amended)</td>
</tr>
<tr>
<td>UMS</td>
<td>Unmanned Machinery Space</td>
</tr>
<tr>
<td>WELS</td>
<td>Wellit Logistics System</td>
</tr>
</tbody>
</table>
2 Health, Safety and Environment

2.1 General

In all marine operations for LNAS it is stated clearly that the activities shall be characterized by a high level of HSE and carried out in accordance with regulatory requirements for the activities.

LNAS aims to establish a working culture for all parties involved in our activities that result in:

- Zero fatalities
- Zero serious incidents
- Zero harm to the environment

Important ways to achieve these overall goals are:

Health
- Promote a healthy working environment
- Prevent occupational illnesses
- Reduce health hazards

Safety
- Promote risk identification
- Avoid silent deviations
- Take care of your colleagues

Environment
- Promote understanding and control of operations involving liquid containing systems
- Avoid unnecessary fuel consumption in all activities
- Optimize activities to reduce emissions to sea and air
- Identify and protect exposed equipment
- Sort your waste

The main objective for LNAS is that the activities are carried out as planned without any harm to personnel, the environment or financial assets. Controlling major accident and personnel risk is prioritized in all phases from planning to completion of the activities.

LNAS has a continuous focus on improvement of our operations with regard to safe and efficient operations. To achieve this, good communication between all parties are vital.

2.2 Risk Management

Vessels on LNAS contract or within LNAS operated safety zones shall actively use risk assessments as a mean to reduce and control risks associated with activities. This will be particularly important if there is no recognized and approved procedures in place or if crew members has no or limited previous experience with the activity.

LNAS expect that efforts are made to increase risk understanding among all crews in relation to all activities being performed.

The objective is to achieve the lowest risk level possible and to prevent all types of incidents and injuries (cf. GOMO guidelines Section 4).

Risk assessment shall also be carried out for non-routine operations and as part of the qualification of new equipment and/or technology, cf. GOMO Section 6.1.2 and 7.3.
2.3 Incident Notification and Reporting

All HSEQ related incidents shall be recorded. There shall be a system on board to maintain records of such reports and to register and follow-up mitigating actions to prevent recurrence.

If an incident occurs within the safety zone of any marine asset, or at base, the relevant OIM/Master/Base Manager shall be informed without undue delay.

Serious incidents, or events of an acute nature, shall immediately be communicated as per attachment "B". The immediate notification shall be followed by a written report.

All incidents that can be related to the vessel day by day (interfere with the vessel work tasks) operation shall be informed to LNAS Logistic duty without undue delay (24/7)

In addition to reporting requirements outline above, a copy of all incidents, near miss, observation etc. reports shall be submitted to marine@lundin-norway.no once a week.
3 Responsibility, Manning and Competence

3.1 Responsibility
Responsibility shall be clearly defined for all positions onboard the vessel. An organization chart shall be prepared that clearly describes responsibilities for the activities taking place.

The prime responsibility of the Master of any vessel is to safeguard the crew and equipment on board and ensure environmental care at all times. The Master or any crew member is at any time expected to stop operations that may put personnel, vessel or environment at risk.

3.2 Manning and Competence

3.2.1 General
The vessels shall have a documented system to manage and control competence and skills (experience and certification) for all crew members compliant with applicable regulations and guidelines. This system shall be maintained at all times describing the compliance status. Reference is made to GOMO Section 5.4.3.

A status report shall be issued to marine@lundin-norway.no upon commencement of operations and upon request. An example of a competence list is provided in Attachment A.

In the event of a non-conformity situation regarding crew competence, the owner/manager of the marine asset shall suggest compensating and/or corrective measures to be implemented which shall be presented to LNAS for acceptance.

Note that specific competence and training requirements may apply in connection with certain operations and contracts.

LNAS shall be informed by mail to marine@lundin-norway.no if any change to the officers on board is taking place. This information shall include personnel CV’s

3.2.2 Specific requirements
Specific requirements related to the complexity of the activities in accordance with GOMO Section 5.4.2 shall be observed. The complexity levels described in GOMO are shown below.

![Complexity Levels Diagram]
All dynamic positioning (DP) operations within 500m of any installation/vessel shall be done with two certified STCW officers on the bridge (Level B operations.)

The Engine Control Room shall always be manned by competent personnel when vessels are within 500m of any installation. As minimum one engine officer shall be on duty at all times when departure/arrival harbour and inside any installations safety zone (500m). See Table 3.1 for further detailed requirements.

**Table 3.1 – Minimum Competency Requirements**

<table>
<thead>
<tr>
<th>Manning</th>
<th>Operational Level</th>
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<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Watch Keeping</td>
<td></td>
</tr>
<tr>
<td>Bridge</td>
<td>As per SMC and SMS</td>
</tr>
<tr>
<td>Engine Room</td>
<td>UMS (if so classed)</td>
</tr>
<tr>
<td>Dynamic Positioning (if used)</td>
<td>No requirement</td>
</tr>
<tr>
<td>Deck (marine) (excl. project personnel)</td>
<td>As required by the activity</td>
</tr>
</tbody>
</table>

a) Unlimited SDPO or DPO as defined by IMCA M117
b) Restricted DPO to have attended basic DP induction course and appropriate equipment familiarisation.

**Operational Level A:**
- Operations outside any safety zone
- Response and rescue support (excl. near standby)
- Transits (including towing)

**Operational Level B:**
- Cargo operations within safety zone including those supported by dual-role stand-by vessels
- Simple low-load anchor handling operations
- ROV operations outside safety zone
- Near standby

**Operational Level C:**
- Complex anchor handling operations, typically piggybacking, pre-laying or in deep water
- Close approach intership operations
- Subsea construction
- Diving support
- Complex ROV operations, in close proximity to surface assets
- Simultaneous multi-vessel operations
- Vessel supported lifting operations within the safety zone.

### 3.3 Crew Lists

All marine assets operating for or on behalf of LNAS, shall upon start of contract and after each crew change submit updated POB (crew list) and NOK (next of kin) list to am@resq.no and marine@lundin-norway.no.
4 Common Operational Requirements

4.1 General
Vessels shall adhere to any procedures and checklists as required by owner's management system, in addition to specific requirements provided by LNAS.

Further, all vessels shall adhere to sailing orders and specific instructions given by the LNAS logistics and/or supply base coordinator.

When on rig location the vessel shall follow the instructions given by the OIM.

In addition to the requirements specified in this document, information and instructions may be provided through project specific documents.

If speed is not specified by logistic or marine the most economical speed is to be used to reduce cost and unnecessary emissions. Economic speed is vessel depending, but LNAS assume 10 knots as a realistic speed.

If the vessel is ordered to sail with full speed (85% or more) this should be confirmed in writing by the LNAS logistic/marine representative. The vessels shall document this in WELS and by use of vessel own HSEQ reporting system.

NOx-reduction measures, including SCR-systems shall always be utilised optimally, unless otherwise is approved by the LNAS logistic/marine representative.

Vessels in transit towards all LNAS operated rigs under surveillance from Statoil Operation Surveillance & Emergency (OPC SE) must establish contact well in advance of arrival. The information shall contain ETA and SOW at arrival.

OPC SE can be contacted on phone (+47) 55 14 32 78 / VHF Channel 14 or OPCSE@statoil.com

Vessels in transit towards "Brynhild/Pierce field" must establish contact with the FPSO vessel Haewene Brim (operated by Bluewater) two days before arrival. The information shall contain ETA and SOW. The sequence of the proposed activities and request a work permit, or permits be raised in advance of the third party vessel arrival. Ref. doc. HB-O-100-MA-0093-001/Rev B

4.2 Planning and Coordination of Vessel Operations
The LNAS Logistics Department is responsible for planning and coordinating platform supply vessel and standby vessel operations. All other activities are coordinated by LNAS Marine.

The Master and vessel officers shall familiarize themselves with any exclusion zone of any marine assets they call on.

When sailing to/from any locations it should be ensured to never use any fixed or floating object as waypoint. The Closest Point of Approach (CPA) shall be minimum 1nm.

4.2.1 Daily morning conference per operation
A conference call takes place every morning, during which the daily operations and vessel schedule are coordinated. Participants are vessel(s), supply base, onshore and offshore logistics. Details will be issued for each operation as required.
4.2.2 Sailing Plan
For the Edvard Grieg field a sailing plan will be distributed on e-mail.

It is the vessel responsibility to enter sailing and fuel log details into WELS. Necessary introduction and training on how to use the system will be provided as required.

4.2.3 Cargo Manifest
Before any loading onto the vessel commences, a preliminary cargo plan shall be prepared and a cargo manifest shall be prepared and approved. The final cargo manifest including relevant documentation (e.g. safety data sheets, original declarations forms, weights, etc.) shall be issued before departure. Ref. is made to GOMO section 9.1.

4.2.4 Sailing Order
Sailing order may be issued verbally by the Lundin Supply Base or installation representative. The vessel shall issue departure notice via WELS.

4.2.5 Communication with the installation
The facility/installation/rig shall be notified of vessel arrival minimum one hour prior to ETA.

Prior to commencement of all types of operation good means of communication shall be established. If the communication fails, the operation shall be suspended immediately until proper communication has been re-established.

4.2.6 Deviations from the vessel scheduling
Deviations from the planned sailing must not take place without permission from LNAS Logistics. If major delays (i.e. more than two hours) to the vessel scheduling occur the vessel shall inform the installation and LNAS Logistics. The vessel is responsible for providing such information, regardless of whether the deviation is caused while at quay (cargo delays, etc.) or when in transit.

In cooperation with the installations, LNAS Logistics will consider which actions should be taken to avoid undesirable delays and unacceptable costs.

4.3 Voyage Report
All vessels shall send voyage reports for each voyage.

This is reported through WELS, a web based program instructed herein to allow reporting of vessel activities. This includes all events on a voyage, daily fuel ROB figures, deck area map, bulk, deck cargo actions and departure information. The WELS user guide will be submitted upon request.

LNAS Logistics are automatically updated on the vessel status when a report is saved to web by the vessel. Updated deck area maps are also distributed to involved parts (i.e. crane operator on installations) when saved to web.

For further details and user instructions, contact the LNAS logistics/marine representative.
4.4 Marine activities within the 500m safety zone

The OIM is in charge of all activities within the 500m safety zone. Good communication between the OIM and vessel Master is essential to ensure that marine activities are carried out in a safe and efficient manner.

When entering the Edvard Grieg field, it is only the Edvard Grieg Installation CCR who can give permission to enter the 500m zone. This is also applicable for vessels approaching/ servicing "Rowan Viking".

The vessel shall be fully operational with relevant checklists completed. Communication shall be maintained with the installation coordinating all activities within the 500m zone. All communications should be by repeating orders.

The vessel Master shall ensure that DP software onboard is updated to latest edition and thoroughly tested. This is to be documented in vessel maintenance system.

Vessels inside the 500m zone within any asset is not allowed to operate with closed bus tie bar.

Before receiving bulk and/or cargo, necessary declarations and data sheets shall be in place. Special attention with regards to volume control shall be placed on transfer of fuel, liquid waste and other bulk transfers.

It is expected that the Master on board vessel will stop operation until declarations and data sheets are received.

Officers on Watch and other watch keeping personnel on the bridge shall under no circumstances be distracted by non-operational tasks. Use of mobile phone or similar devices whilst on duty on deck, engine or bridge within 500m safety zone is prohibited. Mobile devices is not allowed to bring to deck while performing work.

Fishing activities is not permitted inside the 500m zone.

If Radius, fanbeam or similar reference system will be used, the system should be properly tested before use as approved reference system.
The following specific tasks shall be observed:

**Entering the 500m zone**
- Note that for entering a 500m safety zone, specific procedures or instructions may apply. Further information will be provided by the project logistics coordinator or the LNAS logistics duty.
- If applicable the Vessel Master shall ensure that the vessel has the latest update of applicable mooring spread details. This to ensure now contact between vessel and mooring lines.

**Work inside the 500m zone**
- Always check the distance to anchor lines and observe the anchor line patterns if applicable.
- Avoid positioning and relocation upwind of the installation
- Perform work in an efficient manner whilst alongside the facility so that time in close proximity is minimised
- Upon suspension of cargo/bulk operations, vessels should relocate to a safe distance downwind from the installation

**Departing the 500m zone / or supply base**
- Make sure that all containers and bulk onboard are manifested upon departure.
- All cargo is secured according to vessel specific cargo securing manual.
4.5 **DP Operations**

DP operations shall in principle be done according to the marine asset's procedures/checklists for this type of operations. In addition it shall be ensured that the IMCA guidelines are followed for DP operations (see reference documents).

All DP vessels shall have a valid IMCA annual DP trial performed annually (valid for 12 months +/- 3 months.

The FMEA are subject to continuous updates if required by changes to system or operation, ref. IMCA and IMO. FMEA are to be seen as part of the vessel SMS system, and subject to ISM requirements of review/revisions. Reference are made to IMCA M179 "Guidance on failure modes and effects analysis (FMEA)".

The DP requirements related to vessels for various marine operations are as follows:

<table>
<thead>
<tr>
<th>Activity</th>
<th>DP class$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manned underwater operations</td>
<td>3</td>
</tr>
<tr>
<td>Manned underwater operations conducted from a work boat (the requirement applies for the support vessel)</td>
<td>2</td>
</tr>
<tr>
<td>Lifting operations between vessel and installation conducted with the vessel's crane (heavy lifts)</td>
<td>3</td>
</tr>
<tr>
<td>Pipe-laying and riser installation within the safety zone$^2$</td>
<td>3</td>
</tr>
<tr>
<td>Inshore survey and offshore metocean data collection outside the safety zone</td>
<td>-</td>
</tr>
<tr>
<td>All other marine operations</td>
<td>2</td>
</tr>
</tbody>
</table>

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$^1$ For definition of DP/equipment class, see IMCA M 182 "International Guidelines for The Safe Operation of Dynamically Positioned Offshore Supply Vessels"

$^2$ For pipe-laying activities and riser installation within the safety zone, DP class 2 is accepted if the following measures are implemented, as a minimum:
- Extra fire watch routine
- Extra watch in the engine room
4.6 Lifting Operations

In general, marine vessels should use their own procedures/checklists for planning and executing lifting operations. In addition the vessels shall ensure compliance to rules/guidelines in section 3 where and whenever relevant for them.

For lifting activities within the 500m zone, the NORSOK standard R-003 shall apply.

When using the main block of the rig crane for lifting, an intermediate pennant of sufficient safe working load should be installed on the hook(s) of the main block enabling personnel to connect or release the lifting rigging on the cargo item without having to approach or attempt to maneuver the block itself. This intermediate pennant should be of sufficient length such that the height of the main block when the lifting rigging is connected or released is always approximately 5 meters above the cargo rails at the side of the main deck, or the highest adjacent item of cargo (ref GOMO Section 9.10).

Use of tag lines shall normally be avoided on the vessels, ref GOMO section 9.14.

4.7 Potable Water

For potable water, the reference document shall be followed at all times: "Water Report #129", issued by the National Institute of Public Health January 2017.

As the drilling units produce their own potable water, the amount of potable water on board shall be kept to a minimum (100 m$^3$) unless otherwise stated by the Logistics person responsible for the actual installation. For the Edvard Grieg platform a separate audit will be conducted by Company doctor before vessel is certified for water deliveries.

The potable water should not be stored onboard in more than 21 days.

4.8 Transport of personnel in Open Waters

Transportation of personnel between offshore vessels entails risk for personnel. If required, personnel transfer may be carried out by a Fast Rescue Craft or approved and certified personnel transfer basket (for example FROG*).

Criteria for crew change in open waters (outside the 500m zone) are described below:

- Vessel owner approved procedures shall be in place
- Crew change operations shall only be performed under safe conditions. A risk assessment of the operation shall be performed taking all hazards into consideration. If the risks involved are found to be acceptable by all parties involved, the vessel Masters may mutually agree to perform a crew change. All crew change operations done in open waters shall be duly logged in the deck log book with weather conditions clearly stated.

After a risk assessment is done, this and any mutually agreed decisions shall be documented.

For further requirements to personnel transfer, see GOMO section 7.9.
4.9 Transport of personnel by use of FROG

LNAS will have Frog XT available at the Edvard Grieg installation and at some of the drilling rigs. The operational criteria are:
- Restrictions related to weather and wave height
- Involvement of safety service before deciding whether such operations
- Involvement of crane operators
- Education and training in the use
- Light conditions / requirements for daylight
- Volunteering

The new type of FROG’s safeguards a number of requirements that are relevant for this purpose:
- Approved for personnel
- Approved for use in the Arctic
- Buoyancy element holding basket liquid if it falls into the sea
- Seats with harnesses for the personnel in the basket

The system is available in sizes from two passengers and up to ten passengers. Common to all versions is that they can be configured for medical evacuation and then have the capacity to a stretcher and a companion.

Training with use of FROG shall be done frequently. The target is to carry out the training monthly and that involved personnel are trained at least one time a year.

The training shall be in accordance with a real situation and shall be launched to a vessel provided that it can be done safely.

The access/egress of personnel should be practiced, but the use of personnel the FROG during a lift shall be avoided as a safety precaution.

4.10 Weather Forecast

The weather criteria and guidance shall be in accordance with the GOMO guidelines. Weather forecast for all LNAS locations will be supplied through the LNAS logistics/marine representative.

Vessels and rigs operating in the Barents region must be aware of the possibility of polar lows. This can occur without being forecasted.

4.11 Environmental Conditions

For vessels operating in environmentally extreme conditions (i.e. winter operations in the Barents Sea), appendix 7-A in GOMO shall be followed.

Note that project specific requirements may be provided for this type of operations.

Vessels operating north of Røst in the period from October to May shall have a vessel specific winterization manual in place. This shall be reviewed by LNAS.

4.12 Communication on deck

It is not allowed to work on main deck on vessel without use of proper communication. We recommend use of UHF with headset.
4.13  Platform Supply Vessel (PSV) Operations

4.13.1  General

For all types of operations LNAS vessels to follow sailing orders given by LNAS Logistics and/or LNAS Supply Base coordinator.

When the vessel is alongside the rig, the marine radar shall be switched off to avoid radiation hazard on the rig.

If the rig is moored by a mooring system the vessels Master and duty officers should be aware of depth and line directions close to the rig. Such information charts shall be available from the rig control room or marine section leader/barge master.

WELS (http://www.wels.no) is the primary system for logistic and reporting, and shall be used. All vessels on hire for operation on behalf of LNAS are required to report their journey in WELS Reporting Client.

LNAS logistics will issue a well/project specific logistics plan.

If operations at a facility cannot be completed and the vessel is requested to stand by for further instructions, the vessel shall move to a location at a safe distance from the facility and in a drift off position.

As described in GOMO (10.6) 4” quick release self-sealing coupling shall be used on all types of Mud and Brines. Requirements related to color coding, connections, couplings and pressure ratings shall be in accordance with appendix 10-E GOMO.

4.13.2  Weather side working

Weather side working should normally be avoided. If vessel re-location is required, the vessel should avoid passing up-wind and / or up-current of the facility. Safe distance to anchor chains/wires including pennant wires shall be ensured.

Reference are made to: GOMO 8.11 "Weather Side Working"

4.13.3  Bulk handling

Proper communication must be ensured before commencement of hose transfer operations. Control of bulk hoses shall be ensured at all times to avoid hose wear against structures and other exposure that may lead to hose damage. Reference is made to GOMO Appendix 10C - Bulk Hose Best Practice Guidelines.

It shall be verified that any pressure in the system is vented before hose transfer starts.

Reference is made to GOMO Section 10. For fuel transfer, sampling and quality requirements according to GOMO section 10.9.1 shall apply. For special products, cf. GOMO Section 10.10.
4.13.4 Back loading of wet bulk waste (slop)

When slop is back loaded to the vessel, an analysis form (ref. GOMO annex 10-F-2) and a declaration form (excl. volume) for dangerous waste is to be provided by the Offshore Installation and forwarded to the vessel Master prior back loading. This should include analytical test; confirming that the flash point exceeds 60°C and that there is no traces of Hydrogen Sulphide (H₂S) or Hydrocarbons (LEL) in the product mass. The volume of slop estimated in the declaration form needs to be verified and filled in by the offshore installation after transfer, and sent down to the vessel. If in case the vessel can’t get alongside the offshore installation, the declaration form can be collected in Wels.

The slop should be loaded into an empty tank, and shall under no circumstances be mixed with Slop from other installations.

In order to verify that H₂S is not developing in the product mass during transport to shore, it should be implemented routines for testing of atmosphere in the tanks. The preferred method is to use vessels own H₂S measurement system in the slop tanks. If not possible, the testing should be done through an inspection hatch on the designated tank.

The atmosphere shall be tested at the tank bottom or just above the liquid surface. Any traces of gas shall be reported to operator accordingly and necessary action shall be taken to ensure that the safety of the vessel and its crew is not compromised. The slop shall be discharged from the vessel as soon as possible, in order to avoid biological activity resulting in H₂S breakout.

Used tanks should be inspected for “build up” of sediments, and cleaning to be performed if required.

4.13.5 Dangerous and Noxious Liquid Cargoes

If a vessel will transport dangerous and/or noxious cargoes in bulk tanks LNAS require that at least the Chief Officer should have performed the Safe Cargo, Transport and Handling on OSV (SCTH) training course.

4.13.6 Loading and offloading of fuel

Only LNAS approved vessels shall load diesel to offshore installations. All fuel transfers to and from the vessel shall be documented in WELS (www.wels.no). See below:
Vessel requirements for bunkering and delivery of MGO (Diesel)

In order to verify that the accuracy of the MGO delivery is within the requirement of ± 1%, the following routines have been implemented. They are valid for contract start-up, receipt of fuel onshore and upon delivery of fuel to offshore installations.

Contract initiation
The vessel shall upon contract initiation deliver technical details and calibration certificates for flowmeters relevant for receipt and delivery of diesel.

Procedure for onshore bunkering:
- Prior to taking on fuel, the flowmeter readings shall be recorded in the log. Screenshots of the flowmeter readings shall be taken.
- Perform the bunkering operation.
- After receiving the fuel, the flowmeter readings shall be copied and recorded. Screenshots of all readings shall be submitted in WELS, along with onshore receipts, fuel quality certificates and bunker delivery notes.
- Check that the recorded amount of fuel is in compliance with the volumes submitted by supplier. Calculate the difference between the vessel's flowmeter and supply base recordings in the log.
- The log shall be signed off by responsible party on vessel, and uploaded into WELS.
- If the difference is greater than 1 % this shall be handled as a vessel internal non-conformance and reported to LNAS.

Procedure for delivery of diesel to offshore facility:
- Prior to delivery of fuel, the flowmeter readings shall be copied and recorded in the log. Screenshots of the flowmeter readings shall be taken.
- Deliver fuel.
- After delivery, the flowmeter readings shall be copied and recorded. Screenshots of all readings shall be submitted in WELS, along with bunker delivery note and log.
- Confirm the volume fuel delivered and check if the installation has its own measurements on board. If so, note the registered amount in the log. These values will not be used for verification of delivery, but is required to study variations in the different installations.

Fuel Delivery Log:

<table>
<thead>
<tr>
<th>Date:</th>
<th>Vessel:</th>
<th>Base:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flowmeter</td>
<td>Flowmeter</td>
</tr>
<tr>
<td></td>
<td>Base:</td>
<td>Base:</td>
</tr>
<tr>
<td>Recording before delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recording after delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume delivered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference (%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The log shall be uploaded to WELS for every fuel transfer (on- and offshore), and will be QC’ed for every fuel transfer and verified during vessel inspections.

Vessel requirements for loading and reporting of LNG

All vessels fuelled with LNG shall report Daily ROB, consumption, and loading of LNG in WELS. LNG data shall be reported in Metric Tonnes (MT) only. Bunker delivery notes and receipts from supplier shall be uploaded into WELS.
4.13.7 Tank washing instructions
Mud tanks / Slop tanks are to be washed by vessels own tank washing system on a regular basis in cooperation with LNAS logistics. This is in order to minimize the possibility for build-up of sediments.

Wash water from this process is to be pumped into separate slop tanks if applicable. Otherwise the vessel's mud tanks have to be used for this purpose.

Vessels without own tank washing system should arrange with LNAS if tank cleaning is required.

The vessel Master is responsible for the tank wash operation, even if a third party is hired to perform the task. (Ref. GOMO Section 5.5).

Any hazardous waste water generated from the tank wash operation shall be declared into www.avfallsdeklarering.no by the vessel Master.

If vessel's Mud / Slop tanks are used for storage of wash water, the atmosphere has to be monitored in order to avoid biological activity which causes H2S development.

4.13.8 Tubular cargo
For handling of tubular cargo onboard, appendix 9-B in GOMO is to be followed. For securing of tubular bundles, Velcro straps are the preferred option. Wire clamps may be used as an alternative. Mixed use of Velcro straps and wire clamps shall be avoided.

4.13.9 Prior to arrival in Port
In due time (when departing from rig) prior to arriving the supply base, the vessel shall call the supply base for berth allocation and berth facilities (water hoses, linesmen, etc.).

Any fuel or LNG order needs to be communicated to supply base.

It is emphasized that no vessel shall commence mooring operations unless there is someone on the jetty to take the mooring lines.

To get access to the International Ship and Port Facility Security (ISPS) area, the vessel has to call the Port Authority for instructions.

4.13.10 Dangerous goods
The supply vessel shall receive the safety data sheet and the IMDG papers prior of loading of containers, both onshore and offshore.

The dangerous goods will also be marked in the manifest with UN nr and classification number. In case of bad weather, the latest and final manifest can be downloaded from Wels.

4.13.11 Backload of drilling cuttings in skip or bulk (ISO / blu-jay tank)
When drilling cuttings is backloaded to the PSV, a declaration form (excl. volume/skip number) for dangerous waste is to be provided by the Offshore Installation and forwarded to the Vessel Master prior back loading.

When ISO /blu-jay tanks are mobilized dedicated project crew are mobilized on-board the vessel.

When backload of cuttings is completed, the declaration form needs to be verified and filled in by the offshore installation, and sent down to the boat. If in case the boat can't get alongside the
offshore installation, the declaration form can be collected in Wels. Waste handling contractor will accept a copy as long as the original paper is coming on next possible boat from installation.

4.14 **Rig Move and Anchor Handling Operations**

4.14.1 **Preparations and Administrative Requirements**

For anchor handling operations a 1st notice e-mail shall be issued to all involved parties/vessels with scope of work / relevant safety alerts, information on location and time for vessel brief and mobilization. This e-mail will be issued as soon as the vessels are committed.

Prior to commencement of the anchor handling operation the Master of the vessel shall confirm, by e-mail to marine@lundin-norway.no and additional e-mail addresses as per instructions in the 1st notice, that the Guidelines/SoW is within the capacities of the vessel, and that the described tasks can be performed by qualified and rested crew.

WELS ([http://www.wels.no](http://www.wels.no)) is the primary system for logistic and reporting, and shall be used. All vessels on hire for operation on behalf of LNAS are required to report their journey in WELS Reporting Client.

The vessel shall ensure sufficient fuel is onboard for the intended operation.

An operational and safety briefing shall be held with relevant (bridge/deck) crew on all anchor handling vessels. The brief should include a presentation of the Guideline/SoW, the Risk Assessment from the rig move meeting and a general safety briefing. The briefing shall as far as practicable possible be done prior to commencement of the mobilization.

Safety briefing shall be executed by LNAS Marine representative and as minimum include:
- Operation details
- Relevant lesson learned/ experience transfer
- Weather forecast and expected current at location
- Reporting

The AHTS Master shall perform a Risk assessment/SJA for all phases of the planned operations based on, but not limited to, the Rig Move Risk Assessment presented during briefing. Risk assessment or SJA for the mobilisation shall be done prior to loading.

Life vest (minimum 275kN) shall be used at all times while working on main deck during AH work. In the Barents Sea it is recommended to use lifevests with AIS tracker.

For vessels on short term contracts a DPR shall be sent to marine@lundin-norway.no and additional e-mail addresses as per instructions in the 1st notice. The report shall be given on AHV DPR template issued in 1st notice, and should be issued between 05:00-06:00 each morning.

All fuel figures must be noted at on/off-hire between licenses.

Request for bunker shall be done by the ship-owner with a copy to marine@lundin-norway.no. Any fuel loaded must be noted in the on/off-hire certificates and DPR.

**Any damage to rig move equipment at mobilisation / demobilisation shall be verified by LNAS. If LNAS marine representative is not present, vessel Master is responsible for documentation by taking pictures and noting identification number and damage. This information shall be issued to LNAS Marine.**
4.14.2 Emergency release system
The vessel’s crew should be trained and competent in the operation of the emergency release systems in addition to being familiar with their reaction times and effect.

Instructions giving information on how to operate the emergency winch stops and releases should be readily available on the vessel.

4.14.3 Working Requirements
Reference is made to GOMO. In addition to requirements in Section 3.2.2 of this document, and Section 5.4.5.1 in GOMO, LNAS require at least one AB with experience from 5 similar rig moves or more on each watch. LNAS require three AB's on deck at all times during anchor handling. For prelay operations LNAS could require four AB's on deck for each shift. (EDH, cadet or second year trainee can replace one/two AB’s)

The winch operator should as a minimum have performed a formal winch training course and 5 similar rigmoves.

When equipment is under tension, a clearly defined clear-deck policy must be implemented.

4.15 ROV Operations
ROV operations shall in principal be done according to ROV contractors procedures/checklists. In addition it shall be ensured that relevant IMCA guidelines are followed (see reference documents below).

All ROV spreads (including LARS and associated systems) working for LNAS should, when being mobilized and in regular intervals or whenever found necessary, perform a self-assessment according to IMCA R-006 - Standard ROV audit document.

It shall be ensured that relevant NDT and load testing has been performed when installed and that relevant certificates/documentation for ROV, LARS and associated systems are available on board.

All ROV operations done on behalf of LNAS should be done either from a fixed or anchored asset or by means of DP.

If a DP marine asset (vessel, rig, barge or similar) is used, this should as minimum be according to IMO equipment class 1.

DP1 is only allowed outside 500m zone.
4.16 Stand-by Duties

This section presents the duties that shall be performed by the stand-by vessel.

After the standby vessel is in position, the OIM must be notified of the vessel's operability. It must be confirmed that operational and emergency response instructions are available on the vessel.

If a stand-by vessel is replaced, a robust hand over procedure shall be in place. The handover shall address the relevant duties as described in this section.

The standby vessel must be placed in a position where it can carry out tasks in accordance with the requirements stated in the rig emergency response plans.

When stand by responsibility is transferred to a new vessel, the new vessel must inform CCR via radio and send an e-mail to OIM with relevant information.

In an emergency situation, the standby vessel will assist the rig on the orders of the OIM.

The standby vessel must monitor the radar continuously and call any vessels within 12 nautical miles that are on collision course with the rig. If the vessel does not respond or change course, the OIM must be notified.

Note that the installation may have arrangements for vessel traffic surveillance provided by an emergency surveillance centre. In this event, the stand-by vessel shall be familiarised with this arrangement and the subsequent procedures and interface requirements.

The stand-by vessel shall carry relevant and up-to-date procedures describing their tasks and responsibilities. These procedures shall be available to LNAS upon request. These procedures include, but are not limited to:

- Marine traffic surveillance
- Monitoring of the 500m zone including anchor line patterns
- Near stand-by
- Man over board
- Helicopter to/from the installation
- Medevac from the vessel
- Oil spill monitoring
4.16.1 Surveillance of the 500m zone

The stand-by vessel shall monitor the 500m zone and ensure that no unauthorized vessel traffic is taking place within this area.

The stand-by vessel shall be equipped with ARPA radar for area monitoring. The radar shall normally be set with a 12 nm range with the purpose of detecting vessels/drifting objects on collision course. Notification shall be given to the rig at least 50 minutes before estimated impact. Note that such incidents shall also be reported to marine@lundin-norway.no.

Note that the vessel may be required to vary its location to eliminate radar blind sectors caused by the installation.

In the event that the installation is equipped with a radar surveillance system and/or area surveillance is performed by a marine traffic coordination centre, the surveillance shall be coordinated in accordance with applicable operating instructions.

Surveillance of 1500m around the rig/installation should be performed upon helicopter arrival in case assistance is required. Deck floodlights shall be switched on when helicopter arrives after dark.

4.16.2 Surveillance of mooring lines

For operations with a semi-submersible drilling unit (SSDR), a spread of mooring lines will normally be in use. The stand-by vessel need to monitor the mooring line corridors to the anchor location and notify fishing vessels in the area to prevent that trawling activities interfere with the anchors.

A drawing of the as-laid mooring spread with coordinates will be available on the drilling unit and shall be handed over to the stand-by vessel prior to commencement of operations.

4.16.3 Near Stand-by/Man over Board

The stand-by vessel shall be capable of assisting the installation with at least one available FRC/MOB boat if work over open water becomes necessary. Such activities shall be coordinated in accordance with standard operating instructions. Instructions for assistance and use of equipment in the event of man over board shall be in place.

The FRC should have system for sending and transmitting of AIS signals.

4.16.4 Rescue of personnel from the Sea

Routines, instruction and equipment for rescuing personnel from the sea shall be in place. The dimensioning scenario will normally be the rescue of several persons from the sea caused by a helicopter ditch, or following an emergency evacuation of the rig/installation.

The vessel shall ensure that the crew is capable of handling this scenario and that the necessary equipment is available (e.g. FRC/MOB boat, rescue frame, rescue scoop with suitable lifting device, sufficient lighting and facilities to take care of survivors). Relevant procedures shall be in place. The vessel shall have the capacity to rescue the entire POB onboard if required.
4.16.5 Oil Spill Monitoring
A procedure for all stand-by vessels' duties related to monitoring, detection and remote measurement of acute pollution has been prepared by LNAS (ref. /3/). This document describes routines for remote measurement of acute oil spills during drilling operations. It is to be used for all drilling operations and all LNAS chartered stand-by vessels during all LNAS operations. Logs documenting compliance with the procedure shall be filled in continuously and submitted to LNAS.
Where relevant, the oil spill contingency plan and the Bridging Document for the activity shall be available onboard in addition to the abovementioned procedure.
The log from oil spill monitoring activities shall be to the LNAS HSE and LNAS Environmental advisor on a weekly basis.

4.16.6 Training
LNAS require comprehensive training / exercises for vessels used for st.by duties.

These drills should be performed under diverse weather conditions and at different times during the day to accomplish training under realistic conditions.

LNAS expect st.by vessels to perform Man Over Board (MOB) drill at least twice (2) a week or eight (8) drills each month.

If it’s not possible to perform MOB drills amount as described above, this should be documented in a HSEQ report, reason why drills is not held to be stated.

Stand-by vessels need to document weather limitations to perform drills.

DACON scoop training need to be realistic (with doll or similar) on at least monthly basis.

Location with FiFi requirements need to perform test of the equipment once a month.

All drills/exercises needs to be documented in the deck log book. All LNAS hired standby vessels should forward last week's drills/training to the following addresses.

- marine@lundin-norway.no
- OIM at actual location
- Drilling Supervisor at actual location

4.17 Simultaneous Operations
The vessel shall ensure that the activities undertaken comply with any requirements to simultaneous operations (SIMOPS) established for the work site.

The vessel should assess consequences of simultaneous vessel operations (e.g. tank cleaning vs. deck cargo work, multiple boat operation during pre-lay operation etc.).

The responsible person for managing SIMOPS shall ensure that the risk management Process is complied with and that representatives of the respective vessel management teams are fully involved or consulted.

It is important to ensure sufficient communications between all parties during a SIMOP. Each operation must be assigned designated channels to avoid interference, radio noise etc.

Note that projects may have specific SIMOPS requirements.
4.18 Other Marine Activities

This part of the guideline applies to preparations for marine operations of a project nature and similar. With project nature and similar LNAS mean operations for which new operational procedures must be developed each time. For such operations, the overall management and requirements related to projects will come in addition.

Note: there may be rules and requirements that are not mentioned in this guideline that needs to be adhered to.

Typical operations may be:
- Subsea construction work
- Subsea repair work
- Pipe-laying
- Installation or replacement of risers, umbilical’s, cables and anchor lines (including components in anchor lines)
- Lifts from vessel with vessel crane
- Seabed interventions
- Removal work
- Pipeline commissioning
- Geotechnical Soil Investigation
- All marine operations involving diving
- All marine operations that involve entering the exclusion zone
- IMR operations of a project nature
- Seismic, survey and metocean operations
- Flotel services

For project specific activities, specific instructions and procedures will apply. Ref. is made to GOMO Section 12.

4.18.1 Marine Operations in the installation exclusion zone

For facilities with an exclusion zone for vessels, vessel activity inside the exclusion zone is prohibited.

If the exclusion zone must be entered, an approved dispensation with mitigating actions shall be obtained before entering the exclusion zone.

Dispensation for carrying out a marine operation in the exclusion zone should be based on a risk assessment and risk-reducing measures.

The dispensation shall be approved by the facilities OIM and onshore marine authority.
4.18.2 Depressurise risers in connection with marine operation in exclusion zones

In the event of marine operations inside the installation's exclusion zone, risk reducing measures shall be evaluated in order to ensure that the risk is reduced to an acceptable level. These may include shut down and depressurisation of risers that may be exposed to possible impacts from the vessel or equipment.

In order to define what an acceptable risk level is, the following professionals shall be involved:

- Offshore installation manager
- Marine advisor
- Technical safety
- Person responsible for marine systems
- Technical advisor for flexible risers

4.18.3 Marine operation at another operator’s installation or subsea installation

In connection with marine operations at another operator's installation, or over another operator's subsea installation, it shall be clarified with the relevant operator which operational conditions and communications routines to comply with.

Necessary bridging documents, proximity agreements, work permits and/or similar to be in place before start of operations.
5 Field Specific Operational Requirements

5.1 Edvard Grieg
For "light operations" such as ROV inspections more than 50m from the Edvard Grieg installation, the information required is covered by the information included in a NMO (see the attached NMO example in Appendix "C")

For any operation closer than 50m from the installations and for all subsea installation activities, the following shall be provided in due time before the commencement of the operation;

- Detailed description of the operation shall be submitted in due time upfront of the planned activity.
- Copy of risk analysis (HAZID/HAZOP) covering the planned operation. Lundin shall be invited to take part in such HAZID/ HAZOP sessions.
- Operation specific emergency preparedness plan.

5.2 Brynhild
When entering "The Brynhild/Pierce field" 500m Zone, it is only Bluewater Installation CCR who can give permission to enter the 500m Zone.
6 Emergency Preparedness

6.1 General
All vessels shall have an updated emergency preparedness plan. The management and crew shall have sufficient knowledge of the content in this plan and drills shall be conducted to ensure all emergency tasks can be carried out as intended.

All vessels in service for LNAS on the Norwegian Shelf are responsible for notification of the Joint Rescue Coordination Centre (JRCC) directly of an emergency situation onboard their own vessel.

In the event of an emergency situation on board, LNAS shall be notified as soon as possible.

The emergency notification chart enclosed in Appendix B is applicable for all vessels working for- or on behalf of LNAS and shall be adhered to.

Vessel emergency contact details shall be uploaded to WELS prior to commencement of operations.

Specific instructions and emergency documents will be submitted to the vessels as applicable for the activity.

6.2 Emergency Response Organisation
LNAS has the responsibility to handle an emergency situation for all activities that are defined as petroleum activities.

LNAS has established an organization to handle emergency situations that may arise. The LNAS Emergency Response Organization (ERO) normally consists of 3 levels as illustrated below.
6.3 Emergency Preparedness – Inside the 500m zone

In an emergency situation within the 500m safety zone, the vessel(s) shall report directly to the installation. The installation management will establish the 1st line Emergency Response Organization (ERO) as required and alert in accordance with emergency instructions. An emergency bridging document for the installation shall be in place prepared by LNAS and provided to the vessels involved for operations in category C (ref. table 3.1). A generic emergency notification chart is included in Appendix B.

Note that the ERO set-up above will apply within the 500m zone.

6.4 Emergency Preparedness – Outside the 500m zone

For marine activities outside the 500m zone or where no installation is present (e.g. supply vessels in transit, pre-lay/recovery of anchors, site surveys, etc.) the vessel will report directly to the vessel owner ERO. LNAS shall be informed of all emergency situations and may provide assistance with available emergency resources. This requirement shall be reflected in the emergency instructions onboard and include contact details to LNAS according to Section 2.3. An emergency notification chart is included in Appendix B.

Reference is also made to requirements laid out in GOMO Section 13.

6.5 Training and Drills

All vessels providing services for LNAS shall have a suitable training and drill program available on board. This program shall include training on all emergency situations that may arise on board and any emergency services provided under the contract. Records of training and drills shall be kept up to date and shall be readily available to LNAS for review.

Vessel Master shall promote training and sharing of experience among the crews. Less experienced personnel should be teamed up with those having a good understanding of the task being undertaken.

Performance requirements to the emergency response shall be established and efficiency of the emergency tasks shall be measured and recorded.

Stand-by vessel are to send training/drill matrix on a weekly basis, ref: 4.15.6
7 LNAS Assets

7.1 Supply Bases
LNAS has contracted out the operation of the offshore supply bases.

The supply base contractor is responsible to LNAS for the overall safety and operations on the quay, regardless of which subcontractors are used. This means that the vessels will cooperate closely with the supply base and that personnel will from time to time enter the vessel to discuss issues of common interest.

7.2 Installations
LNAS production operations are undertaken from the Edvard Grieg and Brynhild fields. LNAS drilling operations are normally undertaken by mobile drilling rigs on time-limited contracts. Details for rig on current contracts will be available from LNAS Logistics or Marine representatives.

7.3 Vessels
LNAS has entered into contracts with a variety of vessels to perform supply services, stand-by duties, anchor handling and other marine operation activities. The overview of the fleet on LNAS contract and vessel details is available from LNAS Logistics or Marine representatives.

7.4 Helicopters

LNAS have established contracts for use of helicopters for crew transportation and SAR. The overview of helicopters available at the various facilities can be obtained from LNAS Logistics or Marine representative.
8 References

/1/ Guidelines for Offshore Marine Operations (GOMO)  (http://www.g-omo.info)
/2/ Norwegian Oil and Gas Association - Operations Manual for Offshore Service Vessels - Norwegians Continental Shelf
http://operasjonsmanual.norog.no/
/3/ Lundin Norway AS - Detection and remote measurement of acute pollution for drilling operations.
/4/ IMCA M 103 - The Design and Operation of Dynamically Positioned Vessels
/5/ IMCA M 182 - The Safe Operation of Dynamically Positioned Offshore Supply Vessels
/6/ IMCA M 117 - The Training and Experience of Key DP Personnel
/7/ IMCA R-006 - Standard ROV audit document
/8/ IMCA R-004 - Code of practice for the safe and efficient operation of ROV's
/9/ IMCA M 190 – Developing and Conducting Annual DP Trials Programs for DP Vessels
/10/ IMCA M 109 – DP-Related Documentation for DP Vessels
/11/ NORSOK R-003 Safe use of lifting equipment
/12/ DNV Rules for Planning and Execution of Marine Operations
/13/ IMO MSC/Circ. 645 'Guidelines for vessels with dynamic positioning systems
/14/ When entering "The Brynhild/Pierce field" 500m Zone, it is only Bluewater Installation CCR who can give permission to enter the 500m Zone.
/15/ HB O 100 SP 0009 002 A Brynhild 500m Safety Zone Vessel Pre-entry Checklist
/16/ HB O 100 MA 0093 001 B Haewene Brim - Marine Operations Manual
/17/ HB O 100 MA 0093 001 B Haewene Brim - Marine Operations Manual
Attachment A – Competence Matrix (Example)

### CREW QUALIFICATION

<table>
<thead>
<tr>
<th>Name of vessel</th>
<th>Operator's name</th>
<th>Years of practice</th>
<th>Rigmoves:</th>
<th>Staff number/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>Ch. Officer</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>1st Officer</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>Ch. Engineer</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>1st Engineer</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>Bosun</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>AB (Apprentice)</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
<tr>
<td>Eng (Apprentie)</td>
<td>Rank</td>
<td>Name</td>
<td>Years/Total</td>
<td>Total/last 12 months</td>
</tr>
</tbody>
</table>

### CREW CERTIFICATION

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
<th>Certificate issued</th>
<th>Certificate expire date</th>
<th>STCW Course</th>
<th>DATE</th>
<th>HEALTH Declaration</th>
<th>MMSI</th>
<th>Remarks or other relevant certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ch. Officer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Officer</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Engineer</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bosun</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AB (Apprentice)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eng (Apprentice)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:* STCW Certificate of Competency

STCW: Basic Safety, First Aid, 1st Aid (D10) or (D00)

HEALTH: Declaration expires date

Date:

Master's Signature
Attachment B – Emergency Notification Chart

EMERGENCY NOTIFICATION – VESSELS ON CONTRACT TO LNAS

<table>
<thead>
<tr>
<th>Outside safety zone</th>
<th>Inside safety zone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary notification:</strong></td>
<td><strong>Vessel Master</strong></td>
</tr>
<tr>
<td>As described in vessel emergency response plan</td>
<td>1</td>
</tr>
<tr>
<td><strong>Secondary notification:</strong></td>
<td>2</td>
</tr>
<tr>
<td>LNAS Emergency Manager (24/7)</td>
<td>OIM/Site Manager</td>
</tr>
<tr>
<td>Phone: (+47) 47 46 22 78</td>
<td>Vessel owner / operator</td>
</tr>
</tbody>
</table>

Incident reporting: by e-mail to: marine@lundin-norway.no (LNAS Marine - office hours)

The above requirement for notification of OIM/Site Manager is additional any requirements in vessel emergency preparedness plan. The vessel emergency preparedness plan will always apply, also inside safety zone.

Contact details to the rig/vessel will be provided in the applicable Emergency Response Bridging Document.

The OIM is overall responsible for activities inside the safety zone. The rig will assist in mobilising resources for events occurring inside this zone.
Attachment C – Notification of Marine Operation (NMO)

### Notification of Marine Operation (NMO)

<table>
<thead>
<tr>
<th>Installation:</th>
<th>Vessel:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Contractor:</td>
</tr>
<tr>
<td>Current vessel location</td>
<td>Vessel owner:</td>
</tr>
<tr>
<td>ETD:</td>
<td>ETA:</td>
</tr>
</tbody>
</table>

**Estimated duration:** <Time>  
**DP mode during operation:** <DP mode>

**Vessel description:**  
- DP class:  
- Length / Breadth:  
- Displacement:

**Description of activity:** <Description>

**Attachments (if relevant):**

**Measures implemented on board vessel:**  
- <to be filled in by vessel>

**Platform requests the following additional measures to be implemented on board the vessel**  
- <to be filled in by Lundin representative>

**Vessel requests the following measures to be implemented on board the installation**  
- <to be filled in by vessel>

**Additional measures implemented on board the installation**  
- <to be filled in by Lundin representative>

**Operational phases:**

<table>
<thead>
<tr>
<th>Vessel positioning:</th>
<th>Side of inst.</th>
<th>Distance to inst.</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Contact information:**
<table>
<thead>
<tr>
<th>Vessel representative phone:</th>
<th>Email:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Bridge phone</td>
<td>Email:</td>
<td>-</td>
</tr>
<tr>
<td>Lundin representative onshore phone:</td>
<td>Email:</td>
<td>-</td>
</tr>
<tr>
<td>Lundin representative offshore phone:</td>
<td>Email:</td>
<td>-</td>
</tr>
<tr>
<td>Bridge-Bridge VHF channel to be used</td>
<td>16 and &lt;field channel&gt;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vessel representative:</th>
<th>OIM Edvard Grieg:</th>
<th>Lundin representative onshore</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;name&gt;</td>
<td>&lt;name&gt;</td>
<td>&lt;name&gt;</td>
</tr>
</tbody>
</table>
## Attachment D - Checklist for entering the Edvard Grieg Field Safety Zone

<table>
<thead>
<tr>
<th>VESSELS</th>
<th>ALL VESSELS</th>
<th>Status</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Environmental condition acceptable for a safe operation (including wind, sea, swell, visibility and current)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Limitations due to sea/weather conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Operating location confirmed with facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Confirm whether any prohibited zones at facility</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Status of overside/drilling discharges confirmed with facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>No hot work/smoking on deck whilst within safety zone</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Confirm whether simultaneous operations involving other vessels are current or anticipated whilst own vessel is within safety zone</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>Vessel operational capability reviewed/ confirmed (to include power, thrust, location, heading, etc.)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>Safe approach/exit routes identified</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Stand-off location identified</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>Risk assessment for alongside operations reviewed/ confirmed</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Bridge and Engine room manned in accordance with requirements</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Communication established and checked VHF Channel(s): UHF Channel(s):</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>Auto Pilot off</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>All manoeuver and steering gear systems tested including changeover between control positions and manoeuvring modes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>Emergency manoeuvring system confirmed to be operational</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>Facility to confirm readiness for vessel arrival and operation (including no overboard discharges which would affect vessel)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>Maneuvering mode during the operation to be agreed (if DP mode vessel specific DP checklist to be completed)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>Vessel to be manoeuvred to set-up position before changing mode (1.5 ~2.5 ship's lengths depending on whether in drift on or drift off situation)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>Toolbox talk on bridge with DPOs regarding DP incident response procedures</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>21</td>
<td>Any Management Of Change involved</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>22</td>
<td>Transponder frequencies checked, no clashes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Checked by vessel master
Confirmed by Vessel Representative

### Always check:

NMO for the specific operation may include direct requirements