Guidelines for Offshore Marine Operations

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Contents

Appendices

"Owners" & Sponsors

This document is "owned" and sponsored by the following organisations:

1. Norwegian Shipowners' Association
2. Norwegian Oil and Gas Association
   (formerly Norwegian Oil Industry Association (OLF))
3. Netherlands Oil & Gas Production Association
4. Danish Shipowners Association
5. Oil & Gas UK[1]
6. United Kingdom Chamber of Shipping [1]

[1] [1]The Marine Safety Forum will act on behalf of Oil and Gas UK and the United Kingdom Chamber of Shipping in matters relating to this document

Document Control Sheet

Revision Number	Date	Description	Authorised for Issue	
			Name	Function

Change Records

It is intended that this be considered a new document, replacing the present "NWEA Guide- lines for the Safe Management of Offshore Supply and Rig Move Operations"

The change record below is therefore included for future use.

For Future Use

Revision Number	Section	Summary of Amendments from Previous Revision

NOTES

1. The above summary of amendments relates to THIS document only.
2. This Note is to be deleted at time of second revision of this document.

Comments, Queries & Response Arrangements

Comments or Queries

Comments or queries from users relating to all aspects of this document are welcomed.

Any comments or queries should be submitted using the arrangements described below.

Any concerns regarding the contents of this document may also be submitted in a similar manner.

Response Arrangements

It is the intention to develop internet-based arrangements to facilitate transmission and processing of comments or queries from users relating to this document. However, developing the desired functionality is proving more difficult than first anticipated.

As an interim measure comments or queries may be submitted to the following electronic mail address:

GOMO.Response@gmail.com

To assist in processing comments received it would be helpful if these can be submitted using the form which can be requested from this address.

Details of the internet-based arrangements will be included later after these have been developed and tested to the satisfaction of the steering group.

Preface

Documents Replaced

This document replaces that titled "NWEA Guidelines for the Safe Management of Offshore Supply and Rig Move Operations". This was first issued in 2006 and revised in May, 2009.

Pending their eventual amendment any references to the above guidelines should be construed as references to this document after its formal release.

Marine Operations Manuals

It is recognised that some users may have developed marine operations manuals which make extensive references to the document which these guidelines replace.

It is anticipated that on revision any such references should be amended to refer to THIS document, but pending such revision the original guidelines would remain valid.

1 Introduction

1.1 Acknowledgements

The Steering Group would like to thank those who participated or assisted in the preparation of these Guidelines, details of which are included in Appendix 1 - A.

1.2 Purpose & Use

The objective of this document is to provide guidance in the best practices which should be adopted to ensure the safety of personnel on board all vessels servicing and supporting offshore facilities, and to reduce the risks associated with such operations.

It particularly relates to the following activities:

1. Operations of offshore facilities.
2. Operations of vessels.

Whilst the best practices summarised in this document primarily reflect those adopted in the North West European Area the authors recognise that its predecessor was becoming widely used outwith this region and that many, if not all, of the recommendations included do indeed have global relevance.

Where it has been possible to make recommendations relating to operations outwith its core area without diluting the original objectives these have been included.

It is recognised, however, that in certain circumstances local or company-specific requirements may exist. In this event this document should be read in the context of such requirements and interpreted accordingly.

To facilitate common practices on a global basis, where necessary, this document, together with included reporting forms, should be used as the basis for preparing procedures for local practices.

1.3 Document Style and Structure

The principles used in preparing this document, together with the numbering conventions adopted are described in Appendix 1 - B.

As described in this Appendix general information relating to all activities are included in the early part of the text following which, where possible, the information flow should follow that of a typical voyage to and from an offshore facility.

This is summarised in Figure 1.

1.4 Protocols

The protocols used in the preparation of this document are described below.

1.4.1 Delegation of Authorities

Any references in this document to Facility Manager, OIM, Master, Base Manager or any other person in authority should be interpreted as also including their nominated deputies.

1.4.2 Terminology

In the context of this document "Operator" refers to the party responsible for the management of petroleum activities on behalf of the licensees.

In the context of this document "Owner" relates to the party responsible for the management of one or more offshore support vessels and includes those operating tonnage managed on behalf of others.

1.4.3 Verification of Information

Some information included in the main body of this document has been prepared by the various work groups and subsequently verified by the steering group.

Information included in the appendices to this document has been prepared by others. Where such information has been subject of an independent peer review it has been accepted as accurate and has not been subject of any further assessment prior to inclusion in these Guidelines.

1.4.4 Inclusion of Reference Material

References to further information from a wide range of sources, both public and private, have been included in this document.

In identifying any references to be included the following principles have been adopted:

1. The information included is generally accepted to represent best industrial practice.
2. The information included may be used from time to time as basis of design or in marine operations manuals.
3. The information included may be referred to from time to time in contracts relating to marine operations.
4. The information included is subject to regular and rigorous peer review, being updated as required.
5. The information is included in the public domain, preferably in an electronic format and free of charge.

6. There is no commercial benefit to the source of the information as a result of its inclusion in this document.

1.4.5 Gender Equality

Any references in this document to the masculine gender relate equally to the feminine gender and should be interpreted accordingly.

1.5 Hierarchy of Authorities

The context of these Guidelines in the legislative and contractual environment in which marine operations are conducted is described in Appendix 1 - C.

1.6 Document“Ownership” & Management

The “ownership” of the document, together with the process of its on-going management are described in Appendix 1 - D.

1.7 Regional or Local Supplements

It has been identified that in some instances the preparation of regional or local supplements to provide further guidance on specific circumstances or requirements within a particular area may be required.

Any guidance of this nature will not be prepared by the authors of this document, but to promote consistency and ease of use some common principles for the preparation of such regional or local guidance has been developed.

These are described in Appendix 1 - E.

1.8 Summary of Contents

A summary of the contents of this document and how these relate to those of “NWEA Guidelines for the Safe Management of Offshore Supply and Rig Move Operations, Version 2” is included in Appendix 1 - F.

This sub-section and the Appendix will be deleted on the next revision of this document.

GOMO CONTENTS IN RELATION TO TYPICAL OFFSHORE VOYAGE

VOYAGE PHASE	CHAPTERS WITH RELEVANT INFORMATION
General	3 4 5 6 13
Vessel Procurement	3 4 13
Voyage Planning	9 10
Mobilisation	4 6 13
Loading	3 7.1 9 10 11 (if relevant)
Outward Voyage	7
Approach to Location and Set Up	7 8
Working at Location	7 8 9 10 11 (if AH Operations) 12 (if relevant)
Departure from Location	8
Inward Voyage	7
Discharge	3 4 9 10
De-Mobilisation	

Figure 1: Summary of Contents in Relation to Typical Voyage

2 Abbreviations and Definitions

Abbreviations and terminology which may be used in this document are defined below.

2.1 Abbreviations

24/7 24 hours per day, 7 days per week

A/H Anchor handling

ABS American Bureau of Shipping

AHTS Anchor Handling Tug Supply Vessel

AHV Anchor handling vessel

BP Bollard Pull

CBP Continuous Bollard Pull

CMID Common Marine Inspection Document(Sponsored by IMCA)

COLREGS International Regulations for Prevention of Collisions at Sea, 1972

CoS Chamber of Shipping(Trade association representing owners and operators of UK-based shipping companies)

COSHH Control Of Substances Hazardous to Health

CoSWP Code of Safe Working Practices for Merchant Seamen

DC Daughter Craft

DGPS Differential Global Positioning System

DMA Danish Maritime Authority

DNMI Det Norske Meteorologiske Institutt

DNV Det Norske Veritas

DP Dynamic Positioning

DPO Dynamic Positioning Operator(As defined by IMCA, MTS etc.)

DSA Danish Shipowners' Association

DSV Diving Support Vessel

ERRV Emergency Response & Rescue Vessel

ERRVA Emergency Response & Rescue Vessel Owners' Association

ETA Estimated/Expected Time of Arrival

ETD Estimated Time of Departure

FMEA Failure mode and effect analysis

FPSO Floating production, storage and offloading unit

FRC Fast Rescue Craft

GLND GL Noble Denton

GOMO Guidelines for Offshore Marine Operations(This document)

GPS Global Positioning System

HAZID Hazard Identification

HAZOP Hazardous Operations (Assessment)

HF High Frequency (Radio)

HIRA Hazard Identification & Risk Assessment

HSSE Health, Safety, Security and Environment

Hs, Hs Significant Wave Height

HSE Health & Safety Executive(UK Government Agency)

HSSE Health, Safety Environmental and Quality (Management)(Generic term used throughout this document)

JAG/TI Joint Action Group / Temperature Indices

IACS International Association of Classification Societies

IADC International Association of Drilling Contractors

IBC International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals (IBC Code)

ICS International Chamber of Shipping

ILO International Labour Organisation

IMCA International Marine Contractors Association(Trade association for marine contractors engaged in supporting offshore industry or similar bodies)

IMDG International Maritime Dangerous Goods Code

IMO International Maritime Organization

IMPA International Marine Pilots' Association

INLS International Noxious Liquid Substances Code

ISM International Safety Management Code

ISPS International Ship and Port Facility Security Code

JSA Job Safety Analysis

KATE Knowledge, Ability, Training and Experience

LRS Lloyds Register of Shipping

MARPOL International Convention for the Prevention of Pollution from Ships (MARPOL)(IMO Convention 1973 and as subsequently amended)

MBL Minimum Breaking Load

MCA Maritime and Coastguard Agency

MF Medium Frequency (Radio)

MGN Marine Guidance Note(Issued by the MCA)

MLC Maritime Labour Convention(ILO Convention 2006)

MOC Management of Change (Process)

MODU Mobile Offshore Drilling Unit

MOU Mobile Offshore Unit

MSC Maritime Safety Committee(IMO Committee)

MSDS Material Safety Data Sheet

MSN Merchant Shipping Notice(Issued by the MCA)

MTS Marine Technology Society

MWS Marine Warranty Surveyor

NMA Norwegian Maritime Authority(Replaces NMD)

NMD Norwegian Maritime Directorate

NOGEPA Netherlands Oil and Gas Exploration and Production Association

NOROGA Norwegian Oil & Gas Association(Replaces OLF)

NSA Norwegian Shipowners' Association

NWEA North West European Area

O&GUK Oil and Gas UK(Trade association for UK Offshore operators and support contractors)

OCIMF Oil Companies' Industry Marine Forum(Trade association for major oil companies engaged in marine activities)

OIM Offshore Installation Manager

OLF Oljeindustriens Landsforening(Norwegian oil industry association. Replaced by NOROGA)

OMHEC Offshore Mechanical Handling Equipment Committee

OOW Officer of the Watch

OSV Offshore Support Vessel

OVID Offshore Vessel Inspection Database(Sponsored by OCIMF)

PCP Permanent Chaser Pendant / Pennant

PIC Person In Charge(of MOU)

PLB Personal Locator Beacon

PM Planned Maintenance (System)

PMS Power Management System

PPE Personal Protective Equipment

PSA Petroleum Safety Authority

PSV Platform Supply Vessel

PTW Permit to Work

RA Risk Assessment

ROV Remotely Operated Vehicle

SBV Stand-By Vessel

SCV Small Commercial Vessel Code

SDPO Senior Dynamic Positioning Operator(As defined by IMCA, MTS etc.)

SIMOPS Simultaneous Operations

SJA Safe Job Analysis

SMC Safe Manning Certificate

SMPEP Shipboard Marine Pollution Emergency Plan

SOLAS International Convention for the Safety of Life at Sea (SOLAS)(IMO Convention 1974 and as subsequently amended)

SSV "Safety Stand-By Vessel" or "Stand-By Safety Vessel"

STCW International Convention for Standards of Training, Certification and Watchkeeping for Seafarers(IMO Convention 1978 and as subsequently amended)

SWL Safe Working Load

TBT Tool Box Talk

TMS Tug Management System

UHF Ultra High Frequency

UKCS United Kingdom Continental Shelf

UKOOA United Kingdom Offshore Operators' Association(Now Oil & Gas UK)

VHF Very High Frequency

2.2 Terminology Definitions

Accident: Undesired event resulting harm to persons, environmental pollution or damage to physical assets.

Adverse Weather: Environmental conditions requiring precautionary measures to safeguard the facility or maintain safe working.

Asset(s): Any infrastructure or equipment associated with offshore production.

Banksman: Person on installation or vessel guiding the Crane Operator May also be referred to as "Flagman" or "Dogman".

Base: Quay facilities with logistics support dedicated to petroleum activities.

Base Company or Operator: Owner or operator of a base.

Base Manager: Person responsible for operations on the base.

Blow Off: See "Drift Off".

Blow On: See "Drift On".

Bollard pull : The towing vessel's pull normally specified as maximum continuous pull.

Bridle towing arrangement: Two wires or chains of equal length arranged as a triangle that connects the towed object to the vessel towing it.

Catenary curves: Specification of towline and anchor line curvature for various loads.

Chafe Chain: Short length of chain in way of fairleads to minimise wear on wire or rope bridle components.

Chain tail: A short length of chain consisting of two or more links.

Charterer: Party hiring marine vessel either on behalf of itself or other interests.

Cherry-picking: Selective discharge of cargo from within the stow.

Competence: Acquisition of knowledge, skills and abilities at a level of expertise sufficient to be able to perform a task to a required standard.

Confined Space: A free entry, non-dangerous space where the relevant risk assessment has identified that under exceptional circumstances there would remain a (remote) possibility for the atmosphere to be adversely affected.
Entry and egress routes to such spaces likely to be restricted and controlled by permit.

Coxswain: Generic term for person in charge of a small craft.

Dangerous Space: Enclosed or confined space in which it is foreseeable that the atmosphere may at some stage contain toxic or flammable gases or vapours, or to be deficient in oxygen, to the extent that it may endanger the life or health of any person(s) entering that space.

Daughter Craft: Larger fast rescue craft of semi-rigid construction and typically up to 11 metres in length, provided with fixed protection from elements for crew and recovered survivors, capable of being deployed from host vessel for periods of up to 6 hours.

Dogman: See "Banksman"

Down Weather: A position on the lee side of an offshore facility or vessel.

Dynamic Positioning: Dynamically positioned vessel (DP-vessel) means a unit or a vessel which automatically maintains its position (fixed location or predetermined track) exclusively by means of thruster force.

Drift Off: Circumstances whereby, in the event of loss of power, environmental forces would result in a vessel moving away from an offshore facility or other navigational hazard.

Drift On: Circumstances whereby, in the event of loss of power, environmental forces would result in a vessel moving towards an offshore facility or other navigational hazard.

Duty Holder: In relation to a fixed installation, this is the Operator. In relation to a mobile installation it is the Owner.

Emergency Situation: Any unplanned event which may result in harm to persons, environmental pollution or damage to physical assets.

Facility, Offshore: In the context of this document any physical structure on or above the surface of the sea in the vicinity of which marine operations are undertaken. This term includes bottom supported and floating installations, drilling units of all types and other vessels engaged in offshore support operations.

Flag State: Jurisdiction where a vessel is registered.

Flagman: See "Banksman".

Gog (or Gob) Wire: Wire used to control movement of main tow line when vessel is engaged in towing operations.

Gypsy: Wheel with machined pockets for hoisting chains fitted on a winch.

Hold Point: Stage in any operation at which progress will be assessed to ensure that anticipated objectives at that point have been achieved and that all conditions are favourable for safe continuation of activities. Proceeding past each hold point may require formal acknowledgement in procedures or operational logs.

Hot Work: Welding, burning or flame producing operations.

Incident: Undesired event resulting in damage to assets, equipment or the environment.

Installation, Offshore: Installation, plant and equipment for petroleum activities, excluding supply & standby vessels or ships for bulk petroleum transport. Includes pipelines and cables unless otherwise provided. A structure for exploration or exploitation of mineral resources or related purposes that is, will be, or has been used whilst standing or stationed in water, or on the foreshore or land intermittently submerged.

Interfield Operations: Operations carried out by vessels between offshore facilities.

J-chaser: Hook used by anchor handling vessels to "fish" the installation's anchor lines.

Kenter link: Device for linking two chain lengths.

Lee Side: That side of an offshore facility (or vessel) away from which wind is currently blowing.

Logistics Company: Organisation which, on behalf of its clients, arranges for the transportation of cargo to or from offshore facilities.

Logistics Service Provider: See Logistics Company.

Master: Nominated person having command or charge of a vessel.
Does not include any pilot.

Mechanical Means of Rescue (Recovery): Arrangements installed on a Stand-By Vessel to facilitate rescue of survivors from the sea in circumstances where rescue craft cannot safely be deployed or recovered.

Proprietary designs include the Dacon Scoop and Sealift Basket.

Mechanical Recovery Device: As for "Mechanical Means of Recovery".

Mechanical Stopper: Device for temporarily securing chains or wires to facilitate safe connection or release. Proprietary designs include the Karm Forks and Triplex Stopper.

Near-miss: Undesired circumstance with the potential to cause harm, injury, ill health, damage to equipment or the environment.

Nominated Manager: Nominated persons "in charge" of a specified area or task to be performed.

Non-conformity/Non-compliance: A circumstance where guidelines, regulation or legislation have not been followed.

North West European Area: Area which includes the north west European continental shelf and extending 200 miles from any coastline.

Offshore Installation Manager: Person in charge of an Offshore Installation, also known as Facility Manager.

Offshore Support Vessel: Any vessel involved in supporting offshore activities which is not a mobile offshore unit.

Operating Company/Operator: Party that carries out the management of petroleum activities on behalf of licensees.

Owner: In the context of this document refers to the owner of an offshore support vessel. This term may also refer to vessel managers responsible for operating tonnage on behalf of others.

Pear link: Device for linking two different chain dimensions.

Pendant: Wire hanging permanently attached to the installation used for chasing out anchors.

Pennant wire: Buoy wire; wire from the seabed up to a buoy on the surface.

Permanent chaser: Collar through which an anchor chain runs, to which recovery pendant wire is attached.

Personnel Transfer Basket: Equipment utilised for transferring personnel by crane. May also be referred to as Personnel Carrier.

Piggyback anchor: Any additional anchor connected to the primary when the latter anchor has insufficient holding capacity.

Pigtail: Short chain or wire with open end links.

Port State: State having jurisdiction over activities in its ports and territorial waters.

Radio Silence: Restrictions of limitations to radio transmissions whilst with a safety zone, usually relating to handling of explosives on the facility.

Recognised classification society: Classification society recognised by IACS to approve vessel design, construction, outfitting and operations.

Redundancy: The ability or possibility of a component or system to maintain or reestablish its function following a failure.

Risk Assessment: A process of assessing risk in any operation.

Safety Delegate: Nominated representative for crew or part of crew or group of workers with regard to health, safety and environmental matters. May also be referred to as Safety Representative.

Safety Zone: Established within a radius extending to distance determined by the relevant legislations beyond the outline of any installation, excluding submarine pipelines.

Sector State: State having special rights and jurisdiction over the development of marine resources within its exclusive economic zone.

Shark's Jaws: See "Mechanical Stopper" above.

Ship Owner: Those responsible for normal vessel management and operation.

Shipper: A person who, as principal or agent for another, consigns goods for carriage by sea.

Significant Wave Height: Average height of the highest one third of the waves over a period of 20 minutes.

Simultaneous Operations: In the context of this document two or more vessels supporting the same or different operations within the safety zone around an offshore facility.

Socket, Wire Rope: Any manufactured end termination fitted to the end of a wire rope to facilitate the connection of other rigging elements.

Spooling gear: Arrangement to guide wire onto drum.

Standby Vessel: Older term for Emergency Response and Rescue Vessel.

Stand-By Vessel: Any vessel mobilised to provide response and rescue support at one or more offshore facilities. Such support will primarily involve the rescue of personnel from the sea and their subsequent care. It may also include fire fighting. May also be referred to as "Emergency Response and Rescue Vessel", "Safety Stand-By Vessel" or "Stand-By Safety Vessel".

Stern roller: Large roller on the stern of an anchor handling vessel to facilitate the recovery or deployment of moorings or other equipment.

Stinger: In the context of this document the pennant installed on the crane's hook to facilitate the safe connection and release of the lifting rigging on any item of cargo. A suitable safety hook will be fitted to the lower end of the pennant.

Supply chain: Base or base company - vessel or Ship Owner - installation or operating company.

Supply service: Supply and/or receipt of goods to or from offshore facilities.

Surfer: Small or medium sized high speed craft used for transportation of personnel or light cargoes in benign areas of operations. Foredeck design is such that craft can be docked into "surfer landing" to facilitate safe transfer of personnel.

Surfer Landing (or Ladder): Docking arrangements installed on offshore facilities or vessels to facilitate access and transfer of personnel using "surfer" - type craft.

Swivel: Connecting link or device used to prevent development of twists in wire or chain cables.

Tension control: Control facility to enable winch to be set to pull in or pay out at a specified tension.

Toolbox Talk: A meeting of the individuals due to be involved in an imminent task to review the task, individual responsibilities, equipment required, competency of the individuals, hazards, any Safe Job Analysis or Risk Assessment and/or Permit to Work in place, simultaneous tasks ongoing which may affect the task and any other relevant subject.

Tow eye/Towline guide: Arrangement for keeping towline in centre line or midship area.

Towing pins/guide pins: Device for guiding towline or pennant wire.

Towing winch: Similar to a working winch, often geared differently. Newer towing winches have drums smaller than working winches.

Towline: Wire on towing winch used for towing.

Trigger Point: Threshold, generally relating to environmental conditions, prompting review and / or risk assessment relating to the continuation or suspension of present operations.

Tug Management System: Navigation equipment on board an anchor handling vessel for an anchoring operation functioning as an interface with the installation's (MOU) main navigation equipment.

Tugger winch: Winch provided to move items laterally on the deck of an offshore support vessel. May also be used to secure such items whilst in transit. May have remote control on newer vessels, or may be controlled from the bridge on some vessels.

Tugger wire: Steel or fibre wire used for tugger winch.

Up Weather: A position on the weather side of an offshore facility or vessel.

Weak link : Component in any load-bearing system which is designed to fail at a predetermined load to protect the other components in the system.

Weather criteria: Specification of maximum allowed weather (wind, waves, etc.) when performing the operation.

Weather Side: That side of an offshore facility (or vessel) towards which the prevailing environmental forces are acting.

Weather window: The nominated duration of specific weather criteria required to undertake a particular operation, or critical phase of same, including an allowance for any contingencies.

Working at Height: Any work undertaking where those performing it are not standing on level ground, at deck level or in other circumstances where there is a risk of injury should the worker fall (adapted from CoSWP).

Working winch: Winch for hoisting and setting anchors. Power, length, width and diameter set the application area of the working winch.

Working wire: Wire in working winch including termination, for example socket.

Contents

Revision History

Revision Number	Date	Section	Changes
1	Mar 2019	3.2.6 Bridging Document	Bridging document was only highlighted under emergency and Specific Operational Procedures, and this new section is added

3 Roles and Responsibilities

3.1 General Responsibilities

Operators, Owners and Managers shall ensure that all personnel working for them are familiar with the relevant contents of these guidelines.

Whilst employers have prime responsibility for ensuring the safety of their worksites, personnel should also take care of both their own safety and that of their colleagues. They must always act to prevent accidents and incidents, and should be empowered to “stop the job” in the event of any safety concerns.

All personnel must participate in relevant safety and working environment training activities.

3.1.1 Management

1. Active involvement of management is key to delivery of satisfactory HSSE performance together with efficient operations. Management comprises the relevant decision makers in the operating company, logistics service provider, base operator and owners of vessels and offshore units.
2. It is a shared management responsibility to make available necessary resources to ensure safe and efficient operations, including:
   a. Facilitating safe working environment and operations.
   b. Regular visits to workplaces - as a minimum, at least once per year.
   c. Participation in events which promote the sharing of best practice for safe and efficient operations.
   d. Following up lessons learned from incident and non-conformance reports to ensure any remedial measures identified have been implemented and are having the de- sired outcome.

3.1.2 Operational Responsibilities

Minimum safety requirements that should be identified include, but are not limited to, the following:

3.1.2.1. *Operators and Logistics Companies or Service Providers*

1. Establish quality assurance programme to ensure that all vessels supporting their operations are maintained and operated in accordance with agreed standards.
2. Provide all relevant information regarding facilities which are to be supported.

   Typical examples of data cards used to present such information are included in Appendix 3 - A.
3. Clear work specification and scope of service.
4. Assess consequences of simultaneous vessel operations (e.g. tank cleaning vs. deck cargo work).
5. Identified hazards and acceptance criteria.

6. Notification format for non-conformances, accidents, incidents, etc.
7. Operating company's requirements for competence, training and certificates for the workscope the vessel is to perform.
8. Plan for workscope follow-up.
9. Operational manning, as described in Chapter 5.
10. Lines of communication.

3.1.2.2. ***Base Operators***

1. Co-ordinate activities between base and vessels.
2. Provide all relevant information regarding the Base facilities which will be used.

   Typical examples of data cards used to present such information are included in Appendix 3 - B.
3. Implementation of risk management processes as described in Chapter 4 of these guidelines
4. Clear work specification and scope of service.
5. Risk assessment of interaction between base and vessels.
6. Competence requirements of personnel who plan, coordinate or perform loading or discharging operations.
7. Mechanism and persons responsible for notifying or reporting to the operating company, authorities, etc. for non-conformances, etc.
8. Ensure adequate and appropriate communication between shore base and vessels, as described in Section 8 of these guidelines
9. Ensure that all cargo items to be lifted from the quayside onto any vessel are visually inspected and that all potential dropped objects are removed.

3.1.2.3. ***Offshore Facility Operator***

1. If required, preparation of facility-specific safety zone pre-entry check list to be forwarded to Operator for onward transmission to the Charterer.
2. Clear scope of work.
3. Implementation of risk management processes as described in Chapter 4 of these Guidelines.
4. Technical systems requirements needed to prevent fluid discharges from facility (including cooling water and/or solids) drifting towards vessels working within the safety zone.
5. Mechanisms and persons responsible for notifying or reporting non-conformances, etc to operating company and authorities when vessels are within safety zone.
6. Training and competence requirements of personnel responsible for or participating in loading, offloading and other coordinated operations with vessels.
7. Ensuring that local reference systems associated with dynamic positioning arrangements used by any vessel are properly maintained.
8. Plan for workscope follow-up on completion of activity.
9. Ensure adequate and appropriate communication between facility and vessels, as described in Chapter 6 of these guidelines.

10. After commencement of operations, ensure vessels are advised of any subsequent changes to operational circumstances which may have an impact on the continuing workscope.
11. Ensure that all cargo items to be lifted from the facility onto any vessel are visually inspected and that all potential dropped objects are removed.

3.2 Individual Responsibilities

The responsibilities of various individuals involved in offshore marine operations are set out below.

3.2.1 Vessel Owner/Manager

1. Ensure that any non-conformances identified during any inspections associated with a charterer's quality assurance programme are closed out in a timely manner.
2. Communicate the workscope to vessel.
3. Manage vessel operations and manning ensuring:
    a. A vessel is appropriately and competently manned and equipped for the intended workscope.
    b. A common working language is used on the vessel.
    c. An overall operational plan is prepared for all anticipated onboard operations and services provided by the vessel.
    d. Prepare operational conditions for vessels (define requirements for safe operation of vessels under all conditions, and any vessel limitations due to, e.g. due to a lack of technical redundancy, etc.
    e. Ensure incidents, accidents and safety observations are recorded, assessed and handled in accordance with an established reporting system.
4. Ensure an up-to-date copy of these Guidelines is kept on board and ensure the Master, officers and crew are familiar with the relevant contents.

3.2.2 Vessel Masters

1. Ensure that all officers, crew and all other personnel onboard are aware of the relevant contents of these guidelines.
2. Are at all times responsible for safety of their crews, vessels and cargo and marine environment protection.
3. In the event of extended operations, either in port or at sea, ensure that all personnel engaged in such operations have adequate rest periods, and that effective arrangements for transfer of responsibilities and operational awareness are implemented.
4. Whilst remaining accountable at all times, delegate appropriate responsibilities to other members of the vessel's complement.
5. Ensure that all onshore personnel, including representatives of the base operators, are aware of the appropriate points of contact on the vessel in relation to any activities being undertaken on board.
6. Approve loading plans before cargo (both bulk and deck cargo) is loaded on board the vessel.

7. Review all dangerous goods declarations before any dangerous goods are loaded in port and offshore.
8. Where relevant, refuse any cargo for which the appropriate MSDS is not provided.
9. Report incidents and non-conformances.
10. Inspect and approve seafastening of cargo.
11. Ensure that berth to berth passage plans are prepared for each voyage.
12. Ensure all applicable field charts and relevant documents are on board.
13. Before entering the safety zone shall obtain permission from the facility manager or authorised representative for maritime operations.
14. Advise facility of any operational limitations due to personnel, plant or environment which may have an impact on intended workscope.
15. Ensure that all cargo items to be lifted from the vessel to the facility or quayside are visually inspected and that all potential dropped objects are removed.
16. After commencement of work, advise facility of any subsequent changes to operational capability which may have an impact on the continuing workscope.
17. When alongside an offshore facility, if extended interruption of operations occurs, shall decide whether to move to a safe position pending resumption. The facility manager must be informed before moving away.

The Master **always** has the authority to stop any operation which he considers a threat to the safety of the vessel, other assets or any personnel. Other pressures must not interfere with his professional judgement and he must inform any relevant parties of conflicts of interest arising from the actions of others.

3.2.3 Operating or Logistics Company Managers

1. Performs overall supervision of base, vessel and installation activities.
2. Defines job performance requirements.
3. Ensures that everyone performing work on their behalf complies with requirements of the health, safety and environment regulations.
4. Manages non-conformance resolution.
5. Must ensure time is allowed to perform health and safety requirements including meetings.
6. Provides up to date documentation for the Master and Owner including necessary field charts and other relevant documentation.
7. Ensure a current copy of these Guidelines is available at all locations where activities for which they are responsible are undertaken, and on all vessels supporting such operations.
8. Must not pressurise any Master to undertake any action which, in his professional judgement, may compromise the vessel, other assets or any personnel.

3.2.4 Base Managers

1. Ensure time is allowed to perform health and safety requirements including meetings.
2. Before loading prepare required documentation for cargo to be shipped.
3. Ensure that the necessary information is provided to the Master in sufficient time to plan loading and discharging operations, including ensuring that dangerous goods, noxious liquids and other hazardous products are handled according to regulatory requirements.
4. Ensure that Master is provided with sufficient information relating to proposed cargo so that stability calculations can be completed before departure.
5. Ensure that the Master is advised of any intention to load any unusual items onto the deck of the vessel in sufficient time for any potential risks to be adequately assessed.
6. Ensure proposed stowage plan is agreed with Master, particularly when any unusual items are included in the cargo. This plan should be signed off by both parties.
7. Ensure safe passage of all personnel visiting vessels, including security support.
8. Arrange for all outbound cargo to be adequately inspected prior to delivery to the vessel to ensure that it is adequately prepared for marine transportation and is free from any loose items or other potential dropped objects.
9. Issue required documentation to the Master for all cargo loaded on board before the vessel leaves the quayside.
10. Conduct inspection of all load carriers to ensure they are correctly certified and in proper working order before being lifted on board vessels.
11. Ensure that a cargo checklist has been completed.
12. Are responsible for HSSE compliance on the base.
13. Must agree procedures to be used between all relevant parties.
14. Arrange for all inbound cargo received from offshore to be adequately inspected prior to dispatch and onward carriage from the base to its eventual destination to ensure that it is adequately prepared for surface transportation and is free from any loose objects.

3.2.5 Facility Manager

1. Safety of structure and personnel on board, and any operation within the safety zone affecting HSSE performance on facility and overviews of simultaneous operations.
2. Must ensure operations on the facility do not present a hazard to vessels alongside, especially where overside discharges may fall on a vessel in the immediate vicinity.
3. Approves commencement of an operation and has authority to stop any operation.
4. Active involvement in the risk assessment of any non-standard operations involving any vessels supporting the facility.
5. Prepare required documentation before loading is initiated for cargo to be shipped ashore by the vessel.
6. Preparation of documentation for transporting of dangerous goods before loading onto vessel.
7. Submit relevant documentation to the vessel Master.

8. Ensure that the necessary information is provided to the Master in sufficient time to plan loading and discharging operations, including ensuring that dangerous goods, noxious liquids and other hazardous products are handled according to regulatory requirements.
9. Ensure that the Master is advised of any intention to load any unusual items onto the deck of the vessel in sufficient time for any potential risks to be adequately assessed.
10. Ensures optimal turn-around time for performance of planned operations when vessels enter the safety zone.
11. Ensure that vessels are worked in a timely manner whilst alongside the facility so that time in close proximity to it is minimised. If idle, vessels should be asked to stand-by outwith the safety zone.
12. Issue required documentation to the Master for all cargo loaded on board in timely manner before the vessel departs from the facility.
13. In case of an incident or accident within the safety zone the manager must inform the relevant operating company and the Master of the vessel involved as soon as possible.
14. Must ensure there is a good level of communication between the vessel and the facility. However, all communications should take place at appropriate times and not during critical operational phases on the vessel, for example, when setting up to commence work.

The facility manager may delegate these responsibilities as required to other competent per- sons.

3.2.6 Bridging Document

A bridging document shall be considered established in order to clarify the roles of the parties, their responsibilities and the bridging between the parties' procedures. The contents of a bridging document should include, but not be limited to the following:

- Project title and revision status
- Project overview including dates and contract arrangements
- Combined operation organisation chart
- Identification and allocation of key personnel roles and responsibilities
- Communication contact numbers for key personnel and worksites
- Identification of the relevant work scopes and procedures
- Management of change process, and identification of approval levels
- Emergency and contingency procedures including clarification of primacy
- List of referenced documentation including revision status
- Work control system
- Applicable permit to work system for the intended work
- Combined marine operations
- Field logistics and support
- Circulation list and authorisation signatures

Contents

Revision History

Revision Number	Date	Section	Changes
1	March 2019	4.2.1 Risk Assessment	Deleted reference to emergency response arrangements
		4.2.2 Permit to Work	The following has been added: The Permit to Work cannot be transferred from one shift to another, so if the work extends to a new shift the existing Permit shall be closed out and a new permit issued.
		4.2.3 Tool Box Talk	The following has been added: It may be required to document that a TBT has been carried out.
		4.4. Simultaneous Operations	The following has been added: All parties involved in the operation should participate in the RA

4 Operational Risk Management

4.1 Terminology

It is assumed that various terms are used through industry, but in this document Risk Assessment (RA) shall be used as the generic term.

Other common terms include:

SJA - Safe Job Analysis
JSA - Job Safety Analysis
TRA - Task Risk Assessment
HAZID - Hazard Identification Review
HAZOP - Hazard and Operability Review
HIRA - Hazard Identification and Risk Assessment

4.2 Overview

Good operational risk management is a key component to successful HSSE management. All parties involved in an operation have a duty to ensure it is carried out properly.

The key levels are:

RA - Risk Assessment
PTW - Permit To Work
TBT - Tool Box Talk
MOC - Management of Change

4.2.1 Risk Assessment

The objective of RA is to identify and mitigate risks to an acceptable level. If the risks cannot be mitigated to an acceptable level the work should not proceed in its present form.

Each party involved in an operation must have in place an appropriate procedure for carrying out their own risk assessments, if appropriate.

RAs should include all parties involved in the operations to which they relate.

RAs should be performed for the complete process or operation.

Personnel performing the RA must be trained and competent in this matter.

Risk Assessments should identify the following:

1. All hazards associated with the proposed operation.
2. The probability of a hazard causing harm to personnel, assets or environment.
3. Mitigation measures.
4. Assessment of the residual risk.

Associated with Item 4 above, trigger points or any other changes in circumstances which will prompt the work being stopped or the management of change process being invoked should be identified.

Personnel performing tasks are required to understand the outcome of the RA, including trigger points or other changes which would require the management of change process to be initiated.

All relevant parties are responsible for ensuring that the RA is suitable and sufficient for their own particular tasks.

4.2.2 Permit to Work (PTW)

A permit-to-work system is a formalised and documented process used to control work which is identified as being potentially hazardous. It is also a means of communication between facility, vessel or base management and personnel who carry out the hazardous work. The permit system used should be that adopted by the organisation in charge of the premises (or vessel) where the work is to be undertaken.

PTW is to:

1. Identify physical or other barrier arrangements to be put in place.
2. Be issued for a specific task, and for time period not exceeding 12 hours or other clearly specified time limit.
3. Make reference to RA and its outcome.
4. Identify all lock-outs and tag-outs which should be in place before the work commences.
5. Identify restrictions or limitations in concurrent tasks.
6. Be approved and signed off by an issuing authority.
7. Identify correct Personal Protective Equipment (PPE) is in place for the task to which the permit relates.
8. Where relevant, identify appropriate emergency response arrangements for the task to which the permit relates.

PTW must be effectively communicated to all parties involved.

The Permit to Work cannot be transferred from one shift to another, so if the work extends to a new shift the existing Permit shall be closed out and a new permit issued.

4.2.3 Toolbox Talk (TBT)

Immediately prior to the task being carried out personnel involved in the task should carry out a toolbox talk. This should include (but not limited to):

1. Individual roles
2. Tools, methods and procedures to be used
3. Review RA and relevant PTW.
4. Promote “Stop the Job” culture.
5. Highlight all emergency actions and exit routes from the work site.
6. Confirm PPE required for the task.
7. Where relevant, confirm emergency response arrangements are in place. It may be required to document that a TBT has been carried out.

4.2.4 Personal Protective Equipment (PPE)

Personnel shall be supplied with PPE appropriate to the tasks being undertaken and as identified within the procedures, risk assessments and other control measures established to ensure their health and safety.

Personnel should inspect PPE supplied for suitability and damage before use. This should be used without exception whilst the work is in progress or their supervisor advised as to why the PPE supplied is unsuitable.

Examples of minimum recommended PPE requirements are shown in the table included in Appendix 4-A.

It is the individual's responsibility to:

1. Use PPE correctly.
2. Look after PPE properly.
3. Get PPE checked, maintained or replaced as appropriate.

4.2.5 Management of Change (MOC)

A Management of Change (MOC) process should be in place for all tasks.

MOC is an important tool in preventing accidents, incidents and near misses.

Tasks will normally commence and proceed in accordance with previously agreed procedures. However, should unexpected changes in circumstance occur in the course of the task, the MOC process will be invoked at which time all relevant permits to work will be suspended.

The task should be stopped or suspended whilst the implications of the change are reviewed. If appropriate, the RA should be reviewed before resumption of the task or the TBT revisited prior to the suspensions of relevant permits to work being lifted

4.2.6 Accident, Incident, Near Miss, Non-Conformance and Observations Reporting

All accidents, incidents, near misses, non-conformances and observations are to be reported as per individual company procedures or as otherwise agreed.

The objective of reporting is to establish the potential severity of the event and to ascertain whether further investigation should take place to determine immediate and root causes of the occurrence.

Investigations should be comprehensive and seek to identify and implement actions to prevent recurrence. The Root Cause Analysis technique is a particularly powerful tool in achieving these objectives.

Findings should be communicated to the parties involved and industry where relevant.

All accidents or incidents within the safety zone shall be reported as soon as possible to the Facility and Operating Company Managers, in addition to other statutory requirements.

All accidents or incidents outside the safety zone shall be reported in accordance with applicable regulations, owner's and other applicable procedures, and statutory requirements. As a courtesy, such events should also be reported to the Charterer having regard to potential reputational impact.

All incidents resulting in pollution of the marine environment, including spills or releases, must be reported to appropriate regulatory bodies.

4.3 Potentially Hazardous Shipboard Operations

As part of their compliance with the ISM Code, Owners will have identified potentially hazardous operations on the vessels for which they are responsible.

Owners or Managers of vessels to which the ISM Code does not apply should ensure that its provisions relating to HSSE matters are complied with as fully as is practical.

Typically, hazardous operations on shipboard may include, but are not limited to those listed in Table 1. Hazardous Operations

Depending on the requirements of the ISM system relating to particular vessels, some of these potential hazards may be grouped together, but the responsible Owner should ensure that all are addressed using the risk management processes described in the earlier part of this Chapter.

Table 1: Hazardous Operations

NATURE OF HAZARD	FURTHER DETAILS
Entry into Enclosed or Confined Space	Including entry into any Dangerous Spaces
General and Low Voltage Electrical Work (Less than 1,000 Volts)	Including work on switchboards, etc.
High Voltage Electrical Work (1,000 volts and over)	
Hot Work	Including arc welding, cutting using gas or grinders
Work involving Critical Machinery, Machinery or Control Arrangements	May include software maintenance or modifications
Work on any systems containing stored energy	Including pressurised systems or any arrangements involving rigging under tension.
Work on Deck in Heavy Weather	Particularly on vessels with low freeboard
Working at Height or overside	Working at any height where fall could result in harm to personnel Working outside the side rails around any open deck.
Other Non-Routine Work	Including, but not limited to, non-routine lifting and hoisting operations.

4.4 Simultaneous Operations

In supporting offshore marine operations, vessels may be required to participate in activities involving offshore facilities or other vessels which could introduce potential hazards to personnel, equipment or the environment.

Those responsible for managing such operations should ensure that the risk management processes described earlier in this Chapter are complied with and that, where relevant, representatives of the respective vessel management teams are fully involved or consulted. All parties involved in the operation should participate in the RA.

Contents

Revision History

Revision Number	Date	Section	Changes
1	Mar 2019	5.2.2 Other Maritime Personnel Certification	Deleted: In the case of offshore support vessels this is most relevant in the case of qualifications relating. to the operators of dynamic positioning systems, where the certification regime is managed by the Nautical Institute and some other agencies.
		5.2.3 Functional Competence	Deleted: Such competency levels, which should be based on both theoretical knowledge and practical experience, relate to the vessel's function in the activities it is supporting.
		5.2.4 Training, Experience Level & Record Keeping	Deleted: Owners should ensure that arrangements are in place to record both the training and experience of personnel in relation to any task which may be undertaken on a facility or vessel.
		5.4.1 General Competence	Deleted: The STCW convention, together with its subsequent amendments, governs the majority of aspects relating to the employment of seafarers, including qualifications, hours of work, physical health and other conditions of employment. Compliance with STCW requirements should therefore be deemed sufficient for maritime personnel serving on offshore support vessels. Added: All vessels should be manned in order to provide all specified contracted services. The Owners should assess the proposed manning level in order to ensure that the level is suitable for the intended activities and, if necessary, make appropriate arrangements to ensure that all operations likely to be involved can be safely undertaken.
		5.4.2.2. Operation Level B	Added: 4 Towing Operations
		5.4.5.1.Senior Watchkeepers in Charge of AH Operations	Deleted: Masters having previous A/H experience as Master or Chief Officer, but where this is more than 5 years ago, should have an overlap period of at least 14 days with an experienced A/H Master. At least one A/H operation must be performed during this period.
		5.4.5.2 Officers	Deleted: Before participating in the A/H team associated with the MOU moving operation, deck or engineer officers with no previous A/H operations experience should undertake a formal offshore and A/H familiarisation course or programme. This can be a combination of deck and bridge experience in a real or simulated environment Participation in any such programme should be recorded.
		5.4.5.4.Deck Crew	Deleted: At least one member of each deck watch should have performed a minimum of 5 MOU moving operations.
		5.4.5.7 Duel Responsibilities & Reporting Functions	Deleted: Situations have arisen where the same individual is acting on behalf of two or more interested parties, often involving both the Towmaster and Marine Representative functions. This cannot be considered as good practice, since the roles, responsibilities and reporting functions of the individual involved are likely to be compromised. Such situations should therefore be avoided wherever possible. Added: Dual Responsibilities & Reporting lines must be clarified and a single line of communication to be established. The Master has overall responsibility for the safety in all operations conducted on the vessel including simultaneous operations.
		5.5 Third Party Industrial Personnel onboard the Vessel	Deleted. Section replaced by table 2. which covers third party personnel

5 Certification, Training, Competency & Manning

5.1 Introduction

The intention of this Chapter is to ensure that offshore marine operations are performed to an acceptable standard and in a controlled manner. The competence regimes in the industry are based on both international and national regulating bodies, in addition to Best Practices and Guidelines.

This means that while Seafarers shall adhere to their Flag State requirements for their Maritime Competence, other personnel have to comply with other requirements. This Chapter therefore focuses on the competencies likely to be involved on mobile units and vessels supporting offshore operations.

5.1.1 KATE

Competency has been defined as "acquisition of knowledge, skills and abilities at a level of expertise sufficient to be able to perform a task to a required standard".

It can be summarised in the acronym "KATE":

- **Knowledge**
- **Ability**
- **Training**
- **Experience**

5.2 Certification and Competency Requirements

5.2.1 General Maritime Personnel Certification

Flag State requirements concerning all mandatory training and certification requirements in order to serve as a Seafarer. e.g., Certificates of Competency, Safety Courses, Medical Certificates and similar.

Compliance with STCW requirements will be sufficient for these purposes.

5.2.2 Other Maritime Personnel Certification

In some instances, certification relating to specialist functions may not fall within STCW requirements and may be managed by bodies other than the vessel's flag state.

5.2.3 Functional Competence

This includes personnel having the required level of competency to support specialist functions which may not be regulated by the Flag State.

Typically, these would include banking cranes, rigging and slinging, winch operations, advanced first aid training on stand-by vessels and many other similar functions.

5.2.4 Training, Experience Levels & Record Keeping

In many cases, course attendance will not be sufficient to acquire those skills which also require practical experience of the work to be undertaken.

These arrangements should be in a form that can easily be transferred between employers, if required. Individuals should ensure that such records which relate to them are updated and verified as new skills are acquired.

In addition to normal operations, any training and experience should also relate to any emergency situations which might arise as the task progresses.

It is the responsibility of the owners or managers of facilities and vessels to ensure that personnel have the necessary competency and experience to undertake any tasks to which they may be assigned.

Courses relating to any task may be arranged within the employer’s organisation, including recorded “on the job” training, or by a competent external service provider. These may include crew resource management and other training courses in a simulated environment.

5.3 Team Competencies

To accommodate training and personal development, the competency of the overall marine team involved in a particular operation should also be considered.

To promote training and sharing of expertise, less experienced personnel should be teamed up with those having a good understanding of the task being undertaken.

When considering the personal development of a seafarer, owners and operators should therefore endeavor to ensure that the individual concerned can work as part of an experienced team.

This is equally important on offshore facilities as on vessels.

5.4 Marine Personnel Competence Overview

5.4.1 General Competence

The owners should assess the proposed manning level in order to ensure that the level is suitable for the intended activities and, if necessary, make appropriate arrangements to ensure that all operations likely to be involved can be safely undertaken. Therefore, a thorough assessment of intended operations should be undertaken.

The Master must ensure that all personnel comply with STCW and MLC regulations. The Master must ensure that all personnel comply with current STCW Hours of Rest regulations at all times.

Where, for example, as a result of its size, the above provisions do not relate to a particular vessel they should be complied with as fully as may be practical.

Minimum Safety and Security requirements are governed by Flag State requirements, and therefore are not addressed in these Guidelines.

It is the owners' responsibility to man the vessel in such a way that in all circumstances the crew are able to conduct the required operation in a safe manner. Charterers shall provide Owners with sufficient information in a timely manner to allow these requirements to be met.

5.4.2 Operational Levels

The introduction of Operational Levels is meant to draw focus from vessel capabilities to the complexity of the operation itself. This means that competence requirements should reflect the complexity of the operations within the contract scope of work, instead of, for example, the DP Class of the vessel. It also means that if an AHTS vessel performs cargo runs, it is the cargo run that is the essential criteria, and the competence requirement should reflect that.

These Operational Levels relate ONLY to Vessel Crew.

In order to set the right operational level, it is essential that the Charterer specifies in the scope of work what kind of operations are to be expected during the contract period.

It is not desirable to "up man" and "down man" during the operation.

For longer term charterers the intended scope of work for the vessel, together with the process for managing any changes to the scope throughout the charter period, should normally be included as part of the charter party.

5.4.2.1. *Operation Level A*

Basic operations - Not linked to vessel type Function/Typical Operations

1. Operations outwith any safety zone
2. All response and rescue support.
3. Transits (including Towing) in order to do ANY JOB, this level must be met, as this is safe manning (SMC) requirement from Flag State.

Manning: Safe Manning Levels

According to SMC and vessel's safety management system.

5.4.2.2. *Operation Level B*

Standard Operations - Medium Complexity Function/Typical Operations

1. Cargo operations within safety zone, including those supported by dual-role stand-by vessels.
2. Simple low-load anchor handling operations.
3. ROV operations outwith safety zone.
4. Towing Operations

Manning Bridge

2 Fully Certified STCW Officers.

If required, winch operator as described in vessel's SMS.

If operating on dynamic positioning, bridge manning should consist of one operator certified in accordance with the vessel class notation and a second who, as a minimum, has attended the basic DP Induction course. Dependent on the qualifications and previous experience of the second operator, a period of equipment familiarisation in accordance with IMCA, MTS or equivalent recommendations may also be desirable.

Engine

Not in UMS mode (active monitoring).

During these operations, all machinery functions are to be actively monitored by the current watch-keeping engineer from a location adjacent to the machinery space so that, should physical intervention be required, the response time for such intervention is minimised.

Deck

Subject to Risk Assessment.

Cargo or anchor handling operations will normally require 2 qualified seamen with appropriate operational experience.

5.4.2.3. *Operation Level C*

Advanced Operations - High Complexity Function/Typical Operations

1. Complex anchor handling operations, typically piggybacking, pre-laying or in deep water.
2. Close approach/inter-ship operations.
3. Subsea construction.
4. Diving Support.
5. Complex ROV operations, in close proximity to surface assets.
6. Simultaneous/ multi-vessel operations.
7. Vessel supported lifting operations within Safety Zone.

Manning Bridge

Subject to risk assessment, but likely to include: 2 Fully Certified STCW Officers.

If required, winch operator as described in vessel's SMS.

If operating on dynamic positioning two fully certified DPOs one of whom should be a SDPO and the other a DPO in accordance with IMCA, MTS or equivalent requirements.

Engine

Not in UMS mode.

During these operations all machinery functions are to be actively monitored by the current watch-keeping engineer from a location adjacent to the machinery space so that, should physical intervention be required, the response time for such intervention is minimised.

Deck

Subject to Risk Assessment.

Anchor handling and other operations will normally require 2 qualified seamen with appropriate operational experience.

5.4.3 Vessel Competency Matrix

The requirements of Operational Levels A, B and C in relation to bridge and engine room personnel are summarised in Table 1.

Table 1: Vessel competency matrix

MANNING		OPERATIONAL LEVEL		
		A	B	C
2*WATCH KEEPING	Bridge	As per SMC and SMS	2xSTCW	
	Engine Room	UMS (if so classed)	Not UMS (active monitoring)	
DYNAMIC POSITIOING (if used)		1 Unlimited DPO (a) and 1 Restricted DPO (b)		2 x unlimited DPO
Deck (marine) (excluding project personnel)		As required	Subject to risk assessment (likely to be minimum of 2)	

Notes
(a) Unlimited SDPO or DPO as defined by IMCA, MTS or similar.
(b) Restricted DPO to have attended basic DP induction course and, if necessary, to have had appropriate equipment familiarization

5.4.4 Application

The above recommendations relate to the majority of vessels supporting offshore operations.

However, it is recognised that in certain circumstances, particularly in relation to smaller vessels (typically less than 500 GRT) with restricted accommodation, compliance with these recommendations may not be possible.

In such circumstances it is the responsibility of the vessel owner or manager to ensure that the vessel is adequately manned with appropriate procedures for the function it is required to support.

Relevant flag state and local requirements should always be complied with.

5.4.5 MOU Moving Operations

Due to the nature of MOU moving operations participating personnel must additionally be familiar with all aspects of such operations as follows:

5.4.5.1. *Senior Watch Keepers in Charge of Anchor Handling (AH) Operations*

Senior watch keepers in charge of AH operations require relevant expertise. Watch keepers allocated to charge of operations with no previous AH experience should perform at least 5 MOU moving operations accompanied by an AH experienced Master, or a suitable combination of rig moves and simulator training in accordance with training matrix and experience log, before they may command an AH assignment. AH experience gained in a chief officer role is acceptable.

5.4.5.2. *Officers*

Officers involved in AH operations also require relevant expertise. In particular, officers must have a full understanding of all safety aspects of anchor-handling especially with regard to safe use and limitations of equipment.

If supervising AH work on deck, the officer must have AH experience and be competent in AH procedures and guidelines, AH equipment set-up and function, and be familiar with associated hazards and risks.

Officers working on the bridge during AH and who may have tasks affecting the safety of those working on deck shall be familiar with AH deck work operations and the associated hazards and risks.

5.4.5.3. *Vessel Winch Operators*

The Vessel winch operators should be competent in the winch, safety systems, functions and limitations.

The Ship Owner should be able to document that appropriate on the job training or a course has been given. A training certificate should be issued by Shipowner or a course center.

5.4.5.4. *Deck Crew*

Personnel assigned independent work on deck during AH operations should be familiar with guidelines and procedures for this, and AH safety. They should also be familiar with the use of UHF/VHF radio.

Able seamen with no previous AH experience must be trained in guidelines, procedures and safe equipment use before assignment to independent AH work on deck. All training is to be documented.

5.4.5.5. *Tow Master*

It is the responsibility of the organisation providing or employing a person to undertake the function of Tow Master to ensure that the individual has the competency and experience to fulfil this function.

It is recommended that persons supporting this function should have participated in the moving of mobile offshore units in the following capacities:

1. In relation to semi-submersible units, acted as a stand-alone Barge Supervisor on such units for a minimum of three (3) rig moves or as assistant Tow Master for a minimum of five rig moves. Both roles should be supervised by an experienced Tow Master.
2. In relation to self-elevating units, acted as a stand-alone Barge Supervisor on such units for a minimum of three (3) rig moves or as an assistant Tow Master for a minimum

of five rig moves. Both roles should be supervised by an experienced Tow Master.

Recent experience gained as Master or senior watch keeper on vessels which have been engaged in anchor handling operations of a similar nature should also be considered when assessing the competency of a Tow Master. In this context “recent experience” should be taken as being within the previous three years, though earlier experience may also be considered if particularly relevant.

In addition, persons acting as Tow Master should have:

1. Relevant marine knowledge, experience.
2. Where necessary, appropriate qualifications which may include STCW certification.
3. Full understanding of the proposed operation, including any particular risks which might be involved.
4. Appropriate knowledge of Geotechnical/Soil Conditions.
5. Knowledge of Offshore Meteorology and Forecasting.
6. Knowledge of DP Operations if relevant.
7. Knowledge of relevant international and local rules and regulations.
8. Ability to communicate effectively in English and/or local working language.

5.4.5.6. *Marine Representative*

It is the responsibility of the organisation providing or employing a person to undertake the function of Marine Representative to ensure that:

1. The individual has the competency and experience to fulfil the function as it relates to the particular operation.
2. The terms of reference for the role are fully understood.
3. The individual has been adequately briefed and has been provided with all relevant information.

5.4.5.7. *Dual Responsibilities & Reporting Functions*

Dual Responsibilities & Reporting lines must be clarified and a single line of communication to be established. The Master has overall responsibility for the safety in all operations conducted on the vessel including simultaneous operations.

5.4.5.8. *MOU Winch Operator*

MOU winch operators should be competent in the winch operation, safety systems, functions and limitations. MOU Owner shall be able to document that appropriate on the job training or a course has been given.

5.4.5.9. *Crane Operators (including Subsea Functions)*

Crane operators must be certified and competent in the crane, safety systems, functions and limitations.

Operational experience with cranes installed on the vessel or MOU is to be logged, including operation of any heave compensation or other particular features provided.

Vessel or MOU Owner shall be able to document that appropriate training has been given. For examples of training requirements refer to OMHEC standard or local equivalent.

5.5 Dangerous and Noxious Liquid Cargoes

The carriage and handling of dangerous and noxious liquid cargoes by ship is governed by IMO and implemented by the different Flag States and Coastal States.

There are no specified competence standards covering the freight of dangerous and noxious liquid cargoes on Offshore Supply Vessels.

Recommended competency levels for handling these cargoes are as follows:

5.5.1 Vessel Personnel

Masters, Chief Engineers and certain other Officers should have received suitable training relating to SOLAS and MARPOL requirements which includes the relevant parts of the IBC Code as referred to in A.673 (16) (Guidelines for the transport and handling of limited amounts of hazardous and noxious liquid substances on offshore support vessels) appropriate to the vessels to which they are assigned, the IMDG Code and the OSV Code where relevant.

5.5.2 On Shore Personnel

Personnel working at the onshore base or on the offshore facility with responsibility for declaration and shipment of dangerous or noxious liquid cargoes should have received similar training so that they have a full knowledge and understanding of the requirements that vessels must comply with when carrying such cargoes.

5.5.3 Table 2. Competence Requirements

Role	Adequate English	IMDG Code	Lifting Equipment	Slinger Course	Cargo Handling	Bulk Material Handling	Materials Management	Industrial Personnel - Shore	Industrial Personnel	Notes and Additional Requirements
Operation managers Shipping managers Sailing managers Vessel coordinators Logistics coordinators		X	X		X					1. Shall preferably have a maritime background (nautical studies, mate, Master) 2. The defined operation manager, shipping manager, sailing manager, vessel coordinator or logistics coordinator is responsible for coordination and follow-up of all loading or offloading operations involving offshore service vessels at a base, quay or tank installation.
Quay Foremen	X	X	X			X	X			
Personnel packing goods in containers		X*	X		X					* IMDG required if handling goods classified as dangerous goods
Crane Operators			X	X						
Personnel involved in cargo handling		X		X						
Personnel involved in bulk cargo handling					X					1. Familiar with identfication of hazardous chemicals and requirements for testing 2. Safe handling of bulk cargo and hazardous chemicals. 3. Handling and containment of spills, and familiar with related external notification procedures.
Installation Maritime Co-ordinator					X					Training shall include vessel types, functioning of manoeuvring and/or positioning systems, vessels' characteristics and limitations (including weather restrictions and vessel load capacity) and maritime terminology.
Installation cargo handling		X								
Personnel involved in tank cleaning								X	X	1. Familiar with identfication of hazardous chemicals and requirements for testing 2. Safe operation in tanks and confined areas 3. Handling and containment of spills, and familiar with related external notification procedures.
Other Industrial Personnel									X	As identifed by co-ordinators of their operation and their required for the service they perform

Contents

Revision History

Revision Number	Date	Section	Changes
1	Mar 2019	6.Operational Communication and Meetings	Amended reference is made to Chapter 3 Bridging Document relating to communications between the various parties involved.
		6.3.1 General	Amended: 5. Meetings should be minuted, retained on file and distributed as required.

6 Operational Communications & Meetings

Offshore operations are often complex, involving many parties.

Experience has demonstrated that communication failures between the various parties are often the root cause of many subsequent problems.

Where possible, the Charterer should ensure that all parties involved come to an agreement regarding the means of communication to be used and arrangements for operational meetings appropriate to equipment available and activities to be supported. In some circumstances, these arrangements may be included in the charter party.

All required communications equipment is to be thoroughly tested prior to the commencement of any operation and at regular intervals whilst it is in progress. Clear and reliable communications between all parties involved are required to stop operations in the event of a dangerous situation developing.

Care shall be taken to ensure that communications do not distract from the primary tasks.

All parties shall be able to communicate in English and/or another agreed common language.

The use of dialects which may be experienced in the course of typical offshore operations is likely to lead to confusion and should be avoided.

All personnel interacting with facility/base must be able to communicate effectively.

Reference is made to Chapter 3: “Bridging Document” relating to communications between the various parties involved.

6.1 Radio Communication Whilst at Facility

Maintain radio listening watches on the nominated channel in addition to appropriate emergency and calling channels.

Where practical, communications between the facility deck and the vessel should be conducted on a different channel to that used for general field or control room traffic, particularly when using VHF communications. This will help to avoid confusion and enable warnings of potentially dangerous situations to be communicated more quickly.

If the vessel-facility communication link suffers failure or major interference, the vessel should stand off until effective communications are restored.

Before operations commence, ensure there are good radio communication between vessel and required facility stations.

During operations, facilities should avoid unnecessary communications to vessels. Personal communication to deck areas, for example, may be by UHF or VHF.

Where headsets are used, any headsets worn on deck must be set at a volume which allows other sounds (waves, sea, cargo movements, warnings, etc.) to be heard.

Due to the danger to personnel MF and HF radio transmissions are prohibited while alongside an offshore facility. If this is necessary, the facility manager’s permission is required. If this is refused and the requirement is urgent, the Master must ask permission to leave the safety zone to use these frequencies.

All VHF Radios should be used on low power.

6.1.1 Radio Silence

The facility's requests for radio silence are to be complied with. Vessels should ensure all conditions identified by the facility are observed.

6.1.2 New Technology

As technology develops, the use of the following communication devices becomes more prolific. When introducing any new means of communication care should be taken to risk assess the implication of their use in the circumstances in which they might be employed.

Currently such systems include, but may not be limited to, the following:

1. Smart/Mobile Phones
2. E Mail/Messaging systems
3. Video Conference
4. Satellite Communications

6.2 General Communications

General communications involving vessels and offshore facilities during a typical voyage are summarised in Table 1:

Communications with Vessels

● essential

○ recommended, particularly for unusual / dangerous items

Voyage Phase	Charterer	Base Operator	VesselMaster (or senior watchkeeper)	Area Co-Ordinator (may be on- or offshore)	OIM (or nominated deputy)			Information Required
Start of Charter	●	●	●	●				confirmation of operating standards contact details - including telephone numbers decision making process particulars of all locations (including ports) any other relevant information
Start of Outward Voyage (prior to departure)		●	●	●	○			voyage planning and routing anticipated weather during voyage (including potential impact on operations) outbound / inbound cargo requirements (including dangerous goods, urgent or special items and in-field transfers) particular preparations at each installation (including initial back-load, etc.) potential delays and / or routing changes
Start of General Field Operations (prior to arrival in field)			●	●	○			any changes to routing particular preparations at each installation (including any initial back-load, etc.) other activities in progress in field any expected delays in course of operations anticipated weather during operations (including effect on workability at each site)
Start of Specific Operations (at each installation visited)			●		●			confirmation of readiness to work on arrival - and to continue to completion without undue delays shift-patterns, meal breaks, etc. operational status of all cargo handling arrangements initial preparations necessary prior to discharge (particularly if necessary to clear deck space to receive outward cargo) particulars of inward cargo to be loaded onto vessel (especially any dangerous goods & / or heavy / unusual lifts) any items required urgently any potential hazards in vicinity (including discharges, local obstructions, etc.) any unusual operations during cargo operations (including fire drills, flushing, venting, etc.)
Start of Inward Voyage		●	●	●	●			confirmation that information relating to inward cargo received by logistics service provider (including manifest, dangerous goods information, etc.) estimated time of arrival operations planned on arrival vessel requirements on arrival
Completion of Voyage (or charter if appropriate)	●	●	●					consumables remaining on board off-hire information / survey report (if applicable)

Table 1

6.3 Operational Meetings

6.3.1 General

1. Appropriate cross-party cooperation and communication is essential to safe and efficient operations.
2. For rapid resolution of significant issues, direct communication between parties must be established through nominated individuals. The first line of offshore communication is between vessel Master and the control room, who will consult other appropriate authorities on the facility.
3. Operating companies are responsible for establishing effective cooperation and communication between supply chain parties. All involved should participate and deliver resolutions or recommendations.
4. The Master shall keep all relevant parties informed of any issues, maintenance requirements or breakdowns which may effect the operation of the vessel.
5. Meetings shall be minuted, retained on file and distributed as required.

6.3.2 Operational Meetings

Cooperation and communication between relevant parties shall be regarded as a precondition for safe and efficient operations.

Suggested attendees and agenda for operational meetings are summarised in Table 2:

Table 2: Operational Meetings

Responsible:		Operator / Logistics Service Provider
Participants	Vessel	Master, Chief Officer, Safety Delegate & others as required
	Owner	Manager, HSSE
	Offshore Facility	Operation Manager, Shipping Manager, Vessel Coordinator, Quay Foreman
	Base	
	Operator	
	Logistics Companies	
Purpose	Teambuilding through contact and familiarity with each other's' work location and tasks	
Agenda	HSSE matters, including incident or near miss reports Variations from safe and efficient operations Feedback on measures taken following undesired incidents or non- conformances Communication Operational matters Experience transfer Improvement projects Review minutes	
Frequency	Appropriate for the duration of the operation.	

GOMO Chapter 7

Operational Best Practice

Revision History

Revision Number	Date	Section	Changes
1	February 2020	7.1; Safe Access to Vessels	Additional guidance / good practice added
		7.5.2; Siting, Care & Maintenance of Local Reference Systems	Additional note added on consultation with vessels if any doubt exists regarding siting or positioning of equipment
		7.9.2.11; Personal Protective Equipment & Effects	Reference to SOLAS added at point 3
1.1	December 2022	7.9.1; Requirements	Reference to IMCA M 254 “Guidelines for Walk to Work Operations” added in support of existing wording

Contents

7 Operational Best Practice

7.1 Safe Access to Vessels

Masters have a prime responsibility to ensure safe means of access to the vessel for which they are responsible.

This implies a "duty of care" for all personnel seeking access to or egress from the vessel.

Good practices for rigging and use of gangways include:

1. The gangway must be properly rigged and deployed
2. It must be safe to use and adjusted as necessary to maintain safe access to the vessel
3. Area must be adequately lit at all times
4. A lifebuoy with self-activating light and buoyant line posted adjacent to the gangway
5. The gangway MUST NOT be used at an angle greater than 30° above the horizontal plane unless it is specifically designed for operation at greater angles
6. Where necessary a bulwark ladder must be provided, safety fenced to a minimum height of 1m
7. Guard ropes must be kept taut at all times and stanchions must be rigidly secured
8. The gangway must be kept clear of cargo operations and quayside obstructions
9. The gangway must be kept clear of any materials or obstructions likely to cause a person to slip or trip
10. A safety net should be mounted where a person may fall from the gangway, ships deck or quayside. The aim of the safety net is to minimise the risk of injury arising from falling between the ship and the quay or falling onto the quay or deck and as far as reasonably practicable the whole length of the gangway should be covered. Safety nets should be surely rigged, with use being made of securing points on the quayside where appropriate.
11. All access equipment should be inspected by a competent person or a regular basis

Where vessels are berthed alongside each other this guideline places the responsibility for ensuring safe means of access between them on the outboard vessel, but both should co-operate to ensure that personnel may transfer from one to the other in safety.

The provision of a safe means of access to ALL vessels, whether alongside the quay or "2nd, 3rd (or more) off" is of the highest importance.

Failure to provide safe means of access will result in a dangerous situation with significant risk of serious injury or death.

Good practices for ensuring safe access to vessels alongside others include:

1. Same level of safety for all accesses to vessels
2. Change in height between vessels to be minimised
3. Gangways and landing areas are to be adequately illuminated and free of trip / slip hazards
4. Adequately supported handrails or ropes are to be provided

5. ALL arrangements to be stable and adequately secured
6. Nets are to be provided and adequately secured
7. Lifebuoy to be on hand in vicinity to the access

Note: In addition to this it should be noted that users of gangways are responsible for risk assessing conditions prior to use, and where necessary consideration should be given to turning and facing the gangway and bulwark ladder whilst ascending or descending.

Personnel should be instructed not to use any unsafe means of access.

7.2 Vessel Operational Capability

At all times, it is the responsibility of the Master to assess the risks associated with any particular activity the vessel may be requested to support. Where necessary, the Chief Engineer and other responsible parties must also be consulted in making such assessment.

This assessment should include an assessment of any likely degradation in the vessel's manoeuvring and station-keeping capability in the event of a failure of any safety critical system(s) or component(s), particularly in relation to the vessel's ability to safely cease cargo operations and exit the immediate vicinity of the facility should any such failure occur during the anticipated activities.

Any outcomes of this assessment must be advised to the Facility Manager prior to the commencement of operations.

Factors to be taken into account in making this assessment may include, but are not limited to:

1. Environmental criteria

   Thresholds/trigger points at which continuing operations will be further reviewed to be agreed with the Facility Manager.
2. The position that the vessel will be required to take up during proposed operation in relation to the current environmental conditions at the facility.

   Operations which will require a vessel to take up and maintain station on the up-weather side of an offshore facility will most likely involve additional risk factors which must be taken into account when undertaking this assessment.
3. The competency of the OOW to manoeuvre the vessel manually in the prevailing circumstances should this become necessary.
4. Exit route from working location to open water clear of the facility and all adjacent structures.
5. Power distribution configuration, particularly relating to vessels with diesel-electric (or similar) propulsion and manoeuvring arrangements
6. Power utilisation of critical manoeuvring arrangements when in the vicinity of offshore facilities.

   Where a vessel is required to take up and maintain station close to and on the weather side of a facility the power utilisation of any manoeuvring thruster (including main propellers) should not exceed 45%
7. Operations in the vicinity of assets considered to be at particular risk or where ability to safely manoeuvre clear of the facility may be restricted.

   Such operations may include, but are not limited to:

a. Requirement for vessel to maintain station adjacent to assets containing hydrocarbons which have no or minimal protection
b. Requirement for vessel to maintain station close to multiple facilities located in close proximity to each other. Typically, this would include offshore facilities where additional drilling and/or accommodation units have been established to support particular requirements.

Subsequent to the commencement of operations the Master must continuously monitor all factors relating to the vessel's station keeping capability. Should any of these change, such that the station keeping capability of the vessel changes, the Facility Manager should be advised without delay, particularly if bulk transfers are in progress or are planned.

If, during the course of operations, the vessel is required to move from one face of an offshore facility to another the circumstances should be re-assessed taking into account the factors summarised above.

If at any time circumstances change to the extent that maintaining station in the current position relative to the facility represents an unacceptable risk the current operation should be suspended forthwith and the facility manager advised accordingly, the objective being at all times to minimise the risk of contact between the vessel and the facility.

Any concerns should also be communicated to the Owner and the Charterer's representative.

Longer term concerns relating to station keeping at any offshore facility should also be communicated to its Manager and also the vessel Owner.

7.3 Non-Routine Operations

From time to time a requirement may exist for vessels to support operations which, by their nature, may be unusual or outwith the range of activities normally supported.

These Guidelines do not advocate that such operations should be curtailed or restricted but seek to draw attention to the additional risks which may be involved and to recommend that, when proposed, appropriate specific task-based risk assessments, as described in Chapter 4 of this document are undertaken by the personnel involved.

Operations which may be considered non-routine include, but are not limited to, the following:

7.3.1 Weather Side Working

Reference should be made to Section 8.11 for guidance relating to procedures if requested to take up station on the up-weather side of an offshore facility.

If supporting operations at offshore complexes consisting of several structures located in close proximity to each other, which may or may not be linked by bridges and may also include mobile offshore units, Masters should be conscious of potential "drift on" situations developing in relation to platforms or other units apart from that at which the vessel is presently located.

7.3.2 Certain Lifting Operations

Certain lifting operations involving the transfer of cargo between a vessel and an offshore facility should not be considered as routine but should be the subject of a separate specific risk assessment.

These include, but are not limited to, the following:

1. Operations requiring the use of a crane's main block
2. Operations involving the lifting of long cargo items, particularly where it is necessary to use two stinger pennants from the crane's hook.
3. Operations which require personnel on the vessel to connect or release lifting rigging using any means other than safety hooks.
4. Operations involving the lifting of cargo items where rigging has not been pre-installed.

7.4 Software Management & Maintenance

The operation of a wide variety of equipment, some of which may be safety critical, on modern facilities (including vessels) is dependent on software-based control arrangements.

It is therefore essential that the management and maintenance of all such control arrangements is subject to the same rigour as any other critical system installed on the facility or vessel.

Any subsequent changes or updates should then be controlled and recorded in the PM system as they occur in order that a full audit trail of such amendments can be maintained, as happens in the case of modifications or repairs to other equipment.

7.5 Dynamic Positioning Arrangements

7.5.1 General Requirements

Any vessel chartered and approved to maintain station by means of dynamic positioning within the safety zone around any offshore facility, should observe and comply with the guidelines published by IMO and supplemented by further guidance published by IMCA, MTS or similar trade associations, as updated from time to time.

It is the responsibility of any Owner responsible for operating any DP vessel within the safety zone of any offshore facility to ensure that these requirements are understood and complied with.

7.5.2 Siting, Care & Maintenance of Local Reference Systems

It is the responsibility of the "owner" of any local, radar or optically based reference system used to support vessels maintaining station by means of dynamic positioning to ensure that it is correctly sited on the facility and that suitable arrangements have been established for its care and maintenance.

Where any component of a reference system which forms part of a vessel's inventory is passed to an offshore facility to support operations at that location a document package including information regarding preferred siting of the component and its care and maintenance should be transferred at the same time.

Where practical, reflectors used with optically based reference systems should be sited clear of commonly used walkways or decks where containers are stored since the presence of retro-reflective material on cargo items or PPE may result in false signals being returned to the sensor arrangements on the vessel.

Note: If doubt exists relating to the siting and or positioning of equipment, this information should be readily conveyed and discussed between the vessel and the offshore facility.

7.5.3 Optical Reference Systems, Environmental Degradation

In fog, mist, falling snow, heavy rainstorms or other conditions similarly restricting visibility the performance of optically based systems may be seriously degraded. Depending on wind direction discharges from the facility may have a similar effect.

If selected as one of the position reference systems for a vessel maintaining station by means of dynamic positioning the personnel responsible for monitoring and operation of these arrangements should be aware of the potential for their degradation in such circumstances.

7.6 Simultaneous Operations (SIMOPS)

Simultaneous operations in this context refer to circumstances where two or more vessels are supporting activities within a facility's safety zone at the same time or operating elsewhere in circumstances whereby actions undertaken by one may have an effect on the other(s).

Any hazards likely to arise during such operations should be addressed using the risk management process, as described in Chapter 4 of these Guidelines.

7.7 Towing Operations

Please refer to Chapters 11 & 12 for further information relating to towing operations.

7.8 Discharges from Facilities

Masters must cease operations and move clear of the facility if at any time there is any concern whatsoever that discharges from any facility are posing a threat to the wellbeing of any personnel on the vessel, affecting visibility or compromising the performance of optical reference systems.

Any such concerns must be reported immediately to the Facility's Manager where it should be followed up as a matter of urgency.

Some facilities may be fitted with "auto-dump" or "auto-vent" arrangements designed to automatically empty tanks to sea or purge pressurised systems to atmosphere if certain threshold values are exceeded. Wherever practical such arrangements must be disabled whenever vessels are approaching or working alongside the facility, and their status advised to the vessel as part of the pre-operational checks.

Where this is not practical, the status of all relevant systems must be checked by the facility prior to giving the vessel permission to enter the safety zone to assess the likelihood and consequences of such an event occurring. The vessel must be advised of the outcome of this check and the Master, at their sole discretion, will decide whether the facility can be safely supported in the prevailing circumstances.

These arrangements should continue to be checked at frequent intervals whilst the vessel remains alongside.

7.9 Offshore Transfer of Personnel to or from Vessels

7.9.1 Requirements

Circumstances may arise where it is necessary to transfer personnel to or from a vessel whilst it is offshore. These may include requirements for personnel to be moved between an offshore facility and the vessel involved, or between it and another in the vicinity.

The preferred means of effecting such transfers will normally be by helicopter or, where conditions are suitable, by specialised small craft subject to the facilities and / or vessels involved being suitably equipped and personnel having had the correct training. Alternatively, where the vessel is providing accommodation support in close proximity to an offshore facility a gangway or bridge link between the two will normally be provided.

Such transfer methods will be the subject of specific risk assessments and particular requirements, precautions, procedures and, where appropriate, combined operations safety cases will have been developed. These are therefore seen as being planned activities, consideration of which is outwith the scope of these Guidelines.

A requirement to transfer personnel may arise, however, when the methods described above are not available, necessitating the use of other arrangements. The equipment used for this purpose may include:

1. Transfer baskets or other forms of carrier lifted by a crane on the facility.
2. Other small craft where no such arrangements exist.

The remainder of this sub-section relates to the preparations required and procedures to be observed when using such equipment.

Increasingly Walk to Work (W2W) motion compensated gangways are being used as a means of access to offshore assets. IMCA M 254 – Guidelines for Walk to Work Operations provides a standard reference guideline covering walk to work motion compensated gangway operations for the offshore energy industry.

7.9.2 General Preparations, Precautions & Procedures to be Observed

7.9.2.1. *Risk Management*

The risk management process, as described in Chapter 4 of these Guidelines, should be complied with whenever transfers of personnel are being contemplated.

In some instances, transfers by means other than helicopter may take place on a regular basis, being considered the safest or most practical means of moving personnel from one location to another. Typically, such operations will involve the use of small craft specifically designed for the purpose to move personnel between offshore facilities and / or vessels, all of which have been provided with docking arrangements designed and constructed for that purpose and compatible with those on the craft in use. Typical examples are the “surfer” ladders in use in many benign areas of operations, where the bow of the craft is engaged into the guides of the landing which hold it in place allowing personnel to safely step from one to the other. Similar arrangements are utilised on many small offshore structures, including wind turbines.

In such circumstances, whilst the full risk management process should be complied with prior to the commencement of operations, it should not be necessary to undertake this exercise before each transfer. However, arrangements should be in place to ensure that prior to each transfer the personnel are properly briefed as to the precautions to be observed.

Furthermore, the original risk assessment should be reviewed at frequent intervals to ensure that the outcomes remain valid. If, for any reason, this is no longer the case the entire process should be repeated.

Where other equipment or arrangements are proposed, including the use of lifted transfer baskets or the use of small craft not specifically designed for the purpose it is unlikely that such a generic approach will be acceptable. The full risk management process may therefore be required before each operation, though a series of transfers involving the same equipment and principal personnel may be considered as a single operation.

7.9.2.2. *Authorisation for Personnel Transfers*

The personnel transfers described in this section of these Guidelines should be the subject of approval by the persons in charge of the offshore facilities and/or the vessel(s) involved.

Where transfers by means other than helicopter take place on a regular basis and are considered the safest or most practical means of moving personnel from one location to another authorisation for each such activity is unlikely to be required. However, as described above, the original risk assessment should be reviewed at frequent intervals to ensure that the outcomes remain valid. If, for any reason, it is considered prudent to repeat the entire risk management process further transfers using the method involved should be the subject of renewed authorisation.

Where other equipment or arrangements are proposed it is unlikely that such a generic approach will be acceptable. Each operation should be individually authorised, though a series of transfers involving the same equipment and principal personnel may be considered as a single operation.

7.9.2.3. *Consent for Transfer*

Personnel requested to transfer between offshore facilities and / or vessels by the methods described in this section of these Guidelines should be made aware of the risks involved, together with precautions and procedures to be observed.

On having received the relevant briefing personnel should positively indicate their willingness to be transferred by means of the method proposed, or, alternatively, refuse without sanction.

7.9.2.4. *Suitability of Equipment*

All equipment utilised to transfer personnel between offshore facilities and / or vessels by the methods described in this section of these Guidelines should be fully fit for purpose and in compliance with the regulations of the jurisdiction in which the operation takes place.

Further recommendations relating to specific items of equipment are included in the relevant sections below.

7.9.2.5. *Storage & Maintenance of Equipment*

All equipment utilised to transfer personnel between offshore facilities and / or vessels by the methods described in this section of these Guidelines should be maintained and stored in accordance with the manufacturer's instructions.

7.9.2.6. *Experience & Competency of Supervisors & Operators*

Overseeing supervisors and operators of equipment involved in the transfer of personnel between offshore facilities and / or vessels by the methods described in this section of these Guidelines should have had previous experience of the operations involved and have been assessed as competent to undertake the tasks assigned to them.

This includes, but is not limited to the following functions:

1. Supervisors of operations.
2. Crane Drivers, where transfer is by basket or carrier.
3. Coxswains, where transfer is by small craft.
4. Attendant personnel, including deck or craft crews.

7.9.2.7. *Access to & Egress from Transfer Areas*

Access and egress routes to or from the transfer area on the offshore facility or vessel should be clearly marked, dry, and clear of all obstructions or trip hazards. Where necessary, a non- slip coating should be applied to steel decks or other alternative arrangements put in place.

7.9.2.8. *Communications*

The means of communication between the various personnel involved in the transfer operations will have been identified during the risk management process.

All such means of communication should be in place and their correct operation verified prior to the commencement of any transfer activities.

7.9.2.9. *Clear View of Transfer Area*

Wherever possible personnel supervising the activities described in this section of these Guidelines should have a clear view of all phases of the entire transfer operation.

Further recommendations relating to specific transfer methods are included in the relevant sections below.

7.9.2.10. *Capacity of Basket, Carrier or Craft*

The capacity of any basket, carrier or craft used in the course of the activities described in this section of these Guidelines will be determined by the manufacturer of the equipment.

This capacity should not be exceeded at any time.

7.9.2.11. *Personal Protective Equipment & Effects*

Personnel being transferred by any of the methods described in this section of these Guidelines should be provided with appropriate personal protective equipment.

Dependent on the area where the transfer takes place such equipment may include:

1. Watertight immersion suit.
2. Thermal protection.
3. Lifejacket or Buoyancy Aid.

   Inflatable lifejackets or buoyancy aids are normally to be preferred, to relevant SOLAS standard.

   Inherently buoyant marine lifejackets provided to comply with SOLAS requirements are bulky and likely to obstruct movement.
4. Personal Locator Beacon, where detection and tracking facilities available

Personnel should be given a briefing regarding the correct donning and use of the equipment. Before boarding the basket, carrier or craft it should be checked by the person supervising the transfer.

Personnel should not wear any clothing or carry any items which could restrict their mobility or interfere with the correct operation of any protective equipment.

In some cases, a small quantity of personal effects may be included with the transfer of personnel. However, this will involve additional space and/or weight requirements which should be taken into account when assessing the available capacity of the basket, carrier or craft.

If carried, such effects should be stowed and secured in such a manner that escape routes are not obstructed.

Where the simultaneous carriage of personnel and their effects would compromise the capacity of or obstruct escape from the basket, carrier or craft arrangements should be made for each to be transferred separately.

In general, the policies, practices and equipment relating to the transportation of personnel by helicopter are also relevant to the transfers described in this section of these Guidelines.

7.9.2.12. *Compliance with Supervisor's Directions*

Personnel being transferred by any of the methods described in this section of these Guide- lines should comply with the directions of the Supervisor overseeing the operation.

7.9.2.13. *Availability of Rescue Facilities*

Whilst personnel are being transferred by any of the methods described in this section of these Guidelines suitable rescue facilities should be available at immediate notice.

Where a stand-by vessel is in attendance, if not directly involved in the transfer operation, its Master should be advised and requested to bring their rescue facilities to an immediate state of readiness.

If no such vessel is in attendance, or is itself involved in the transfer operation, alternative arrangements, which may involve fast rescue boats or craft installed on other vessels, should be identified and agreed before the persons in charge give the necessary authorisation.

7.9.2.14. *Environmental Restrictions*

The transfer of personnel by the methods described in this section of the Guidelines should not be undertaken where the environmental conditions were such that increased risk would be incurred.

Typically, such operations should not proceed where the prevailing conditions include one or more of the following:

1. Wind speeds in excess of 20 knots (10 metres / second) at height of 10 metres above sea level.
2. Significant wave heights in excess of 2.5 metres.
3. Horizontal visibility of less than 500 metres.
4. Heavy accumulations of snow or ice on landing areas, access and egress routes, etc.

Further restrictions relating to specific transfer methods are included in the relevant sections below.

Furthermore, these operations should not normally take place in hours of darkness. Where this is deemed essential by the relevant persons in charge additional precautions are likely to be required, which may include, but are not limited to, the following:

1. Ensuring that illumination of all transfer areas in adequate.
2. Ensuring that lifejackets or buoyancy aids are fitted with high intensity strobe lights.
3. Ensuring that retro-reflective tape on overalls or immersion suits is not obscured.

Transfer operations undertaken outwith environmental limits or in the hours of darkness should be the subject of a full risk assessment process and specifically authorised by the persons in charge on the relevant offshore facility and/or vessel(s).

7.9.2.15. *Record Keeping*

The persons in charge on the offshore facility and/or vessel(s) should ensure that full particulars of any transfers as described in this section of these Guidelines is recorded in the relevant log-books and that the register of personnel on board the facility or vessel(s) is revised as soon as possible.

7.9.3 Particular Preparations, Precautions & Procedures

Recommendations relating to specific preparations required together with the precautions and procedures to be observed relating to each of the means for effecting personnel transfers described in this section of these Guidelines are as follows:

7.9.3.1. *Use of Transfer Baskets or Carriers Lifted by Facility Crane*

This sub-section relates to the use of baskets or other carriers lifted by the cranes on an offshore facility to transfer personnel between it and a vessel close alongside.

Recommendations which should be observed include:

1. Any cranes to be used for this purpose should comply with rules or codes in force within the jurisdiction where the operation will be undertaken.

   These may vary from area to area but particular attention should be paid to hoisting and braking arrangements.

2. Baskets or carriers to be used for this purpose should also comply with the rules or codes in force within the jurisdiction where the operation will be undertaken.

3. All equipment to be used for this purpose should be thoroughly inspected by competent persons at periodic intervals, as required by the rules or codes of the jurisdiction within which they will be used.

4. In general, baskets or carriers incorporating a rigid frame which provides protection for occupants are preferable.

   Baskets or carriers which do not incorporate this feature may only be acceptable for emergency use in some jurisdictions.

5. Baskets or carriers should be rigged or otherwise fitted out in accordance with manufacturer's instructions.

6. A basket or carrier should be fitted with sufficient buoyancy to support the unit itself and its occupants in the event of entering the water.

   Buoyancy should be distributed to prevent inversion should such an event occur.

7. Baskets or carriers should be visually inspected by a competent person before each operation to ensure that all rigging, fixtures and fittings remain fit for purpose and secure.

8. Clear lift-off and landing areas should be identified on facility and vessel. Such areas should as a minimum:

   a. Within a radius from centre of 1.5 x basket diameter be free of obstructions or trip hazards.

   b. Outwith the lift-off / landing area there should be no obstructions extending more than 4 metres above the deck within 8 metres of its centre and beyond this, within a distance of 20 metres from the centre within an arc of 180º.

9. Appropriately briefed personnel should be in attendance for both lift-off and landing to assist in controlling the movement of the basket or carrier at these critical phases of the operation.

   In particular, such personnel should be briefed in the use of the attached tag lines.

10. Any other work in the vicinity of the lift-off and landing areas should be suspended whilst the transfer is in progress.

11. In addition to the environmental restrictions referred to above, transfers of personnel using baskets or carriers should not proceed when the prevailing conditions include:

    a. Vertical visibility of less than 100 metres

    b. Air temperature of -10º Celsius, particularly if wind is also present.

12. Prior to the commencement of the transfer the Master should confirm that the vessel is stationary and that its station keeping arrangements are fully operational.

13. Throughout the course of the transfer the crane driver should have a clear and unobstructed view or the carrier or basket and its occupants.

    If, for any reason, this is not possible an experienced banksman should direct the crane driver. The banksman should be clearly identified and visible to the crane driver at all times.

14. The route of the transfer should be planned so that the basket or carrier is always well clear of any exhausts, discharges or obstructions.
15. After the basket or carrier is lifted from the deck of the facility the crane should be slewed so that it is over the water, whereupon it is lowered to a height of approximately 2 metres above the vessel's cargo rail. The basket or carrier should then be moved to a position over the designated landing area on the vessel before being finally lowered onto its deck.

    Transfers from the vessel to the installation should follow the reverse route.
16. The basket or carrier should always be lowered with the hoisting mechanism engaged.

    Free-fall or non-powered lowering should not be used except where the hoisting mechanism fails whilst the basket or carrier is occupied.
17. If considered necessary, a person experienced in this method of transfer may accompany other personnel who may be less familiar with it.
18. A small quantity of personal effects can be carried in some types of baskets or carriers, but not in others.

    If carried, such items should be stowed and secured in such a way that escape routes from the basket or carrier are not obstructed.
19. Personnel to be transferred should only approach and board the basket when instructed by the supervisor.

    On boarding, personnel should secure themselves in the basket or carrier as instructed during the preparatory briefing.
20. On landing on the deck of the facility or vessel personnel should release themselves and disembark the basket only when directed by the supervisor.

    They should then clear the immediate area using the route indicated.
21. Personnel not directly involved in the transfer should remain in a safe haven well clear of the operation, except as otherwise directed by the supervisor.

7.9.3.2. ***Use of Small Craft***

This sub-section relates primarily to the use of other small craft deployed from a larger host vessel to transfer of personnel between vessels. Such craft may typically include the following:

1. Fast rescue boats mobilised on vessels in compliance with SOLAS requirements.
2. Fast rescue craft or daughter craft mobilised on stand-by vessels.
3. Small work-boats mobilised on a variety of vessels.

Recommendations which should be observed include:

1. Personnel transfers involving only vessels should not take place within the safety zone around any offshore facility.
2. The relevant facility management teams should be advised of the intention to undertake any such transfer, together with the Masters of any attendant response and rescue vessel, if itself is not directly involved in the operation.

3. Any craft to be used for this purpose should comply with rules or codes of the host vessel's flag state or those of the jurisdiction where the operation will be undertaken.
4. Any craft to be used for this purpose should be thoroughly inspected by competent persons at periodic intervals, as required by rules or codes of the host vessel's flag state or those of the jurisdiction where the operation will be undertaken.
5. Any craft used for this purpose should be constructed with a rigid or semi-rigid hull. Fully inflatable craft are not normally acceptable for this purpose.
6. If permanent fendering or similar arrangements are not incorporated into the hull design suitable portable fenders should be provided.
7. Sufficient buoyancy to support the craft itself and its occupants in the event of swamping should be installed.
8. Craft fitted with self-righting arrangements are to be preferred.
9. If practical, where the principal propulsion consists of a single engine and drive train an auxiliary system should be provided, for use should the principal arrangements fail.
10. Where the vessels involved are equipped with identical craft, with the same means of deployment and recovery being installed on both, "davit to davit" transfers are to be preferred.
11. Where fitted, permanent rigid ladders should be used, subject to their being in good condition. Typically, such arrangements are fitted on cargo barges and similar units.
12. Where such ladders are not fitted or are in poor condition portable ladders may be provided. Portable ladders supplied for this purpose should comply with IMPA requirements.
13. Stanchions, hand-holds and other arrangements to facilitate the safe transit of personnel from the ladder to the deck of the vessel and vice versa should comply with IMPA requirements.
14. Personnel to be transferred should only board the craft when instructed by the supervisor. On boarding, personnel should take their seats and secure themselves as instructed during the preparatory briefing or as directed by the Coxswain.
15. Whilst in transit personnel being transferred should remain seated or move around with caution.
16. On arrival at facility or vessel personnel should disembark the craft only when directed by the Coxswain. They should then follow the directions of the supervisor.
17. Personnel not directly involved in the transfer should remain clear of the operation, except as otherwise directed by the supervisor.

Whilst the recommendations above relate principally to small craft deployed from a larger host vessel, they may also be appropriate for other craft capable of autonomous operation.

7.9.4 Further Guidance

Further guidance relating to the transfer of personnel between offshore facilities and / or vessels may be found in the documents listed in Table 1.

Table 1: Further Guidance

SOURCE	DOCUMENT PARTICULARS	
	NUMBER (If Known)	TITLE
IMCA	M202	Transfer of Personnel to and from Offshore Vessels

7.10 Security

The vessel and / or facility is to comply with ISPS where there is a requirement and any additional coastal or flag state requirements.

7.11 Operations in Environmentally Extreme Conditions

Guidance on operations in environmentally extreme conditions is included in Appendix 7 - A.

GOMO Chapter 8

Collision Risk Management

Revision History

Revision Number	Date	Section	Changes
1	November 2021	8 – Introduction	Introduction wording updated to capture typical causes of collision and consideration of vessel displacement
		8.2.2 – Distractions	General update to wording to describe management and control of distractions
		8.2.3 – Communication	New sub section on "Communication" added
		8.2.6 - Handovers	Additional comment added to highlight potential risks arising from handover during critical periods of operation
		8.6 – Change of Control Station or Operating Mode	Updated with guidance on where and when change of controls should happen
		8.7 – Setting Up Before Moving Alongside	Further/revised guidance on set-up times and additional reference material/guidance added
		8.8 – Use of Dynamic Positioning	Reference to vessel ASOG added
			Guidance on switching from DP to Manual added
			Further guidance added on deciding the minimum allowable working distance
		8.9 – In Operating Position	Updated to strengthen requirement to suspend operations and manoeuvre clear if any concerns in maintaining position
			Wording relating to 45% power utilisation from chapter 7 added
		8.11 – Weather Side Working	Additional wording on "hierarchy of control" added

Contents

8 Collision Risk Management

Duty Holders, Vessel Owners and Bridge Officers shall ensure that any operations that involve approaching, working alongside, and departing from any offshore facility are, at all times, undertaken in accordance with the best practices described below.

Vessel collision may be caused by any one of the following factors:

- Black-out/technical defect
- Dynamic Positioning Drive-Off
- Run-Off / Drift-Off
- Human Error

Duty holders should consider the potential displacement of the vessel against the structural capacity of the installation and, in the case of larger vessels, relative to the installation, the possibility that a low-speed collision could result in severe and possibly catastrophic damage to the installation. In these cases, the operation should be comprehensively risk assessed and managed in a manner appropriate to the high-risk nature of the operation.

8.1 Safety Zones

Most offshore facilities are protected by the establishment of a safety zone around the structure, unit or vessel.

The best practices described in this document have been developed on the presumption that such a safety zone exists. It should be noted that some offshore facilities, particularly vessels, may not be protected by such a zone. However, it is strongly recommended that when attendant vessels are approaching any offshore facility, the practices described in this Section should be observed, irrespective of whether a safety zone has been established around the facility.

8.2 Bridge Team Organisation and Management

It is the responsibility of vessel Owners and Masters to ensure that the team directing operations on the bridge has the necessary experience for proposed operations such that all activities can be undertaken in a safe and expeditious manner.

Matters which may require particular consideration include, but are not necessarily limited to, those below:

8.2.1 Competencies

At all times, the competencies of personnel within the bridge team should comply with those identified in the relevant operational level for the current activities, as described in Chapter 5 of these Guidelines.

8.2.2 Distractions

Vessel operators should have in place arrangements to ensure bridge personnel can focus on the key navigational activities without distraction, particularly when:

- approaching an installation
- preparing to enter and transit the 500m safety zone
- performing operations in close proximity to the installation
- departing the 500m safety zone.

Key bridge personnel are the watchkeeper, responsible for manoeuvring the vessel, and a second equally competent person to support the watchkeeper.

Support includes communication with the installation & deck crew and engine room, monitoring vessel position and equipment, and monitoring the actions of the watchkeeper. Neither person should engage in tasks which could diminish their situational awareness or distract them from their role.

Vessel operators should identify those tasks which may distract key bridge personnel from their primary duties and plan them so as not to coincide with those critical navigation activities described above. Alternatively, they should ensure there is sufficient resource on the bridge to undertake the task without involving key bridge personnel.

Any members of the bridge team who find themselves in a situation where primary responsibilities are being compromised by additional activities should immediately stop the job, alert the senior watchkeeper and refocus attention before resuming the operation. A quick check should be made to see if anything has been missed whilst distracted.

8.2.3 Communication

Prior to entering the installation 500m safety zone, the senior watchkeeper shall describe the planned manoeuvre with all members of the bridge team. Any member of the bridge team can comment on the plan or raise any concerns, regardless of their rank or experience. Vessel operators should promote open discussion between members of the bridge team before all critical navigational activities.

Once inside the 500m safety zone, members of the bridge team shall verbally communicate to one another any action they take that affects the safe navigation of the vessel prior to performing the action. All members of the bridge team should verbally respond to this communication by confirming they understand the action or by seeking clarification.

If any person has a concern about how the vessel is being operated or the actions of other members of the bridge team, they should raise this concern immediately. If necessary, the manoeuvre of the vessel should be aborted until the concern is rectified.

8.2.4 Situational Awareness

Typically, modern marine equipment installations include a variety of aids to provide bridge team members with navigational information necessary for the safe operation of the vessel.

However, maintenance of a continuous visual watch remains an important part of the bridge team's responsibilities and should not be overlooked.

8.2.5 Awareness of Environmental Conditions

The Master and ship's staff shall constantly remain alert to predicted and experienced weather conditions. They shall assess whether any deterioration will affect the performance or contribution of operations at an offshore location. It is the Master, and/or their Deputy's responsibility to convey, without delay, to the offshore controller an assessment of deterioration that may affect the safety of ongoing operations. Guidance contained in the Adverse Weather Working Guidelines shall be considered, and a copy displayed on the bridge.

The bridge team shall use all means at their disposal to ensure that they remain aware of prevailing environmental conditions. It should be fully appreciated that surface current speed and direction may alter on any given aspects of an installation and may differ considerably from local information sourced from local tidal information.

They should also be aware of any "trigger points" which have been identified in relation to any operations presently being undertaken.

In the event of environmental conditions changing such that the threshold levels in "trigger points" are (or are likely to be imminently) exceeded the bridge team shall assess whether current operations can continue or should be suspended until conditions improve. Particular attention may be required in hours of darkness when aspect and hazards are more difficult to identify.

8.2.6 Handovers

Adequate arrangements shall be in place to ensure that, at the change of each watch, each member of the bridge team is able to give their relief a complete briefing regarding the status of present activities and the vessel's current operational status. The relief personnel should not take over until they are satisfied they have received a full and complete handover.

In some circumstances, where complex operations are being undertaken, clear bridge team relief procedures shall be in place to ensure positive hand-over. Consideration may be given to arranging for members of the bridge team to be relieved at different times to ensure continuity of awareness within the team.

Requirements for written record of handovers, to be signed off by all watchkeepers, may exist for some circumstances. These should be described in the vessel's SMS manual.

Where possible, handovers should be avoided during critical periods of the operation where safety may be adversely affected by a change of personnel.

8.2.7 Precautions Against Fatigue

In all but the most extraordinary circumstances, international legislation relating to hours of work and rest periods shall be complied with.

Certain operations may require an unusually high level of control for extended periods. Personnel involved in such operations are therefore required to maintain an unusually high level of concentration with the result that early on-set of fatigue is likely. In such circumstances, arrangements should be made for the relevant personnel to be relieved more frequently than might be normal practice.

Operations where such arrangements might be prudent should be identified at the early planning stage and appropriate measures put in place at that time.

Operations likely to fall into this category should be risk assessed to ensure adherence to the provisions of the Manila Amendments to the STCW Convention, 2010.

8.3 Approaching Location

Whilst approaching any facility, vessels should set a course which is off set from it and at a tangent to the safety zone. Entry to the 500m safety zone thereafter to the set-up position should be taken at a speed of 3 knots or less. as shown in Figure 1 Approach to Facility.

This course should take the vessel to a position where it can be set up for intended operations and the check lists completed in a drift-off situation.

8.4 Selection of Station Keeping Method

Following an assessment of the operations to be supported, together with the prevailing and forecast conditions, select the most appropriate method of station keeping whilst in the vicinity of the offshore facility. Further guidance is included in Section 8.8 of these guidelines.

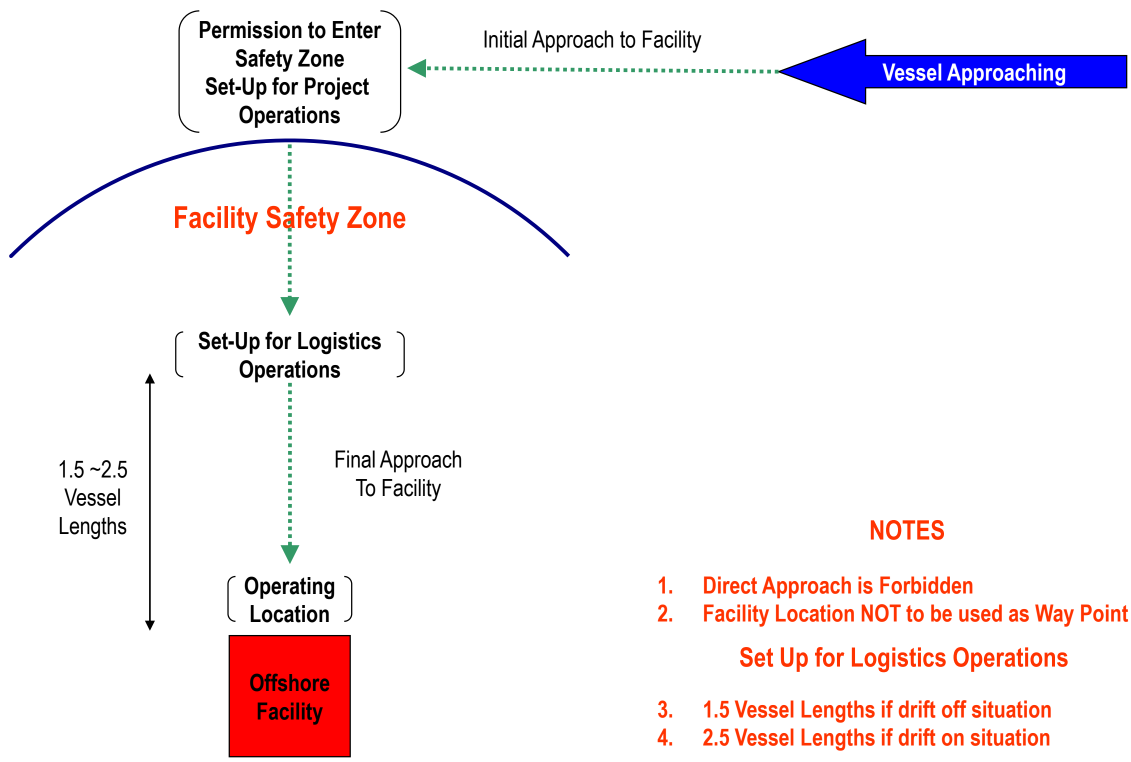

Figure 3: Approach to Facility

The selection of station keeping method should be advised to the facility as part of the pre-entry process.

8.5 Pre-Entry Check Lists

Prior to entering the safety zone at any facility, the pre-entry check list for the vessel shall be completed. Completion of these check lists shall be viewed as a safety-critical function.

A typical example of such a check list is included in Appendix 8–A of this document.

Each check list shall be signed off by all watch-keepers. Copies should be retained on file for audit for a limited period of approximately 3 months.

Where laminated check lists are in use, an entry shall be made in the vessel's log of each such use, together with a summary of the outcomes.

Electronic copies of signed-off check lists are acceptable and shall be filed in a suitable manner.

8.6 Change of Control Station or Operating Mode

Whenever control of a vessel is transferred to another station or a different operating mode is selected, it shall be ensured that all manoeuvring arrangements are responding as anticipated prior to undertaking any operations in the close proximity of an offshore facility.

Excluding any emergency, and/or a sudden unexpected fault occurring, change of controls or mode of operation should not routinely take place whilst in close proximity to the installation, another vessel or other obstruction.

Close proximity to an installation is considered as less than 1.5 – 2.5 x ships length.

Further guidance is included in Section 8.7 of these Guidelines.

8.7 Setting Up Before Moving Alongside

Vessels shall set up in the vicinity of the face to be worked on the appropriate heading. Vessel distance from the facility shall be not less than 1.5 ship's lengths in a drift-off situation or 2.5 ship's lengths in drift-on circumstances.

When setting up to work in a drift-on situation, the vessel should not be directly up-weather and/or up-tide of the facility.

The set-up position should also consider any obstructions in the vicinity of the intended working location.

Prior to moving from the setting up to the working location, sufficient time shall be allowed to ensure that **all** station keeping arrangements are stable and environmental factors can be fully assessed. It is suggested that a minimum of 15 to 20 minutes is allowed for manual station keeping; for vessels operating in DP mode, reference can be made to IMCA M182 for set-up time.

Prior to the initial DP set-up, consideration should be given to the environmental conditions, manufacturer's recommendations and any company guidance relating to DP operations.

Once escape routes have been identified and discussed, an approach to the installation from the setup position can be made. Manoeuvring should be undertaken to the installation in incremental steps of approximately 10 meters, progressively reducing to steps of approximately 1 meter.

Final approach to the installation should be at a speed, over the ground, not exceeding 0.5 knots

8.8 Use of Dynamic Positioning

Vessel specific directions and guidance relating to the use of dynamic positioning facilities for station keeping will be included in operating procedures prepared by the equipment manufacturer and / or Owner. These shall be complied with at all times.

When operating in DP mode, the power systems and station-keeping systems shall be configured in accordance with the Activity Specific Operating Guidance. Operations at offshore installations are considered critical activities. Any change in DP status from “normal” to “advisory” condition should be comprehensively risk-assessed and operations can only be continued if mitigatory measures are put in place.

All DPOs must be capable of taking control of the vessel in manual mode and manoeuvring the vessel away from the installation in the event of DP failure. This action should be practised at every available opportunity and should form part of the pre-entry checks.

When deciding on the minimum allowable working distance between vessel and installation, duty holder and operators shall consider the time required to take manual control of the vessel against the time it will take the vessel to drift onto the installation in the event of DP failure in a drift on position.

Further guidance is included in Section 7.5 of these Guidelines.

8.9 In Operating Position

Whilst alongside the facility, power consumption, thruster utilisation and environmental factors must be monitored on a regular basis, particularly if working on a weather side/drift on situation.

Similarly, actions required to depart from the facility at short notice, should this be necessary, shall be continuously reviewed. The exit route to depart from the immediate vicinity of the facility shall be reviewed at the same time. If, for any reason, there is any concern regarding the vessel’s ability to maintain position operations must be suspended and the vessel manoeuvred to a drift off position and clear of the facility.

Thruster pitch and power monitoring when approaching 45% power utilisation will prompt close monitoring and re-evaluation of the work. Exceeding 45% power utilisation will immediately prompt stopping work.

Further guidance is included in Section 7.2 of these Guidelines.

8.10 Changes of Operating Location

Where it is necessary for the vessel to move from one working location to another, such movement shall be carefully planned and executed.

Wherever practical, risks associated in moving between locations should be assessed and personnel instructed accordingly. The assessment shall consider any risks associated with other vessels that may be working in the vicinity.

Wherever practical, if moving from one working face to another, the vessel should avoid passing up-wind and/or up-current of the facility. It should move well clear of the facility, move to the appropriate setting up location and carry out the setting up procedure described above prior to moving into the new working position.

The facility shall be kept fully advised regarding the progress of any move between working locations.

If available, a consequence analyser may be used in simulation mode as an aid in assessing the implications of moving from one working location to another. However, the availability of this aid should never be considered as a substitute for the proper planning and implementation of such a move so that it is executed in a safe and controlled manner.

8.11 Weather Side Working

Duty holders and vessel operators must apply the hierarchy of risk control and avoid weather side working wherever possible, eliminating drift-on collision risk. OIMs and vessel masters should review the weather forecast and delay potential weather side operations until the environmental conditions are no longer pushing the vessel onto the installation. Further guidance included in Section 8.9 of these Guidelines.

Any potential requirements to work on the weather side of a facility must be risk assessed as described in Chapter 4 of this document prior to moving into the set-up position. It shall be continuously reassessed until the relevant operations have been completed.

When preparing to work a weather face, the vessel must not set up directly to windward of the facility, but in a drift off position so that, in the event of a power failure whilst setting up, the vessel will drift clear of the facility.

At any location where tidal or other currents are significant, similar precautions should be observed.

8.12 Requests to Stand-By for Further Instructions etc.

The risk of contact between an offshore facility and a vessel operating along-side are increased if the two remain in close proximity for extended periods. If, therefore, for any reason, operations at a facility cannot be completed and a vessel is requested to stand by for further instructions, cargo, etc., it shall move to a location at a safe distance from the facility and in a drift off position. When returning to an operating location, the pre-entry checks and set-up procedures described above shall be repeated.

8.13 Extended/Protracted Cargo Handling Operations

The potential risk of contact between any vessel and facility is reduced when the time that the vessel is in close proximity to the facility is minimised.

It is the expectation that the facility personnel will plan operations to minimise this time alongside. Should the Master believe that this is not the case, resulting in the vessel having to remain alongside for protracted periods, this should be brought to the attention of the person in charge of operations at the facility.

Where performance reporting arrangements have been made by the Charterer, such events should also be reported through this channel.

8.14 Departure and Commencement of Passage

In all cases, a safe exit route shall be selected, taking the vessel well clear of all hazards, including any other vessels and to leeward of the facility.

In all cases, changes in operating mode from position keeping to passage making should not take place within 1.5 ship's lengths of the facility, if departing from the lee side, or within 2.5 ship's lengths if departing from the weather side.

Furthermore, if departing from the weather side, such changes in operating mode must only be implemented in a drift off position.

8.15 Field Transits

Some offshore developments may consist of several independent facilities.

In some instances, vessels that are not supporting or undertaking operations within the safety zones around such facilities may be required to pass through the development.

When making such a field transit, courses should be planned so that, where practical, the vessel passes at a distance of at least one nautical mile from each facility and any operations which might be in progress in its immediate vicinity.

8.16 Other Recommendations to Minimise Collision Risk

Other recommendations to minimise the risk of contact between offshore facilities and their attendant vessels are included throughout the remaining chapters of these Guidelines. These do not appear in this Chapter since it is considered they are more appropriate in the general context of the subjects in which they are included.

Contents

Revision 1, August 2018

Revision History

Revision Number	Date	Section	Changes
1	Aug – 2018	9.3; Sailing Instructions	Dangerous goods paperwork added to list
		9.7; Stowage and Securing of Cargoes in Containers	Wording added to highlight that the proper packing and securing of cargo within any container is the responsibility of the shipper and not the vessel
		9.8; Refrigerated Containers Disconnection at Offshore Facilities	Wording on connection changed from “receptacles” to “power supply”
		9.11; Cherry Picking	Wording changed from “minimise” to “eliminate”
		9.12; Other Potentially Hazardous Practices	Wording at point 1 expanded on to indicate that this practice should be actively discouraged
		9.13; Unusual Cargo Items Loaded onto Vessel Decks	Reference added to “Non-Routine Cargo Items Guidance”

9 Logistics and Cargo Handling Operations

This Section includes guidance on best practice for logistics and cargo handling operations which should be complied with by all the relevant parties involved in the course of a typical voyage to and from the offshore destinations.

9.1 Cargo Planning

9.1.1 Compliance with Legislation

When planning to load any cargo, on or under deck, on an offshore support vessel, it is the joint responsibility of Charterer, Owner, Master and Base Operator to ensure that the proposed vessel is fully fit for purpose and in compliance with all relevant requirements relating to the safe carriage of the goods or products concerned.

Compliance with relevant international legislation, together with the rules or codes of the vessel's flag state and those of the regional authorities in its present area of operations is included in this requirement.

The Charterer, Owner, Base Operator and Master should ensure that all personnel who may be involved in the loading or discharge of cargo are appropriately qualified and competent in the handling and carriage of the goods or products involved. This requirement also extends to other personnel who may be mobilised to provide any support services which might be necessary, including surveyors and other quality assurance specialists.

Whilst these responsibilities relate particularly to the carriage of dangerous goods and inflammable, noxious or otherwise hazardous liquid products, they also relate to all other cargoes carried on offshore supply vessels.

9.1.2 Notification of any Unusual Cargo Items

Where there is an intention to ship any unusual cargo items on an offshore supply vessel, the Base Operator should advise the Master in a timely manner in order that any risks associated with the shipment can be properly assessed and appropriate preparations made.

Items falling into this category are referred to in Sections 7.3.2 and 9.13 of these Guidelines.

9.1.3 Deck Space Management, Back Load Cargoes

Congestion on the cargo decks of both vessel and offshore facility can result in hazardous situations for personnel or equipment.

Except where rigorous planning of logistics support is in place or where previously agreed and confirmed in sailing instructions, it is considered good practice for a vessel to arrive at an offshore facility with approximately 10% of its useable deck clear and ready to receive initial back-load. This allows sufficient space to be cleared on the facility's deck before any cargo is taken up from the vessel. Wherever possible, this clear deck space should be contiguous.

Subject to discussion with the Master, this recommendation may be waived at the last facility at which cargo is back-loaded onto the vessel prior to its return to base when all deck space may be utilised, but only on the understanding that it will not subsequently be diverted to support another offshore location on its inward voyage.

9.2 Cargo Plans

In the course of the initial loading at its shore base, the Master should ensure that a record of the cargo loaded on board is maintained. This should show the locations of the “blocks” of cargo for each facility to be supported during the forthcoming voyage, together with number of lifts in each block and other relevant details.

Locations of any unusual cargo items should be clearly indicated.

The cargo plan may be further supported by photographs of the vessel’s deck.

There is normally a requirement for this plan to be forwarded to the Base Operator on completion of loading, who will subsequently arrange for it to be forwarded to the facilities to be supported in the course of the subsequent voyage.

The plan should be updated as the voyage progresses.

A typical deck plan is illustrated in Appendix 9-A of these Guidelines. Other examples, based on software packages exist, and may be more easily transmitted through the communications channels in use.

A table or drawing showing the contents of the vessel’s under-deck cargo tanks should also be prepared and forwarded to the Base Operator as described above.

9.3 Sailing Instructions

Prior to a vessel being dispatched on any voyage delivering cargoes to one or more offshore facilities the Base Operator or Logistics Service Provider, in conjunction with the Charterer, should furnish it with a comprehensive set of sailing instructions.

These instructions may include, but are not limited to the following:

1. Cargo Manifest which includes details of items loaded on the vessel.
2. Any specific information regarding cargoes on board, including:
    a. MSD Sheets.
    b. Particular hazards associated with any cargoes.
    c. Particular precautions relating to the care of any cargo.
    d. Dangerous Goods paperwork.
3. Routing for voyage.
4. Facilities data cards, if not already held on board.
5. Reporting requirements.
6. Any changes in contact details.
7. Any other special instructions or relevant information.

9.4 Weather Forecasts

Arrangements should be made with a reputable weather forecasting service provider, experienced in the preparation of offshore forecasts, to prepare and promulgate weather forecasts extending, where practicable, up to 5 days for the relevant locations.

Such forecasts will generally be arranged by the Charterer and should be made available to Masters of all vessels operating on its behalf.

The weather forecasting service provider may also be able to prepare more specialised information on request, including longer term forecasts and met-ocean statistical analyses, etc., if this is required for any particular purpose.

It is also the Master's responsibility to ensure that forecasts from other publicly available sources can be received on board and taken into account in voyage planning.

9.5 Dispatch of Vessels

Where forecasts received indicate prolonged periods of adverse weather at the offshore locations to be supported on a particular voyage such that it is unlikely that any of the intended sites can be worked safely, the Master and Charterer should agree that the dispatch of any vessels involved should be deferred until anticipated conditions improve.

In the event that a vessel is dispatched in such circumstances, the Master may, at his sole discretion, elect to take an indirect route to reduce the risks to the ship, its personnel and cargo, or to proceed to a sheltered location to await an improvement in conditions the offshore locations.

In this context "prolonged period" should be taken as period exceeding approximately 1 day where it is unlikely that any work could safely be undertaken at any of the relevant offshore locations in the forecasted conditions.

9.6 Potential Dropped Objects

Unsecured objects being dislodged or falling from cargo items represent a risk to personnel, equipment and the environment throughout the supply chain. At all stages in the supply chain, items should therefore be thoroughly inspected prior to transfer from one stage to the next. Potential dropped objects identified during these inspections should be removed and reported.

Objects which constitute this risk include, but are not limited to:

1. Loose tools used when servicing equipment included in or forming part of the cargo item.
2. Foreign objects in or on containers, including in fork lift pockets.
3. Ice formed when water entrained in a cargo item freezes.

When loading or discharging any deck cargo, the personnel involved should move to a safe haven well clear of the intended load path until it is safe to approach the item, or it is no longer above the vessel's deck.

Where practical and safe to do so, items on the deck should be inspected for potential dropped objects after loading and again before discharge at the offshore facility or onshore base.

Any such objects identified during these inspections should be removed, if safe to do so, and an incident report submitted through the appropriate channels. If the objects cannot be safely removed the cargo item should be quarantined pending a full assessment of the risks which may be involved in discharging it, either at the offshore facility or quayside.

9.7 Stowage and Securing of Cargoes in Containers

Failure to correctly secure cargo items shipped in containers, either open or closed, can pose serious risk to personnel and equipment, including:

- Injuries being sustained by crew members when attempting to secure the loose items.
- A change in the centre of gravity of the lift due to the movement of loose items within the container could result in its being significantly out of level.
- This may result in the loss of contents from the container.
- Handling of the load, particularly when landing, will also be made much more difficult.

The proper packing and securing of cargo within any container is therefore a safety matter of the highest importance.

Any person who has reason to believe that the correct procedures have not been followed or satisfactory arrangements installed should **"stop the job"** until remedial measures have been implemented.

It is important to note that the proper packing and securing of cargo within any container is the responsibility of the shipper and not the vessel.

9.8 Refrigerated Containers, Disconnection at Offshore Facilities

From time to time, refrigerated containers may be used to deliver provisions to offshore facilities. Such containers may have their own self-contained refrigeration unit, but more usually electrically powered units will require connection to a power supply on vessels which have been specifically installed for this purpose.

Specific check lists may relate to the carriage of such items which should be completed by the relevant personnel.

Where such containers are used, it is important that they are not isolated for significant periods since the temperature may rise to such an extent that the contents thaw and have to be condemned.

It is therefore recommended that when preparing to discharge this type of container at an offshore facility the power supply should be isolated, disconnected and removed only from those items to be delivered to that facility. The power supply may remain connected to refrigerated containers intended for other destinations.

In some circumstances it may be necessary to isolate, disconnect and remove the power supply to those containers to be delivered to an offshore facility prior to entering its safety zone.

9.9 Tubular Cargoes

9.9.1 General Guidance

General guidance relating to best practices when transporting tubular cargoes is included in Appendix 9-B attached to this document.

9.9.2 “Round Tripped” Tubular Cargoes

It is recommended that when tubular cargoes remain on the vessel for successive voyages to an offshore facility, the following practices be adopted to prevent incidents:

1. Lifting arrangements should be checked to ensure that they are correctly installed prior to loading any other similar items “on top”.

   Such checks should include:

   a. Correct leads of all parts of lifting arrangements.
   b. Presence and correct installation of securing arrangements (bulldog grips, Velcro straps, tie-wraps, etc.).
   c. Adequacy and suitability of above securing arrangements.

2. Prior to lifting any bundles from the vessel deck at the offshore facilities, a check should be made of BOTH ends of the lifting slings to ensure that they are correctly set up for the lift.

Where appropriate, a risk assessment of the discharge of such items should be undertaken and the outcomes included for discussion in the subsequent tool box talk.

9.10 Main Block Operations

Cargo items will normally be transferred between a vessel’s deck and an offshore facility using the auxiliary hoist (otherwise known as the whip line) of the latter’s crane.

From time to time, however, where the weight of the item to be transferred exceeds the capacity of the auxiliary hoist, the crane’s main hoist must be used.

Should this be necessary, an intermediate pennant of sufficient safe working load should be installed on the hook of the main block enabling personnel to connect or release the lifting rigging on the cargo item without having to approach or attempt to manoeuvre the block itself.

Where practical, 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 metres above the cargo rails at the side of the main deck, or the highest adjacent item of cargo if this extends above the cargo rail.

Any requirements to undertake operations of this nature should be advised to the vessel involved in sufficient time for the appropriate task-specific risk assessments to have been made. Operations should not commence until the vessel has confirmed that these assessments have been completed and personnel briefed as to any particular precautions to be observed.

9.11 "Cherry Picking"

“Cherry Picking" may be defined as being **"**selective discharge of cargo from within the stow". The term "cherry picking" includes:

1. Cargo lifting arrangements not being directly accessible from deck level.
2. Breaking stow from an open location with no clear and secure access/escape routes to adjacent safe havens.
3. Any requirement for personnel to use unsecured ladders or to climb on top of other cargo or ship's structure and to enter any container to connect lifting arrangements is prohibited at all times.

Masters who are asked to undertake any of the above should “stop the job”.

To eliminate the risk of "cherry picking", every effort should be made prior to commencement of loading to ascertain which, if any, cargo items are of high priority.

Vessels will be advised accordingly, and cargo should be stowed in such a manner that any high-priority items can be discharged directly on arrival at their destination.

Such cargoes are to be identified before cargo is loaded onto the vessel.

9.12 Other Potentially Hazardous Practices

The following practices may also be potentially hazardous and should be individually risk assessed:

1. Moving other cargo on deck of vessel to gain access to a particular item. As with “Cherry Picking”, this practice should be actively discouraged due to various associated risks.
2. Lifting cargo containers to deck of facility, stripping the same and returning to the vessel, with the vessel being required to remain alongside the installation throughout.

   It should be appreciated that such practices may introduce increased risks due to:

   a. Additional lifting operations, involving increased risk to personnel.
   b. Vessels having to remain close adjacent to the facility for extended periods, involving increased risk of collision.

Masters who are asked to undertake either of the above should challenge any such requests, drawing attention to the additional risks outlined above.

Furthermore, before proceeding with any of the activities referred to above, a thorough risk assessment should be undertaken and the outcomes included for discussion in any subsequent tool box talks.

Where frequent requests to support operations of this nature are received from a particular facility concerns relating to the risks involved should be raised with the OIM and the Charterer.

9.13 Unusual Cargo Items Loaded onto Vessel Decks

From time-to-time requirements may exist for unusual items to be loaded onto the deck of offshore support vessels.

Examples of such items include, but are not limited to, the following:

1. Modules or large fabricated items associated with offshore construction projects.
2. Very long items, including tubulars, flare booms, crane booms or similar, which, because of lifting geometry require the use of 2 stinger pennants on the crane hook.
3. Any items which have not been pre-slung prior to shipment.

Such items may have unusual dimensions, be unduly heavy or have high footprint loads, have unusual means of support and their transportation may have been the subject of a specific engineering assessment. In addition, connection and release of the lifting rigging may pose particular risks for personnel on the vessel.

In this context, any cargo items not carried in conventional shipping units such as containers, baskets, tanks or racks should be considered “unusual”.

The Master of the vessel proposed for the carriage of any such items should be notified of the intention to load them on his vessel sufficiently in advance for the potential risks associated with their loading, carriage and discharge to be fully assessed.

Please refer to Chapter 3 for further information relating to specific responsibilities relating to this matter.

For further information and guidance refer to “Non-Routine Cargo Items Guidance” on the GOMO website. www.g-omo.info

9.14 Tag Lines

In general, it is recommended that the use of tag lines should be avoided.

However, it is recognised that their use may be advantageous in handling some of the cargo items referred to above, and also that they are in general use in certain parts of the world.

Guidelines for their make-up and use is therefore included in Appendix 9-C.

GOMO Chapter 10

Bulk Cargo Operations

Revision History

Revision Number	Date	Section	Changes
1	December 2022	10.1 General Requirements	Bullet point 2: reworded to clarify need for vessel and bulk system to be fit for purpose
			Bullet point 3: “segregation” added
			Bullet point 4: extra bullet added to cover need for integrity checks of hose and lifting arrangement
		10.2 General Precautions	Bullet point 4: wording added to consider secondary/back up means of comms
			Bullet point 9: reference changed from “Master or Senior OOW” to “a designated member of the bridge team”
			Bullet point 13: reference to ISGOTT publication added
			Bullet point 14: reworded in respect of use of “compressed air” for clearing of hoses
			Bullet point 17: reference to floating hoses added
			Bullet point 19: wording updated to emphasise manual handling risks
		10.3.1 Vessel Responsibilities at the Facility	Extra bullet added to consider securing of hoses and diffusers where necessary
		10.7 Bulk Hose Handling Procedures & Securing arrangements	Title updated to reflect merge with previous section 10.8 on Hose Securing Arrangements
			Details on traditional hose securing method removed and reference to example good practice methods in appendix 10-C added
		10.8.1 Bulk Transfers of Common Liquids – Cargo Fuel (Marine Gas Oil)	Reference added to development of tank management plans and also MSF Marine Gas Oil guidance
		10.8.2 Bulk Transfers of Common Liquids – Potable Water	Reference added to development of tank management plans and also to MSF Pot Water Guidance
		10.9.4.1 Methanol	Reference added to the MSF / OCIMF document “The Carriage of Methanol in Bulk Onboard Offshore Vessels”
			Recommendation to consider crew training in Methanol handling added
		10.13 Tank Cleaning	Section updated and reordered to follow the natural flow of an operation

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Contents

10 Bulk Cargo Operations

10.1 General Requirements

Cargoes carried in bulk on offshore support vessels include dry products in powder form, together with various types of oil and water-based muds, base oils, brine and numerous other chemicals transported in liquid form.

Attention is drawn to Chapter 3 which emphasises, that when planning to load any cargo, including those consisting of bulk powders or liquids onto an offshore support vessel, the various parties involved have several joint responsibilities, including ensuring that:

1. The proposed vessel is fully fit for the purpose intended
2. Vessel and bulk system is fully in compliance with all relevant legislation, rules and codes relating to the carriage of the relevant goods or products. Relevant documentation such as MSDS shall be provided to vessel to assist in checking compliance
3. Appropriate procedures for the loading, segregation, carriage and discharge of the products are in place
4. Suitable integrity checks for the hose and lifting arrangement are in place and up to date
5. The personnel involved have relevant experience and competencies

Bulk cargo transfers are potentially hazardous operations and must be done in a controlled manner.

10.2 General Precautions

In undertaking bulk cargo operations, the following precautions should be observed:

1. The pressure ratings of all components of the transfer system should be verified to ensure that they are appropriate for the proposed operation.
2. Prior to commencement, agreement shall be reached between all relevant parties, including vessel, base, facility or roadside tanker regarding the pressure rating to avoid overpressure.
3. The protocols for control of the transfer operation are to be agreed by all parties involved.
4. Communications arrangements shall be agreed and tested prior to the commencement of the operation and at frequent intervals as it proceeds. Means of a secondary/back up communications method shall be discussed.
5. If communications are lost, “Stop the Job”
6. Shipper and receiver should confirm quantities to be transferred and subsequently monitor at regular intervals.
7. Shipper and receiver shall agree on rates of delivery and densities of cargo being transferred.
8. Relevant personnel must be readily available and nearby throughout transfer operations.
9. At facility, a designated member of the bridge team must ensure they can see bulk hose(s) at all times and not be distracted from these. Particular attention should be paid during hydrocarbon transfers to ensure that proper consideration is given of potential hazards when carrying out concurrent cargo operations.

10. Each party shall give sufficient warning prior to changing over tanks and communicate when changes have occurred.
11. **Do not** close valves against a cargo pump
12. If, at any point, vessel Master, shipper, OIM or any other person has concerns relating to the safety of the transfer operation, it must be stopped.
13. Unregulated compressed air should not be used to clear any bulk hoses back to the vessel as this may damage tanks. Refer to ISGOTT for further information.
14. The use of regulated compressed air to clear hoses used for the transfer of any hydrocarbon-based products should be fully risk assessed by all parties involved where the flashpoint of the product is less than 60°C.
15. Do not transfer any other liquids using potable water hoses.
16. Before use, flush potable water lines through to clear any residues.
17. Hoses must remain afloat at all times through use of sufficient flotation devices or floating hoses.
18. Use of self-sealing weak link couplings in the mid-section of the hose string is recommended.
19. The number of reducers and connections should be kept to a minimum to avoid unnecessary weak points and ease manual handling at the hose end.
20. The hose from the facility should not be connected to the vessel until both parties have agreed that all preparations have been completed and that the transfer can commence immediately after the connection has been satisfactorily completed.

10.3 Bulk Operations in Port & at Facility

Flow charts illustrating the processes involved in handling of bulk cargoes both in port and at the offshore facility are included in Appendix 10-A.

Particular responsibilities associated with such operations are described below.

A check list which should be completed prior to commencing any transfers of bulk cargoes is included in Appendix 10-B.

10.3.1 Vessel Responsibilities at the Facility

Before offloading bulk cargo, confirm the following details with facility:

1. Communications protocols have been agreed and, in particular, how calls to “STOP” will be managed.
2. Quantity of bulk to be offloaded.
3. That the hoses and connections, colour codes and dimensions all correct.
4. That the rigged hose lengths are adequate.
5. Procedures for venting and blowing through hoses.
6. The facility is ready to receive cargo; all valves and vents are open and correct tanks lined up.
7. Emergency shut down procedures are in place and the crew are familiar with these.

Ensure that:

1. All pollution prevention equipment is in place, as per SMPEP.
2. All manifold valves are in good condition.
3. The person in charge cannot or will not be distracted from the operation.
4. Facility under-deck lighting is adequate.
5. Dry bulk vent line positions are identified.
6. Hoses and diffusers are secured where necessary.
7. Hose and connection(s) are observed throughout transfer operations

The Master or delegate shall submit the following to the designated contact person:

1. All receipts, where applicable, including meter readings, for cargoes transferred.
2. Any other relevant documentation and information.

10.3.2 Facility Responsibilities

Ensure that:

1. Communications protocols have been agreed and, in particular, party whose "STOP" it is.
2. Hoses, manifolds, and valves are visually inspected, maintained and replaced as required in accordance with the planned maintenance system.
3. Slings and lifting points are visually checked and replaced as required.
4. Hoses are lifted by a certified wire strop on a certified hook eye fitting.
5. Under-deck lighting adequately illuminates the transfer hose and vessel.
6. Appropriate flotation systems are intact and in place.

10.4 Preparations Relating to Transfer of Dry Bulk Materials

The following recommendations are included to supplement those in the flow-charts included in Appendix 10-A.

It is recommended that procedures should be adopted as follows in addition to the use of the Transfer Checklist at appendix 10-B:

1. Prior to confirming that a vessel is ready to transfer any dry bulk cargoes, it should be verified that all on-board preparations have been completed.

   This includes a requirement to ensure that, where relevant, all elements of the system have been vented to atmospheric pressure.
2. When transferring dry bulk cargoes to or from vessels, personnel responsible for delivering the product should confirm that personnel responsible for receiving it have completed all relevant preparations.

   Assumptions that preparations have been completed can be dangerous and must be avoided. Relevant check lists shall be completed as required by the parties involved.
3. When transferring dry bulk cargoes to or from vessels, care should be taken when deciding the sequence and manner in which the various valves are opened to avoid the risk of inadvertently over-pressurising any elements of the system.

4. It is important to remember that the handling of dry bulk materials involves systems containing large volumes of pressurised air. Such systems contain considerable stored energy and the potential for serious personal injury in the event of failure is high.
5. All personnel involved in such operations must therefore comply with all relevant procedures and to ensure that all checks have been satisfactorily completed prior to confirming their readiness to deliver or receive the product.

10.5 Hose Usage

Appendix 10-C contains general guidelines regarding the usage and care of offshore bulk hoses.

10.6 Hose Markings & Connections

Appendix 10-E contains information relating to hose marking, usage and connections.

10.7 Bulk Hose Handling Procedures & Securing Arrangements

A safe system of handling bulk hoses at the offshore facility should be developed to address and minimise the risks associated with bulk hose operations. This should specifically address the risks posed to vessel crew in handling suspended loads.

Any arrangements which reduce or avoid personnel exposure to suspended hoses should be investigated. Two such examples of hose handling procedures are included at Appendix 10-C.

The “Sling and Pin” and “Over Rail” methods described in appendix 10-C require only minor modifications on the vessel. These must be assessed in conjunction with the vessel to assess the safest method for the vessel configuration.

Vessel crews should be reminded that, whenever possible, hose couplings should avoid contact with the ship’s structure. The integrity of the couplings should be monitored by visual inspection of the painted line on the couplings, where applied.

In marginal weather, increased awareness is required by the vessel to avoid over running the hose, especially if deck cargo is also being worked. In such circumstances, consideration should therefore be given to carrying out bulk hose operations on their own.

10.8 Bulk Transfers of Common Liquids

10.8.1 Cargo Fuel (Marine Gas Oil)

Establish a sampling and receipting procedure when transferring fuel.

Samples must be taken in accordance with MARPOL Annex VI and will normally suffice for these operations. However, in some circumstances, more rigorous sampling procedures may be required. Any such requirements should be included in the Master’s sailing instructions and should always be observed.

The duration that fuel is stored in tanks should be minimised to avoid build-up of condensation, which can lead to microbial growth. Each vessel is recommended to have a tank management plan to addresses potential build-up of any water and particles, with procedures in place to keep these as low as reasonably practicable. Further guidance is available from documents such as the Marine Safety Forums “Delivering Quality Bulk Marine Gasoil to Offshore Installations”.

10.8.2 Potable Water

Storage tanks used for transporting potable water must be dedicated solely for that purpose. The duration that water is stored in tanks should be minimised to avoid stagnation. Details of how this is controlled shall be captured in a tank management plan.

Specific national or charterer's requirements may apply to the carriage, storage and transfer of potable water.

An example good practice document "Delivering Quality Potable Water to Offshore Installations" can be found on the Marine Safety Forum website.

The Charterer, Owner and Master should ensure that any such requirements are understood and followed.

10.9 Bulk Transfers of Special Products

Special care must be taken to follow correct procedures when transferring special products which include but are not limited to methanol and zinc bromide.

Appropriate risk management procedures should be in place when transferring special products. Reference should be made to Chapter 4 of this document, with particular attention being given to PPE required for personnel involved.

When transferring these products, the following should be observed:

10.9.1 Shipper

1. Provide full details of products being shipped, including details of all handling precautions to be taken.
2. Staff shall be on site throughout to advise on pumping, handling, earthing and discharge of tanks.
3. Ensure appropriate firefighting equipment is available, where relevant.

10.9.2 Operating Company & Base Operator

1. Nominate berth after liaising with harbour authority, fire brigade and harbour police or security.
2. Ensure sufficient cooling or drenching water is available.
3. Cordon-off area, with signs posted to indicate a hazardous area.

10.9.3 Vessel Master

1. Complete a ship to shore safety check with shipper.
2. Authorise loading.
3. If required, ensure a permit to work is in place before any loading operations can commence.
4. Ensure vessel's restricted zone is clear, fire hoses are rigged and SMPEP equipment is ready for use before loading commences.

10.9.4 Characteristics of Some Special Liquid Products

Whilst the shipper must provide full details of any products being shipped, characteristics of some of the more common chemicals which may be shipped in bulk liquid form are included below.

10.9.4.1. *Methanol*

Particular characteristics of this product are as follows:

1. Burns with no visible flame in daylight conditions.
2. Readily or completely miscible with water.
3. Is a class 3 substance with noticeable odour.
4. Is highly flammable, with a flashpoint below 23 °C.
5. Can evaporate quickly.
6. Has heavier than air vapour that may be invisible and disperses over the ground.
7. Can form an explosive mixture with air, particularly in empty unclean offshore containers.
8. Experiences pressure increase on heating, with the risk of bursting followed by explosion.
9. Is very toxic, and possibly fatal, if swallowed or absorbed through skin. Symptoms may not appear for several hours.
10. Can cause significant irritation of the eyes.

The following specific precautions should be observed when transferring this product:

1. Ensure that integrity of system is intact, and that all relevant certification is valid and in-date.
2. During bulk methanol transfer, smoking and the use of ignition sources are prohibited.
3. During electrical storms (lightning) operations should be stopped.
4. Ensure free deck space around bulk loading / discharge stations so that coverage of foam monitors is not obstructed.
5. No other operations to be undertaken when handling this product.

It is recommended that crew are trained and familiar in Methanol handling prior to operations commencing.

Further guidance on the safe loading, carriage and discharge of methanol by offshore support vessels is available in the document “The Carriage of Methanol in Bulk Onboard Offshore Vessels” available on the Marine Safety Forum website.

10.9.4.2. *Zinc Bromide*

Zinc Bromide is a highly corrosive and environmentally contaminating product.

Due to its corrosive nature, protection against injury from exposure is essential.

Information provided by the shipper should be used when undertaking risk assessments involving the carriage of this product to determine the appropriate level of PPE which should be used.

10.10 Attendance of Facility Personnel During Bulk Transfer Operations

Whilst vessels are connected to offshore facilities by hoses for the purpose of delivering bulk commodities to facilities, it is important that, in the event of a change in the operating circumstances developing, personnel on the facility remain available at all times to disconnect the hose(s) at short notice.

Failure to disconnect the hoses in a timely manner may result in significant risk of injury to personnel and/or damage to assets or the environment.

The facility crane operator and deck crew shall therefore remain readily available, contactable, and nearby throughout transfer operations.

If any such personnel are required to leave the vicinity of operations for any reason, the vessel should be immediately advised. The vessel bridge team, in conjunction with the facility manager, should assess current and anticipated operational risks. It is the Master's decision as to whether the vessel remains connected to the facility pending restoration of the required level of support.

10.11 Back-Loaded Liquid Bulk Cargoes

Please refer to Appendix 10-F for further details.

10.12 Transfer of Noxious Liquids During Hours of Darkness

It is recognised that it may be necessary to transfer hydrocarbon or other noxious liquids during the hours of darkness, particularly in higher latitudes in the winter months.

For clarity, these Guidelines do not advocate that such operations should be curtailed or restricted but seek to identify the additional risks involved in such transfers and to make appropriate recommendations to manage such risks.

It is recognised, for example, that leaks are most likely to occur in the early phases of any transfer operation as connections become pressurised. Once all aspects of the transfer operation have been stabilised, leaks are less likely to occur.

It is therefore recommended that, where practical, the following practices are adopted in relation to the bulk transfer of hydrocarbons (or other recognised marine pollutants) during the hours of darkness:

1. Adequate artificial illumination of the operational areas on the facility, the vessel and the water between them should be provided.
2. Additional high-visibility and / or reflective panels on the hoses (or their buoyancy elements) are recommended.
3. All preparations for the transfer to completed in daylight, where practical.
4. Careful checks to be made for leaks, etc., on vessel, facility and connecting hose as transfer commences.
5. Transfer may continue into the hours of darkness, provided that the entire area and associated equipment is adequately illuminated to an acceptable standard.

   In the event that the transfer continues, a careful watch of the connections and hose should be maintained throughout.

   It is recommended that hydrocarbons or other noxious products should not be transferred simultaneously in these circumstances.

6. On completion of the transfer, extra care should be taken when breaking the connection and returning the hose to ensure that the risk of spillage is minimised.

General precautions to be observed regarding safety of personnel working on deck during the hours of darkness should continue to be implemented.

10.13 Tank Cleaning

10.13.1 Preparations

10.13.1.1. ***Check List***

A typical example of a check list which should be completed prior to the commencement of tank cleaning operations is included at Appendix 10-G.

10.13.1.2. ***Simultaneous Operations (SIMOPS)***

Where simultaneous tank cleaning and other operations, i.e., cargo operations, are undertaken, suitable safety precautions must be in place. Interfaces between vessel's officers, tank cleaning and quay supervisors must be kept open and active during the tank cleaning operation.

10.13.1.3. ***Risk Assessment***

The Tank Cleaner Supervisor must demonstrate to the Master or delegate that they understand the principles and have undertaken a full and comprehensive risk assessment relevant to the intended task, including all mitigative and preventative measures.

The outcomes of the risk assessment need to be addressed in the subsequent toolbox talk with all risks controlled prior to commencing the task.

10.13.1.4. ***Emergency Response & Escape***

The Tank Cleaning Supervisor must demonstrate to the Master or delegate that the emergency response and escape arrangements identified in the risk assessment are in place and available, if required.

Equipment used for emergency escape must be tested, certified, and fit for the intended purpose.

10.13.1.5. ***Permit to Work***

Prior to all tank cleaning operations, a permit to work must be opened to cover (but not be limited to) all work activities associated with the tank cleaning and not just limited to tank entry, i.e., setting up equipment, line flushing, scaffolding etc.

10.13.1.6. ***Isolations***

Isolations to be agreed and in place prior to commencement of tank cleaning. Refer to Appendix 10-G for more information.

10.13.1.7. *Toolbox Talk*

A detailed toolbox talk must be conducted with all key personnel prior to commencement of tank cleaning operations. Refer to Appendix 10-G for more information.

10.13.1.8. *Initial Atmosphere Testing & Tank Entry*

All tanks should be considered as “dangerous spaces” which, if appropriate precautions are not taken, would represent a serious risk to personnel entering them.

The Tank Cleaning Supervisor must demonstrate to the Master that the atmosphere in the tank has been tested to prove that it does not represent a threat to any personnel who may be required to enter the space. They must also be able to demonstrate that any equipment utilised for this purpose has been calibrated & bump tested and used in accordance with the manufacturer’s instructions.

The results of the atmosphere testing should be recorded on the permit or other agreed document.

10.13.1.9. *Personal Protective Equipment & Respiratory Protective Equipment*

Personnel working in the tank shall wear the appropriate PPE as identified in the risk assessment, COSHH or equivalent assessment and MSDS.

All PPE must be pre-inspected prior to use and be correctly fitted for the user and certified were applicable.

10.13.1.10. *Communications*

Communication system between all personnel within tank and at access must be agreed, tested prior to commencement of cleaning activities, and checked at frequent intervals until all persons have exited the tank on completion of operations.

A standby person at each tank will almost always be required. This person should be competent and trained to take the necessary action in the event of an emergency.

Effective means of ship/ship and ship/shore communication shall be established and maintained throughout the tank cleaning operation.

10.13.2 Operations

10.13.2.1. *Control*

Although the tank cleaning operation is conducted by a contractor under control of the contractor’s supervisor, the safety of the operation remains the responsibility of the vessel Master. The operation should be continuously monitored by a designated responsible vessel person, who should stop any operation that they consider to be unsafe.

10.13.2.2. *Continuous Atmosphere Testing*

Continuous tank atmosphere testing by competent personnel from both the vessel and tank-cleaning contractor must be undertaken both prior to commencement of cleaning activities and checked at frequent intervals until all persons have exited the tank on completion of operations. Equipment utilised to conduct these tests of the tank atmosphere must be used by a user competent in the use and in accordance with its manufacturer's instructions.

The results of the atmosphere testing should be recorded on the permit or other agreed document.

10.13.2.3. *Shift Handovers*

Handover between shifts of vessels and tank-cleaning personnel must be carefully controlled to ensure continuity and a further toolbox talk must be conducted.

10.13.3 Completion of Tank Cleaning

On completion of tank cleaning operations, the vessel Master or delegate must carry out an inspection, together with the tank cleaning contractor supervisor and/or client surveyor to ensure that the tanks have been cleaned to the required standard and lines and pumps have been thoroughly flushed.

The various commonly accepted tank cleaning standards are described in Appendix 10-H. The tank inspection should confirm that the tanks have been cleaned to the appropriate standard.

On completion of tank cleaning activity all equipment and consumables to be removed from the vessel and permits closed out.

GOMO Chapter 11

Anchor Handling & MOU Moving

Revision History

Revision Number	Date	Section	Changes
2	May 2024	Full document	References to app "11-B" all changed to "11-A". 11-A was previously *"Guidelines for the content of MOU moving and Anchor Handling Workscope"* which has been merged into this main Chapter.
		11.1 Introduction	Content updated
		11.1.1 Definitions & Abbreviations	Add IMR Vessel, PSV, SJA, Shall, Should & May
		11.1.1 Definitions & Abbreviations	Content updated
		11.1.2 Clear deck	New section added
		11.2 Jointly Agreed Procedures and Responsibilities	Content updated
		11.2.1 Operating Company	Content updated
		11.2.2 MOU Management Company	Content updated, add system components capabilities & presentation of work specification.
		11..2.3 OIM	Content updated
		11.2.4 Vessel Management Company	Content updated. Winch datasheet availability information added.
		11.2.5 Vessel Master	Content updated. Line drawings information, Winch datasheet availability information added & ICCP use information added.
		11.2.6 Offshore Marine Representative	Content updated
		11.2.7 ROV Supervisor	Content updated. ROV availability information added
		11.2.8 Equipment Supplier	Content updated
		11.2.9 Survey & Positioning Supplier	Content updated. Equipment status added
		11.3 Preparations	Content updated
		11.3.1 Contents of Work Specification	Content updated
		11.3.2 Pre-Operation meeting onshore	Content updated
		11.3.2.1 Participants	Content updated
		11.3.2.2 Meeting Agenda	Content updated. Review of operation experience transfer added
		11.3.3 Weather Forecast	Content updated
		11.3.4.1 Towing & Anchor handling equipment register	Towing and Anchorhandling register Note added.
		11.3.4.2 Inspection of equipment	Content updated

		11.3.4.3 Preparations for operation	Content updated. Risk for sea on deck information added
		11.3.5.1 Mooring winches, towing gear & anchor handling equipment	1. Equipment maintenance and 2. Avoid usage of Alloy ferrule termination usage information added
		11.3.5.2 Inspection & testing of equipment	Contend updated. Valid calibration on winch information added
		11.4.1.1 Initial Notification	Content updated
		11.4.1.2 Briefing of Vessels & MOU	Content updated. Representatives from mooring supplier added
		11.4.1.4 Meeting Agenda	Content updated
		11.4.1.5 Mobilization and demobilization of vessel	Heading changed
		11.4.1.5 Mobilization and demobilization of vessel	Content updated. 5. Cleaning of equipment information added
		11.4.2 Notification	Deleted
		11.4.2 Pre-Lay Operation	**Previous 11.4.3 Content updated**
		11.4.2.1 Deployment	Content updated
		11.4.2.2 Testing Anchor Holding Capacity	Heading changed. Content updated
		11.4.2.3 Dual Vessel Operation	Content updated
		11.4.2.4 ROV Operations	Content updated
		11.4.3 MOU Operations	**Previous 11.4.4 Content updated**
		11.4.4 Exchange of information During Anchor Handling Operations	**Previous 11.4.5 Content updated**. Observations of abnormal or unexpected loads information added.
		11.4.4.1 SIMOPS	Content updated. Note: Simultaneously marine operations information added.
		11.4.4.2 Monitor Marine Traffic	Previous 11.4.5.2 Monitor Marine Traffic deleted
		11.4.5 Recovery of Anchor Lines	**Previous 11.4.6 Content updated**
		11.4.5.1 Recovery to deck	Content updated
		11.5.1 Planning of Tow	Heading changed; Content updated
		11.5.2 Weather Forecasting	Deleted, content covered in 11.3.3 Preparations for operation
		11.5.2 Documents & Records	**Previous 11.5.3**
		11.5.3 Tow Procedure	**Previous 11.5.3, content updated**
		11.5.4 Escort Vessels	**Previous 11.5.5**
		11.5.5 Emergency Tow Equipment	**Previous 11.5.6, content updated**
		Previous 11.5.6 Unmanned Tow	**Previous 11.5.7**
		Previous 11.5.7 Exchange of operations During Towing Operations	**Previous 11.5.8**

		Previous 11.5.8 Record of Towing Operations	**Previous 11.5.9**
		11.6 Heading Control Operations	Content updated
		11.7 Communications	Content updated
		11.8 Vessel Stability	Content updated
		11.9 Guidance on Bollard	Content updated
		11.10 Winch Operation: Emergency release & Emergency Stop	Content updated
		11.11.1 Considerations for Deeper Water	Content updated
		11.11.2 Considerations for Shallow Water	New section added
		11.11.3 Special Operations – Fixed Floating Installations	New Section Added
		11.12 Reference of Good Practice	Updated for new sections in App-A

Contents

11 Anchor Handling & MOU Moving

11.1 Introduction

Anchor Handling and MOU Moving operations are among the most hazardous and demanding operations in the offshore industry. High tensions, combined with heavy equipment, requires good planning, close attention during operation, good communication and coordination, combined with qualified and trained personnel to carry out the various types of anchor handling operations.

All personnel should understand their joint responsibilities as defined in Section 11.2 below.

Safety of Crew, Environment, MOU and Vessel is the primary concern.

The guidance in this section applies equally to all types of MOUs.

11.1.1 Definitions & Abbreviations

AH	Anchor Handling
AHV	Anchor Handling Vessel
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea
DP	Dynamic Positioning
HIRA	Hazard Identification & Risk Assessment
HSE	Health, Safety and Environment
IMR Vessel	Inspection, Maintenance and Repair
ICCP	Impressed Current Cathodic Protection
May	An optional action
MBL	Minimum Breaking Load
MOC	Management of Change
MODU	Mobile Offshore Drilling Units
MOU	Mobile Offshore Unit
OIM	Offshore Installation Manager
Operating Company	In the context of this Chapter, Operating Company means the company that has overall responsible for the operation and acting as charterer of the MOU subject for the operation.
PSV	Platform Supply Vessel
QC	Quality Control
R/M	Risk Management

	Is the identification, evaluation, and prioritization of risk followed by coordinated and economical application of resources to minimize, monitor, and control the probability or impact of unfortunate events.
ROV	Remote Operated Vehicle
Shall	A mandatory action
Should	Refers to good practice and highly recommended action
SIMOPS	Simultaneous Operations
SJA	Safe Job Analysis (part of the Risk Management)
SWL	Safe Work Load
TBT	Toolbox Talk (part of the Risk Management)
Towing-gog	A fixed block or chock located in the centre of a tug-vessel where the towing wire runs through.
USBL	Ultra-short Baseline

11.1.2 Clear Deck

All vessels engaged in Anchor Handling operations shall have a clearly defined clear deck policy.

Clear deck policy shall assure that the risk of exposure to personnel is reduce to a minimum during anchor handling operations.

The Master is responsible for assuring that this philosophy is implemented and adhered to.

Note:

It is recommended to install a remote indication (e.g. Clear Deck warning light) close to all exits from accommodation to deck, that can be activated from bridge when clear deck is active.

11.2 Jointly Agreed Procedures & Responsibilities

The parties involved shall agree who will be responsible for the preparation of the Work Specification.

All parties shall be jointly responsible for ensuring adequate planning, risk management, documentation and execution, including contingencies.

Focus on sustainable operations during planning and execution of any Marine Operations should be taken into account.

All parties should agree on the risk management procedures to be observed and shall be jointly responsible for ensuring that this is complied with throughout the entire operation.

A MOC process should be included in the risk management procedures. Major deviation from the Work Specification should be permitted in accordance with this agreed management of change.

Reference should be made to Chapter 4 relating to the risk management process.

A Work Specification that covers the entire operation shall be prepared. The Work Specification should be in the English language, unless otherwise agreed.

Identify who shall have the responsibility and authority to specify necessary equipment in accordance with the Work Specification.

Ensure that satisfactory anchoring/mooring analyses have been prepared in compliance with national/industry requirements, where relevant. Organise the pre-work specification meeting, to include risk management, if required.

Prior to commencement of the Marine Operation, confirmation shall be given by relevant parties that the work specification is reviewed and understood.

Communicate any changes of the work specification to all the parties involved.

11.2.1 Operating Company

The Operator shall have the overall responsibility of the Operator’s respective operations.

Ensure personnel engaged in the operation shall have the required qualification and competence to meet the responsibility given for each role.

- Obtain an overview of infrastructure on the seabed, sea bottom conditions and any obstructions.
- Notify the relevant installation in the vicinity with regards to emergency preparedness or other matter.
- Notify the relevant authorities about the planned operations in advance or according to requirements.
- Shall specify minimum horizontal and vertical distances to infrastructure, pipelines and vulnerable natural seabed resources on the seabed for anchors and anchor lines.
- Ensure adequate planning (including contingencies) and risk assessment of the entire anchor handling and towing operation.
- Provide weather forecasts.
- Provide the vessel management company and vessels with details of maximum calculated loads for the operation.
- Send notification to all involved parties of the work specification, risk management, load list, mobilisation plans, contingency plans and single point of contact in sufficient time.
- Coordinate HSEQ briefing and MOU management company for presentation of work specification.
- Verify that the mooring system is installed in accordance with the planned operation.

11.2.2 MOU Management Company

- Notify authorities of MOU departure and arrival in accordance with local requirements.
- Ensure the MOU is adequately manned by qualified and competent personnel, as required in the work specification, taking into account hours of rest requirements.
- Ensure the mooring system components have the required capabilities as specified in the mooring analysis and certification validity for the required period.

- Ensure that mooring analysis and work specification for both pre-lay and MOU move is prepared and approved in accordance with applicable regulations prior to commencement of operation.
- Exemptions from the already agreed work specifications shall be approved by MOU management company (e.g., anchor installation, anchors positions, test tension, line length during installation).
- Presentation of work specification during brief for the Marine Operation.

11.2.3 OIM

- Has the overall responsibility and the authority for the HSEQ management of the facility and personnel as per statutory requirements and MOU management company's policies.
- Has the overall responsibility for all activities inside the MOU safety zone, including the mooring system connected to the MOU.
- In relation to the movement of the MOU, Operational responsibility may be delegated to a suitably qualified person such as the Tow Master who should also consult with vessel and Masters in the process. If operational responsibility is delegated to a Tow Master, the OIM still has responsibility for the entire operation.
- Decide as to when it is safe and practicable to commence operations within the limitations of the MOU operating manual, having consulted with the Vessels Master.
- Ensure that a meeting is held with all relevant personnel on board prior to operation, minutes are documented in accordance with Company policy and an appropriate entry made in the deck logbook.
- Ensure procedures are in place to monitor each vessel's operation, and to monitor the ongoing status of the operation.
- Ensure adequate communications between all involved parties.
- Ensure that all relevant authorities are kept informed of the operation, as required.
- Liaise and communicate with the Operating Company representative on all matters concerned with the operation and any deviation from the agreed work specification.

11.2.4 Vessel Management Company

Responsibilities of the vessel management company include, but are not limited to:

- Ensure that the vessels are in good operational order and in compliance with relevant legislation and charter party requirements.
- Ensure that the vessels are manned by qualified and competent personnel for the intended operation.
- Verify the vessel's stability calculations prior to commencement of operations and confirm result of such verification by e-mail.
- Ensure that a ship-specific anchor handling manual, or procedures are included in each vessel's safety management system and that such documents are available on board.

- Ensure the AH winch manufacturer's datasheets and AH winch configuration, dynamic response(s), including limitations these may pose in particular operations and configurations, are made available to vessel crew, and implemented in onboard working procedures.
- Ensure clear-deck policy is present.
- Confirm that vessel is fit for purpose for the work described in the work specification.
- Ensure that lessons learned within the industry and other vessels in the company are distributed to the vessel Masters.

11.2.5 Vessel Master

The prime responsibility of the Master of any vessel is to safeguard the safety of crew, equipment on board and environment at all times. The Master shall stop operations that may put personnel, vessel or environment at risk.

Other responsibilities include, but are not limited to:

- Ensure that the manning on board is sufficient.
- Ensure that the vessel's own AH equipment on board is in good condition and certificated as required and meets the requirements of the Work Specification.
- Ensure ID registration of deployed equipment is performed and in accordance with documentation from equipment supplier.
- Ensure defects or non-conformities to the anchor/mooring equipment found during the operation are to be reported in accordance with the Work Specification.
- Ensure line drawings are prepared and sent to OIM and Offshore Marine Representative for verification.
- Report to the OIM on the MOU any accident, incident or vessel deficiency/limitation occurring during the operation.
- Ensure that a vessel Risk Management Process has been performed and recorded, in accordance with the specific work specification.
- Ensure that the personnel who will be involved in the operation have been adequately briefed as to the nature of their duties, responsibilities and authorities.
- Ensure that the stability of the ship is calculated and recorded, for each step in the work specification, including worst-case expected dynamic loads.
- Ensure the winch manufacturer's datasheet and AH winch configuration limitations are taken into account for the planned operations with respect to dynamic loads when determining the max load imposed on vessel.
- Ensure that MOC procedures are complied with in case of changes to the Work Specification, including risk management for the changes.
- Prior to commencement of tow, a detailed passage plan shall be prepared and sent to the OIM and Offshore Marine Representative for review and approval.
- Ensure that vessel Impressed Current Cathodic Protection (ICCP) is turned off 6 hours prior to operation start, according to appendix 11-A, chapter 9, if this is a pre-requisite for chain handling in the given operation. Ref. Appendix 11-A [9.2].

11.2.6 Offshore Marine Representative

- Present HSEQ briefs, participate in safety meetings and ensure compliance with operator's requirements and policies during operations.
- Coordinate all marine activities throughout the entire operation.
- Liaise between operator and all involved parties during operations.
- Be capable of supervising involved parties during operations when required.
- Ensure mooring is conducted in compliance with the work specification and mooring analysis, verify line length, final anchor position and, if applicable, anchor penetration during prelay.
- Responsible for providing required reports.
- Authorized to approve minor exemptions to work specification previously agreed.
- Verify stability calculations received from vessel's Master prior to commencement of operation.
- Execute debrief on completion of operation in order to capture lessons learnt for implementation during future operations.

11.2.7 ROV Supervisor

- The ROV Supervisor is responsible for the safety of the ROV and ROV personnel during operations, and reports to vessel Master.
- The ROV shall be available for operation throughout the entire marine operation and perform the operation in accordance with the work description.
- Ensure that ROV crew is familiar with the work specification.
- Ensure the relevant video recordings are safely stored and delivered to the Client.

11.2.8 Equipment Supplier

- Verify that all equipment delivered is loaded according to the requirements of the work specification.
- Ensure that all supplied equipment is certified and suitable for use.
- Supervise correct handling of equipment during mobilisation & demobilisation of vessel, in accordance with mobilisation base specific procedures.
- Supply equipment guidance for correct equipment handling.
- Prepare and send equipment manifests and load lists.
- Record and report any damage to equipment during operations.

11.2.9 Survey & Positioning Supplier

- Ensuring that positioning equipment is in good operational order before operation commence, (calibrated and tested).
- Manned by qualified and competent personnel for the intended operation.

11.3 Preparations

A detailed written Work Specification should provide all necessary detailed information for the proposed operations.

11.3.1 Contents of Work Specification

The Work Specification should include, but not be limited to, the following information:

1. Identification of key roles and responsibilities, including contact details.
2. Define HSEQ expectations and reporting requirements by all parties. (Reference should be made to GOMO Chapter 4 relating to risk management process.)
3. General Information, e.g. weather criteria and time estimate for each phase in the operation, etc.
4. MOU particulars.
5. Field Information.
6. Mobilization & demobilization port(s) and Equipment Lists for AH Equipment.
7. Vessel Requirement and Capabilities.
8. MOC process.
9. Identify and set trigger and hold points which determine operation start / stop / hold or Risk Assessment.
10. Clearly show the order of work and method to be utilised.
11. ROV survey requirements, where applicable.
12. Maximum calculated loads and dynamic tensions likely to be experienced by any vessel during the course of operations.
13. Detailed drawings of the following:
    a. Anchor pattern.
    b. Each stage of operation
    c. Detailed make up of mooring lines.
    d. Catenary calculations for relevant stages of the operation.
14. Proposed route plan for towing.
15. Manufacture's recommendations for use and handling of mooring equipment.

11.3.2 Pre-Operation Meeting Onshore

The pre-operational meeting onshore should be held well in advance of the commencement of operations. A Preliminary Work Specification for the MOU move should be available and reviewed by all relevant parties.

The Operating company is responsible for coordinating the meeting.

Minutes and any actions from the meeting should be distributed to participating parties.

All Actions shall be closed prior to commencement of operation.

11.3.2.1. *Participants*

Appropriate personnel nominated from Rig Owner and Operation company should be made available for this meeting.

11.3.2.2. *Meeting Agenda*

Pre-Operational meeting should include, but not be limited to:

1. Confirmation of responsibilities and authorities.
2. Review Work Specification.
3. Review of Risk assessments for operation and transfer of experience.
4. Confirmation that onshore pre-move HIRA has been completed, with outcomes available for discussion during the meeting.

   Note: If this is not the case, the HIRA should be included on the agenda.
5. Pre-lay of anchors, if applicable.
6. Vessel requirements; manning, quantity and technical specifications.
7. Manning on MOU.
8. Seabed and soil conditions, with special attention towards vulnerable natural seabed resources and infrastructure.
9. Expected commencement date of the operation.

11.3.3 Weather Forecast

Weather forecasts should be obtained from two reputable weather forecasters.

Intervals of update should be described in the work specification.

11.3.4 Vessel Preparation

11.3.4.1. *Towing & Anchor Handling Equipment Register*

In addition to maintaining its own statutory requirements, it is recommended that a vessel-specific towing and anchor handling equipment register is maintained to record the status of certification, maintenance, and condition of equipment.

The register should include, but not be limited to, all wires, chains, joining links and segments that might be used during anchor handling- and towing operations. These records should always be maintained and kept up to date.

Note: Towing and Anchorhandling register should be separate from the lifting gear register.

11.3.4.2. *Inspection of Equipment*

All anchor handling and towing equipment should be inspected after each use; in particular, wires used in the course of operations should be regularly inspected. Records of inspection should be included in the register with actual condition.

11.3.4.3. ***Preparations for Operation***

During any operation, as a minimum, the following should be in place:

1. All equipment shall be maintained and operated in accordance with manufacturer's instructions or as specified in vessel planned maintenance system.
2. Alloy ferrule terminations are not considered suitable and should not be used.

Note: Care must be taken when opening wire coils, particularly pennant wires, as coils springing open following release of securing bands may cause injury. Turntables should be used.

Vessel crew should ensure that stowage of anchors and equipment shall be secured in the course of operations and alert to the risk of movement when securing arrangements are released.

Certain types of anchors are inherently unstable and may fall over due to vessel movement.

Vessel crew should be aware of the risk for sea on deck, which could potentially cause crew and/or equipment to move uncontrolled on deck. Before sending crew on deck, evaluation should be made of, but not limited to, sea state, sea period, stability, freeboard, heading, etc.

11.3.5 MOU Preparation

11.3.5.1. ***Mooring Winches, Towing Gear & Anchor Handling Equipment***

Mooring winches, Towing gear and Anchor Handling Equipment Register should be kept updated in accordance with the company's procedure.

1. All equipment shall be maintained and operated in accordance with manufacturer's instructions or as specified in the planned maintenance system.
2. Alloy ferrule terminations are not considered suitable and should not be used.

In addition to maintaining its own statutory requirement, it is recommended that the MOU's equipment register is maintained to record the status of certification, maintenance, and condition of equipment.

11.3.5.2. ***Inspection & Testing of Equipment***

All anchor handling and towing equipment should be inspected after each use. In particularly, wires used in the course of operations should be inspected regularly. Records of inspection should be included in the register with actual condition.

Mooring winches should be tested.

Verification should be made that mooring winch readings are correct (line payout and tension).

Winch load cells shall have valid calibration.

All wire slings and correct adaptors should be connected to PCPs.

Testing of emergency release, including deluge system, should be performed on completion of the mooring operation.

11.4 Execution Phase

11.4.1 Mobilisation & Demobilisation

11.4.1.1. *Initial Notification*

Prior to Mobilization, an initial notification shall be sent out.

As a minimum, this shall contain, but not be limited to:

- Rig status, if applicable.
- Work Specification.
- Loading list.
- Details of mobilization and demobilization port(s) including on-hire time and ETA
- Expected duration of work.
- Any additional personnel signing on for the operation.
- Vessel details and contact information.
- Weather forecast details and login.
- Details on vessel brief.
- Nominate one lead/HSE vessel.
- ROV requirement.
- Details of Marine Assurance/suitability survey, if required.

The Master shall accept terms of notification to operator and confirm vessel's suitability in accordance with the Work Specification.

11.4.1.2. *Briefing of Vessels & MOU*

A representative for the rig owner and/or operator should go through the Work Specification in details.

Note: The intention of the brief is to ensure that the rig and vessel crew has the full understanding of the operation and the risk picture for the forthcoming operation.

11.4.1.3. *Participants*

Required participants for this meeting are:

1. Rig Owner.
2. OIM/ MOU Marine personnel/Tow Masters, if applicable.
3. Offshore Supervisors for operating company, if applicable.
4. Marine Representatives for operating company.
5. Vessel Master and crew.
6. Navigation/positioning/survey contractor, if applicable.
7. ROV crew, if applicable.
8. Any additional Owner/Operator personnel as required.

9. Representatives from mooring equipment supplier, if applicable.

11.4.1.4. *Meeting Agenda*

The Pre-Operational meeting will include, but not necessarily limited to the following

1. Status from rig.
2. Weather forecast for the marine operation.
3. Work specification, revision number in use is shared by all parties and confirmation of Geodetic datum – presentation of this.
4. HSE brief presentation – HSE vessel confirmation.
5. Schedule, logistics needs and notifications of interested parties or external agencies.
6. Risk assessment for intended operations has been completed and outcomes passed to Supervisors for inclusion in subsequent tool box talks.
7. Multiple vessel operations, if required.
8. Crew change.

11.4.1.5. *Mobilisation and demobilisation of Vessel*

1. Equipment list and mobilisation/demobilisation plan should be made available in reasonable time prior to commencement.
2. A Toolbox Talk shall be performed prior to commencement, between all parties involved in the loading and discharging of equipment, including establishment of communication plan for the operation.
3. It is recommended to load the equipment with attention to the sequence it should be used during operation.
4. All equipment should be handled in accordance with manufacturers recommendation, equipment suppliers guidance and base specific procedure(s), Ref. App.11-A [9.2].
5. Anchors and other deck equipment shall be cleaned for mud, etc., before lifted off.

Note: Whilst alongside berth, snap back zones should be identified and the danger of these highlighted. If stern mooring is required, the risk shall be identified and required precautions established. Safe access to vessel should be evaluated through the entire operation and gangway should be closed, if necessary, to maintain the required safety level.

11.4.2 Pre-Lay Operation

A pre-lay operation is a potentially hazardous operation, with regards to high tensions and limited deck space. Clear Deck Policy shall be adhered to during the entire operation.

11.4.2.1. *Deployment*

The vessel shall position at a safe distance from seabed infrastructure.

The deployment shall be done according to approved pre lay methodology.

The landing of the anchor should be supported by ROV, if available, to ensure the following:

- The anchor has landed correctly.
- The anchor is correctly orientated.
- The anchor position is within the tolerances set in the work specification.
- Final position and penetration.

11.4.2.2. ***Testing Anchor Holding Capacity***

The vessel shall perform the test tensioning according to Work specification and mooring analysis.

See Appendix 11-A [9.2] for further instructions and guidance.

11.4.2.3. ***Dual Vessel Operation***

If dual vessel operation is required to achieve the required tension, it is recommended to perform the operation connected into the anchor line by delta plate.

11.4.2.4. ***ROV Operations***

It is recommended to use ROV inspection during the pre-lay operation and survey.

In soft soil, the anchor may fully penetrate. The use of a marker buoy placed on the chain approx. 50-150m from the anchor will enable the ROV to verify the final anchor position.

The use of ROV should be considered to ensure the following:

- As left line survey including position of sub-surface buoyancy.
- Verification of subsea infrastructure location prior to commencement of operations.
- Mapping of protected species within the anchor pattern (where required).

11.4.3 MOU Move Operation

The MOU move is a potential hazardous operation, with regards proximity to the MOU, multiple vessel involvement, limited deck space and high tensions.

The operations should be performed in accordance with the Work Specification.

Special attention should be paid to the following:

- A clear and defined communication plan shall be in place and tested.
- Clear Deck Policy shall be adhered to during the entire operation.
- Close attention should be paid to the length and catenary of each mooring line and its relation to the water depth and any subsea infrastructure, with due regard to cross track distances.

Note: it is critical that the vessel is in direct communication with the crane and winch operators during the operation.

11.4.4 Exchange of Information During Anchor Handling Operations

The MOU is required to monitor the following and report any relevant changes to the vessels:

1. Integrity of the unit.
2. Disconnection and recovery of towing connections and assemblies.
3. MOU winch pay-out and recovery speeds.

Vessels are required to monitor the following and report any relevant changes to the MOU:

1. Integrity of the vessel.
2. Alterations to heaving in or pay out speeds and changes to vessel heading and power.
3. Observations of abnormal or unexpected loads.
4. Environmental conditions.
5. Condition of mooring and vessel equipment.
6. Deviations from work specification.

11.4.4.1. *SIMOPS*

Any simultaneous marine operations should be avoided. If performed, they shall be thoroughly risk assessed prior to commencement.

Note: Simultaneous marine operations are any other marine activity in addition to the Rig Move or Anchorhandling operation e.g., Diving Operation, IMR, PSV operations.

11.4.5 Recovery of Anchor Lines

The operations should be performed in accordance with the Work Specification.

Clear Deck Policy shall be adhered to during the entire operation.

Attention should be on reducing the risk of damage to equipment and limiting the tension used while recovering anchor. One should follow the recovery procedure specified tension and hold times, and have sufficient length of chain and/or wire paid out so the equipment is not subjected to damage caused by dynamic peak forces leading to equipment damage.

See Appendix 11-A [9.2 and [9.3], for further instructions and guidance.

Notes:

1. Special attention should be given as any vessel movement may result in dynamic forces. Attention shall be on sea state and control of vessel position movement and length paid out to avoid overload.
2. When undertaking recovery operations, it is important that the vessel's crew know the AH winch's dynamic capabilities and limitations.
3. If recovering anchors by use of chaser, there is a possibility of damaging the PCP system, work wire and anchor, if the wire is overloaded whilst breaking the anchor loose from the bottom.
    - Breaking out of the anchors using the shark jaws shall be avoided.
    - Breaking out the anchors by using chain wheel shall be avoided, if high loads are expected.

- The preferred method is to recover the anchor with the chain end behind vessel stern roller, using vessel work wire, or a work chain/fibre insert which shall take the roller contact.

Note: High loads are when the loads, including peak loads, are expected above 30% of the MBL.

11.4.5.1. *Recovery to Deck*

The anchor and connected components shall be recovered and secured to deck before any disconnection starts.

11.5 Marine Operations – Tow

11.5.1 Planning of Tow

A detailed passage plan ensuring safe navigation of the tow shall be established, ref. Section 12.2.3.3 of these Guidelines.

Close attention should be paid to the length and catenaries of the tow wire and its relation to environmental conditions, water depth and vertical clearance over any sub-sea assets in vicinity of any location or whilst on passage.

Maximum tension whilst towing must never exceed 50% of MBL of weakest link in the assembly. It is recommended to aim for tension utilization of 30% of the MBL to allow room for peak loads.

11.5.2 Documents & Records

The lead tow vessel, as well as all other vessels undertaking the tow, should be supplied with all relevant documented procedures relating to the operation.

The lead tow vessel shall keep an operational logbook in which any deviation from the approved procedure is recorded as well as the route being followed.

11.5.3 Tow Procedure

A standalone Tow Procedure should be provided when one of the following criteria are met:

- Anticipated tow time exceeds 24 hours.
- The tow route or make-up is of an unusual design.
- The client specifically requests the drafting of such a document.

The Tow Procedure should be prepared to cover all normal, contingency and emergency aspects of the tow operation, and should provide a set of procedures to be followed by all personnel engaged in the tow operation.

11.5.4 Escort Vessels

Where the unit being towed is unmanned/non-self-propelled, a suitable escort vessel, meeting the requirements of the designated tow vessel, should be considered.

The escort vessel shall maintain a position close to the tow to allow it to assist in a timely and ready manner.

The escort vessel shall, at all times, be ready to pick up the emergency tow arrangement or assist as required by the OIM or delegate.

11.5.5 Emergency Tow Equipment

The provision of an emergency towing equipment is dependent on warranty requirement. An emergency towing contingency method is advisable and considered best practice.

The deployment of the emergency tow arrangement shall be designed to be unhindered in the event of the main tow bridle parting.

The emergency tow line should be arranged such that it's not being streamed for the duration of the tow.

Where the tow is unmanned, the designated tow vessel and the escort vessel shall have means of remotely deploying the emergency tow line.

11.5.6 Unmanned Tows

When tows are unmanned, no contingency action shall involve changing the status of the MOU. For example, altering draft, use of thrusters, or any other action that requires personnel to board the towed unit.

A suitable power supply shall be fitted to allow nautical signalling lights to be fully operative in accordance with the COLREGS.

The status of the towed unit, including draft, power status, and access, shall be confirmed by the vessel Master prior to departure.

11.5.7 Exchange of Information During Towing Operations

The MOU is required to monitor the following and report any changes to the lead tow vessel:

1. Compliance with COLREGS on the unit, including lights and shapes on the tow.
2. Towing connections.
3. Weather conditions and forecasts.
4. Integrity of the unit.
5. MOU propulsion assistance, if relevant.

The Vessel is required to monitor the following and report any changes to the MOU:

1. Compliance with COLREGS.
2. Towline, particularly prevention of any chafing or friction. Either use towing sleeve, or regularly adjust wire length.
3. On passage towing speed and heading.
4. Deviations from passage plan.
5. Adjustments to power output.
6. Total tow length and catenary profile in relation to water depth.

Note: If towing a MOU on anchor chains, the MOU may pay out chain to provide the optimum towing catenaries.

Whilst towing, clear deck policies shall be observed. Should any urgent or emergency work be required on the after deck whilst towing, this should be fully risk assessed.

If adverse weather is expected, the Master shall consider whether use of towing-gog to control towing wire would be prudent or advantageous.

When towing in adverse weather, dynamic forces are significant. Exercise great caution, particularly when there is a following sea.

Towing logs shall be maintained by the vessel.

11.5.8 Record of Towing Operations

Vessels engaged in towing operations should maintain complete records of such activities.

11.6 Heading Control Operations

Heading control operations should be planned and executed in accordance with operator’s requirements and procedures.

11.7 Communications

Reference should be made to Chapter 6 of these Guidelines relating to Communications.

Communications in accordance with the Work Specification should be established and tested between the MOU work stations, vessel bridge and deck crews and between the various vessels prior to commencement of any Marine Operation.

A common radio channel should be designated for the use by the MOU and all vessels involved in the operation.

It is recommended to dedicate separate frequencies/channels, 1 for each side of the rig, in order to reduce interference and possible misunderstanding during multiple vessels operation.

Note: Stoppages planned and unplanned, in the unmooring or mooring operation should be communicated to the vessels as early as possible.

11.8 Vessel Stability

All vessels shall have a vessel specific Anchor handling and Towing manual.

The stability of the vessel is the responsibility of the Master and stability calculations shall be performed prior to commencement of any anchor handling operation.

Stability calculations shall consider the worst case and predicted scenarios which may occur during the entire anchor handling operation, including, but not limited to, icing, free surface, loading, discharging and transit.

The available information shall show the maximum force in the wire/chain and the point where the lateral force is assumed to be applied (towing pin/stern roller).

Prior to anchor handling operations, the result of the stability calculations shall be readily available on the bridge.

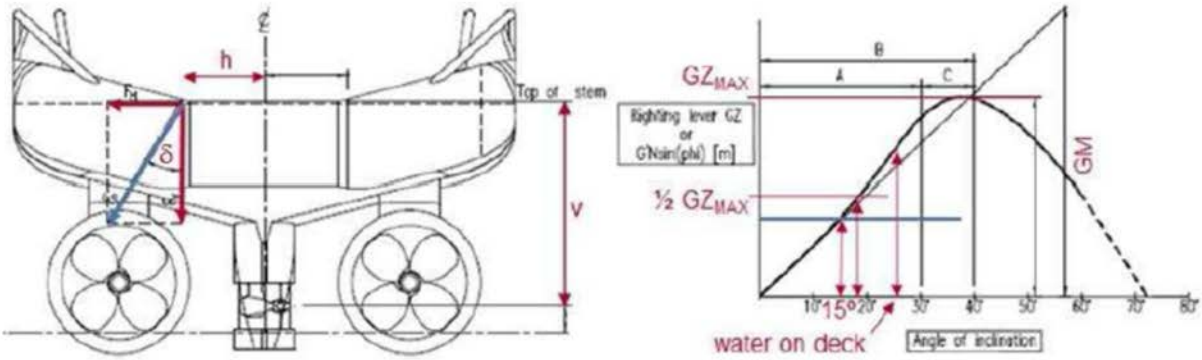
Stability calculations should be able to demonstrate the acceptable vertical and horizontal (transverse) tension to which the vessel can be exposed, considering the most unfavourable conditions for transverse tension. The vessel's maximum heeling angle is to be limited to one of the following angles, whichever occurs first.

(see Figure below):

- Heeling angle equivalent to a righting lever (GZ) value equal to 50 per cent of the maximum righting lever.

(GZ MAX):

- Heeling angle which results in water on the working deck (deck is calculated as flat);
- 15 degrees.



Special attention during anchor handling should be paid to:

- During deep water operations, the weight on the stern roller can be hundreds of tons, which may be applied at a distance off the centre line according to the set-up of the towing pins. This may increase the listing moments and stern trim, increasing the risk of a flooded deck, e.g., from a breaking wave, which may result in a further temporary reduction in stability.
- Use of large rudder angles and thrusters may also decrease the vessel stability, especially when working with a limited stability criteria, e.g., a large amount of thrust applied to the same side as the vessel's heel, which will increase the heeling.
- Normally, changes in the ballast condition should not be carried out during AH and Towing operations, unless the operation requires a change in vessel condition. The effect on the stability of any such change must be fully evaluated and risk assessed. Such changes should be forwarded in accordance with the work specification.
- If roll reduction tanks are used during the anchor handling operation, stability calculations for the tank optimally filled for roll reduction (maximum free surface moment) and a calculation for full tank are to be reviewed by the Master and the crew prior to operation.
- The status of all watertight, weather tight doors and hatches should be maintained as set out in the vessel's operation manual. All such doors should be clearly signed to this effect.

11.9 Guidance on Bollard Pull & Vessel Working Limits

Masters should be aware that bollard pull, as measured for the vessel's certificates, in some cases does not allow for the power used by deck machinery, thrusters and other consumers diverted from the main propulsion.

Allowance for any reduction should be made when considering bollard pull available during any operation.

11.10 Winch Operation: Emergency Release & Emergency Stop

To release excessive tension, winches and mechanical stoppering devices are fitted with emergency release mechanisms.

Maintenance and testing of these systems should be included as part of the planned maintenance regime and satisfactory operation should be verified before any anchor handling activities.

The vessel's crew shall be trained and competent in the operation of the emergency release systems in addition to being familiar with their reaction times and effect.

The winches should be operated in accordance with vessel's Ship Specific Anchor Handling Manual and manufacturer's instruction manual.

As a minimum, but not limited to, the following shall be displayed in the vicinity of the manoeuvring and winch operator area:

- Instruction and effect characteristics for: Emergency operation of Winches
- Instruction and effect characteristics for: Emergency operation of Towing pins and Shark Jaws.

11.11 Further Guidance for Particular Anchor Handling Operations

11.11.1 Considerations for Deeper Water

Anchor handling operations in deeper water carry significant additional hazards. Assessment of what might be considered as "deep water" operations should take into account the capabilities of the vessels supporting such activities.

Where deep water anchor handling operations are being planned, additional factors should be taken into account. These include, but are not limited to, the following:

1. Suitability of vessels for location specific operations, e.g., environmental and other variables.
2. To minimize damage to work wire from joining shackles, use longer continuous lengths of work wire or use lug less joining links rather than shackles.
3. Suspended weight of components to be considered when planning winch usage.
4. Fibre and wires to be spooled onto the drum under tension.
5. Use work wire swivels to avoid twisting damage from the inherent high loads of deep water Anchor handling.
6. Wires should be de-tensioned using suitable methods after use.

7. Swivels are used to avoid twisting damage in the wire when exposed to high tension. Swivels are also used to reduce the risk of torsion building up in the wire. Such torsion could be released when disconnecting components.
8. Chain tails should be used for securing line components in the shark jaw. This is particularly important in deep-water anchor handling operations to avoid uncontrolled release of torsion.
9. Safe release method for deployment of buoys in controlled manner should be used to avoid shock load damage.
10. Whilst deploying chain, there may be a requirement for high tension to be used. Chain contact with the chain wheel should therefore be maximized to avoid potentially dangerous slippage. In some circumstances, and where equipment is suitable, both gypsies may be used. Dynamic braking or tension control arrangements should be used, if available.

Note: See Appendix 11-A [12] for further instructions and guidance regarding use of swivels.

Manufacturers' guidelines for the use and handling of all equipment should always be complied with.

11.11.2 Considerations for shallow water

A mooring operation shall be considered "shallow water" when there is insufficient sag in the system to absorb the AHV dynamics during a crucial job phase.

Factors to be taken into account:

1. Systems stiffness and vessel dynamics during prelaying – mitigated by sufficient grounded length at tension phase.
2. System stiffness and vessel dynamics during anchor recovery operations can cause high peak loads – mitigated by correct winch handling and anchor recovery process.
3. Due to long and horizontal mooring lines, mooring line depth and position when the AHV is manoeuvring alongside the rig.
4. Floating fibre with sub surface buoys in the water surface, vessel shall never cross mooring lines during AH operations.
5. Catenaries in relation to infrastructure during AH operation.

11.11.3 Special operations – Fixed floating installations

When planning for Anchor handling operations outside of what might be considered as normal operations, the vessel organisation and procedures might be affected in different ways. Attention to the following topics, but not limited to, should be taken into account:

- Handling of outsized gear needed specialized tools.
- Customised equipment and components with specific handling requirements.
- Project organisation onboard vessel.
- Change in working routines on deck.
- Time limits and addition weather limitations

11.12 Reference of Good Practice

Examples of recommended good practice for the anchor handling systems referred to below can be found in Appendix 11-A.

Good guidance relating to the handling and use of equipment is also available from the various anchor and equipment manufacturers or suppliers.

1. Permanent chaser pennant (PCP).
2. Pennant Buoy System.
3. Working Wire/Chaser termination on vessel.
4. Piggyback system.
5. Chasing Pennant.
6. Buoy off prelaid mooring line – Safe Release.
7. Fibre Rope handling.
8. Operation – Fibre in Mooring Lines.
9. Handling of Offshore Mooring Chain.
10. Use of Grommets.
11. Quick Release Mooring Connector.
12. Use of Swivel during Anchor handling Operation.

Contents

Revision History

Revision Number	Date	Section	Changes
1	Feb 2020	12.2.3.1 - Passage Planning and navigation	“narrow passages” and “bridges” have been added Reference to IMO Resolution A.893(21) – Guidelines for Voyage Planning added
		12.2.3.3.1 - Voyage summary	Amended to read: “On completion of each towing operation a voyage summary should be prepared in accordance with clients or owners’ requirement. “List of particular items 1-8 deleted.
		12.3.3 - Particular Requirements for Sub-surface Lifting Operations	Deleted “areas of the world”
		12.5.1 - Latest revision of Guideline	Deleted “The latest revisions, which, with the exception of the document published by DNV, are available on the internet web sites of the relevant organisations should always be referred to when planning or executing any of the operations to which they relate” Table 1 updated
		12.8 - Response and Rescue Support	Title amended to read “Response and Rescue Support (Standby Vessel Services-SBV)”
		12.8.7 - Work Parties	Last sentence amended to read “Unless agreed, it is not the responsibility of the vessel shall maintain a visual watch of the various work-sites.”
		12.8.8 – Sharing of SBV Support Services	Deleted “For clarity the agreed procedures and protocols should be consolidated into a vessel sharing manual, contents of which should include as a minimum:
		12.8.9 - Other support functions	Moved to 12.8.1.1
		12.9 - Guard/Chase Vessels	Amended title to Guard/Chase Vessels
		12.9.1 - General requirements	Amended to include 3. Security Guard Vessel
		12.10.3 - Construction	4th paragraph amended to read: Other guidance exists, but guidelines prepared by the MCA is unique in that matters relating to construction, operation and competencies are addressed in a single document.

12 Project Support Operations

12.1 Operations Included

Offshore operations require vessels to support a wide range of activities, including:

1. Logistics support and supply.
2. MOU moving, including anchor handling and towing.
3. Marine transportations.
4. Lifting operations, both above and below sea surface.
5. Other operations, including:
   a. Well servicing and maintenance.
   b. Diving and ROV support.
   c. IRM support.
   d. Survey support.
   e. Dredging and rock installation/management.
6. Emergency response and rescue support.
7. Guarding and monitoring support.

In general these Guidelines relate to the management and operation of all vessels approaching or operating in the vicinity of any offshore facility, regardless of whether a formal safety zone has been established.

Chapters 9, 10 and 11 relate particularly to operations included in Items 1 and 2 in the above list.

Other operations, including the use of smaller craft in supporting offshore operations, are considered in the remainder of this Chapter.

12.2 Marine Transportations

12.2.1 Operations Included

Marine transportations to which this section of the Guidelines relates may include, but are not limited to, the following:

1. Transportation of unusual items on the deck of own vessel, particularly where the item involved is large, heavy or, if damaged, would result in significant actual or consequential loss.
2. Towage of a cargo barge onto which such items have been loaded and secured.
3. Towage of any other vessel or floating object.

12.2.2 Excluded Operations

It is not anticipated that this section of the Guidelines will relate to the following operations:

1. Logistics operations associated with the normal delivery or return of containers or similar cargo items to or from an offshore facility.
2. Operations associated with moving a MOU from one offshore location to another, or to or from port facilities.

12.2.3 Towing Operations

12.2.3.1. *Passage Planning and Navigation*

The Master of the towing vessel is responsible for the preparation of a detailed passage plan and the subsequent safe navigation of the tow. Where appropriate, navigation warnings shall be broadcast by the tug at regular intervals.

Where more than one vessel is utilised to tow the unit a lead tug will be nominated by the person in charge of the operation, which may be a Tow Master if present. The Master of this vessel will assume the responsibilities described above and shall also ensure that the other vessel(s) involved comply with the plans.

This does not, however, relieve the Master of any vessel from the responsibility of safeguarding the safety of personnel and equipment on board own ship.

The passage plan must be carefully developed with regard to water depth, other offshore and subsea facilities, narrow passages, and emergency locations or refuges which may be utilised if required.

Close attention should be paid to the length and catenaries of the tow wire and its relation to environmental conditions, water depth and vertical clearance over any sub-sea assets and/or bridges in the vicinity of any location or whilst on passage.

Route must keep safe distance from any other facilities. Pass on the side that best assures tow will drift away from the facility in case of power loss or loss of tow.

The passage plan shall not use offshore facilities as way points.

Regular weather forecasts should be provided. Normally two forecasts, twice per day, each prepared independently, are required.

Communication lines as agreed during any pre-operational meetings should be observed.

For further information refer to IMO Resolution A.893(21) – Guidelines for Voyage Planning

12.2.3.2. *Contingency/Emergency Towing Arrangements*

Retrieval arrangements for the recovery of the towed object’s main towing gear in the event of its failure should be fully operational.

The towed object's emergency towing system should be rigged and ready for immediate use. Arrangements for this system to be recovered by a towing vessel in all weather conditions without the necessity of boarding the tow should be deployed.

Where the mobilisation of any additional equipment to facilitate this is required, all such equipment should be readily available on board and checked to ensure it is fully operational.

12.2.3.3. ***Record of Towing Operations***

Vessels engaged in any towing operations should maintain complete records of such activities. These records should normally consist of two parts, as follows:

1.Daily Log

Information should be recorded at regular intervals whilst actually engaged in the towing operation, as follows:

1. Date and time of log entry.
2. Name of towed object.
3. Position, actual or estimated.
4. Power setting(s) on main propellers or thrusters.
5. Length of tow-line deployed.
6. Relevant weather conditions, for example particulars of wind, sea and swell.
7. Any changes to towing configuration in foregoing period.

This information should be recorded more frequently in periods of severe weather.

2.Voyage Summary

On completion of each towing operation a voyage summary should be prepared in accordance with clients or owners requirement.

12.3 Lifting Operations, Above and Below Sea Surface

12.3.1 Operations Included

Lifting operations to which this section of the Guidelines relates may include, but are not limited to, the following:

1. Installation operations, involving use of equipment installed on vessel to lift items of equipment from deck of own or other vessel or barge for installation on an offshore facility.
2. Installation operations, involving use of equipment installed on vessel to lift items of equipment from deck of own or other vessel or barge for installation as part of a sub-surface facility.
3. Removal or de-commissioning operations, involving use of equipment installed on the vessel to lift items of equipment from an offshore facility onto deck of own or other vessel or barge.
4. Removal or de-commissioning operations, involving use of equipment installed on the vessel to lift items of equipment from a sub-surface facility onto deck of own or other vessel or barge.

5. Any other operations involving use of the equipment installed on the vessel to support project related activities on an offshore facility, either above of below the sea surface, or on another vessel.

12.3.2 Excluded Operations

It is not anticipated that this section of the Guidelines will relate to the following operations:

1. Logistics operations associated with the normal delivery or return of containers or similar cargo items to or from an offshore facility.
2. Lifting activities which may be required during MOU operations.
3. “Internal” lifting operations on the deck of own vessel, except where the item to be lifted is unusually large, heavy or, if damaged, would result in significant actual or consequential loss.

12.3.3 Particular Requirements for Sub-Surface Lifting Operations

Some requirements relating to lifting operations below the surface of the sea may be different to those involved where the activities are undertaken only in air.

Such differences may include:

1. Specifications of Equipment involved.
2. Competencies of Personnel involved.
3. Operational Planning and Execution.

It is the responsibility of all parties involved to ascertain the requirements for undertaking sub-surface lifting activities in the current area of operations and ensure that these are complied with.

12.4 Specific Operational Procedures

It is likely that the planning and execution of operations to which Sections 12.2 and 12.3 of the Guidelines relate will require the development of specific procedures describing the activities involved.

Where relevant, these procedures will be based on:

1. Engineering design and analysis.
2. Hazard identification and risk assessments.
3. Where relevant, combined operations safety cases, including relevant bridging documents.
4. Simultaneous operations assessments and reviews.

Each set of such procedures will be developed by the relevant project team specifically for the operations being contemplated, and will be subject to the relevant quality assurance and approval processes.

Owing to their specific nature such documents are generally developed for the particular project involved. Further detailed consideration of the development of these procedures in therefore beyond the scope of these Guidelines.

12.5 General Guidance

Whilst further consideration of the specific operational procedures are outwith the scope of these Guidelines further information relating to particular aspects of the the planning and execution of project-related on- and offshore operations can be obtained from a variety of sources, some of which are listed in Table 1.

12.5.1 Latest Revisions of Guidance

The documents included in Table 1 are regularly reviewed and revised by the publishers.

Table 1: Further General Guidance

SOURCE	DOCUMENT PARTICULARS	
	NUMBER	TITLE
DNVGL	DNVGL ST-N001	Planning and Execution of Marine Operations
DNVGL Noble Denton	0013/ND	Guidelines for Load Outs
DNVGL Noble Denton	DNVGL-SE-0122	Noble Denton marine services-Certification for towing vessel approvability
DNVGL Noble Denton	0027/ND	Marine Lifting Operations
DNVGL Noble Denton	0030/ND	Guidelines for Marine Transportations
IMCA	M187	Guidelines for Lifting Operations
IMCA	M171	Crane Specifications
IMCA	M193	Communications during Lifting Operations
IMCA	M194	Wire Rope Integrity Management for Vessels in Offshore Industry
IMCA	M203	Simultaneous Operations
IMO	MSC/Circ. 494	Safety of towed ships and other floating objects

12.6 Marine Warranty Surveyor Involvement

In many instances the planning and execution of operations to which these sections of the Guidelines relate will require the approval of an accredited marine warranty survey practitioner (MWS).

The MWS will review the proposed procedures and revert with relevant comments and recommendations. Approval will often be subject to the attendance on site of the MWS's representative, who may communicate further recommendations as thought fit to the representative of the insured party on whose behalf he is acting.

Compliance with the MWS's recommendations, or agreed alternatives, is strongly recommended since failure to do so may compromise the insured party's commitments to its insurance underwriters and in the event of an incident resulting in loss may expose it to significant commercial risk.

Where the services of a marine warranty surveyor have been retained by any insured party the role and expectations should be advised to all other parties involved in the relevant operations.

12.7 Support for Other Operations

12.7.1 General Requirements

The planning and execution of any operations referred to in 12.1(5) above which supported by offshore vessels will involve the development of task-specific procedures for the work to be undertaken. The contents of such procedures are outwith the scope of this document.

However, when any vessel supporting such operations is approaching or operating in the vicinity of any offshore facility, irrespective of whether a formal safety zone around it has been established, all relevant recommendations included in these Guidelines should be observed.

A note to this effect should be included in the procedures referred to above.

12.8 Response and Rescue Support (Standby Vessel Services-SBV)

12.8.1 Primary Functions

At many offshore facilities elements of the arrangements for emergencies which the Operator must establish to ensure the safety of the workforce on board in the event of an incident is supported by vessels mobilised to provide response and rescue services.

The primary functions of vessels mobilised for this purpose include the following:

4. Rescuing personnel who have inadvertently entered the water in the vicinity of an offshore facility and providing suitable facilities for their subsequent care.
5. Monitoring the movements of other marine traffic in the vicinity of the facility and taking appropriate action where risk of collision with it is though to exist.
6. Acting as contingency command and control station should an incident on the facility result in its own arrangements being disabled.

Except otherwise advised these functions are to be supported on a continuous basis and no other activities should be undertaken by or on board the vessel which would compromise its ability to do so.

In the event of any incident on the vessel which may result in it not being able to fulfil any of the functions above the management of the facility which it is supporting must be immediately be advised of this fact in order that appropriate alternative arrangements can be made.

12.8.1.1 Other Support Functions

In some instances vessels mobilised to provide response and rescue services may be constructed, outfitted, equipped and manned to support other functions.

Such functions may include:

1. Cargo carrying, both deck and bulk goods.
2. Fire fighting capability.
3. Oil recovery and pollution prevention.

Additional activities associated with other such functions may be undertaken simultaneously with providing such services provided that the vessel's ability to fully support the primary roles referred to above are never compromised.

The planning of and procedures describing any operation requiring the support of a vessel which is simultaneously providing emergency response and rescue support should always recognise this requirement.

Where a vessel is supporting any additional activities whilst simultaneously providing response and rescue support the relevant recommendations in these Guidelines relating to such activities should be observed.

12.8.2 General Requirements

Vessels mobilised to provide emergency response and rescue services should comply with the requirements relating to such support which exist in the jurisdiction in which they are operating.

It is the responsibility of all parties involved to ascertain the requirements for vessels providing support of this nature in the current area of operations and ensure that these are complied with.

Table 2: Response and Rescue Support Guidance

SOURCE	DOCUMENT PARTICULARS	
	NUMBER	TITLE
DMA		Guidelines for Standby Vessels
ERRVA		Emergency Response and Rescue Vessels Survey Guidelines
ERRVA		Emergency Response and Rescue Vessels Management Guide-lines
NOGEPA	Industry Standard no.102	Safety Standby Vessels Code of Practice

Where no such requirements exist, the documents listed in Table 2 may provide useful guidance in ensuring that adequate standards for response and rescue support are established and maintained.

12.8.3 Response Criteria

The jurisdiction under whose regime the facility is operating may establish criteria relating to time taken to rescue personnel from the water and transfer them to a place of safety in a variety of incident scenarios. Alternatively, it may require the Operator of the facility to establish such criteria.

It is in the interests of both the Charterer and Owner of the vessel to ensure that such criteria can be complied with.

Facilities and equipment should therefore be provided for the on-going training of the personnel involved. Exercises to ensure that personnel remain familiar with the equipment and procedures involved should be arranged at frequent intervals. Where possible such exercises should be undertaken in typical environmental conditions which may be experienced at the location, always on the understanding that personnel or equipment should not be subject to un-necessary risk.

Full records of any exercises undertaken should be retained for subsequent inspection by interested parties. From time to time there may also be a requirement for such exercises to be observed and recorded by an independent witness.

12.8.4 Adverse Weather Criteria

Facility operations which can be supported by a typical emergency response and rescue vessel will be dependent on the prevailing environmental conditions. The criteria under which the various levels of support can be provided will normally be agreed on an industry-wide basis for the area in which the facility is located.

Where this is not the case, such criteria should be agreed between the Charterer and the Owner, in consultation with experienced Masters, at the time of taking the vessel on hire.

Typical adverse weather criteria for a conventional SBV, equipped with FRC's and or Daughter Craft for rescuing personnel from the water in lower sea states and a mechanical means or recovery in the more severe conditions when rescue craft cannot safely be deployed or recovered are included in Appendix 12 - A.

It should be noted, however, that in a long period of regular swell, rescue craft may be safely deployed and recovered in higher sea states than indicated. On the other hand, it may be that such craft cannot be safely used where waves are of short period and / or confused at lesser heights than those indicated. In such circumstances other means of recovery should be considered.

Furthermore, familiarity with the equipment and techniques involved in the rescue of personnel from the sea gained from suitable training together with frequent exercises in more challenging conditions may well enable the criteria set out in the Appendix to be extended. In addition, other technologies are available which may not be subject to the same environmental limitations.

The Master of the SBV will decide which equipment and techniques are most appropriate for use, based on circumstances associated with the emergency itself and the prevailing environmental conditions.

12.8.5 SBV Operational Capability

Section 7.2 of these Guidelines relates to the factors to be taken into account when assessing the operational capability of any vessel, including those providing response and rescue support.

However, with particular regard to vessels providing such support it should also be borne in mind that the vessel is effectively an integral part of the facility's emergency response arrangements. A reduction in its operational capability, particularly where this involves loss of manoeuvrability or ability to deploy and recover its rescue equipment, may therefore compromise any commitments to the relevant authorities or the workforce made by the facility Operator to maintain an acceptable standard of emergency response arrangements.

Any reduction in the operational capability of a vessel providing response and rescue support at an offshore facility should therefore be notified to the Manager at the earliest opportunity in order that suitable alternative arrangements can be established without delay.

12.8.6 Weather Side Working

Sections 7.3.1 and 8.11 of these Guidelines relates to the factors to be taken into account when assessing setting up and working on the weather side of an offshore facility and relates also to vessels providing response and rescue support.

In assessing whether the vessel can provide effective support on the weather side of the facility the Master should bear in mind any potential impact on the deployment of rescue equipment.

In general, any request to take up station directly up-wind or up-current of the facility should be challenged, since in most instances equally effective support can be provided from a position where the vessel has more freedom to manoeuvre and is not in a “drift-on” situation.

12.8.7 Work Parties Outwith Perimeter of Facility

From time to time it may be necessary for work to be undertaken on the facility outwith its normal barriered perimeter, which may include any scaffolding assembled and maintained in accordance with the relevant rules. Such work may be referred to by a variety of terms, including “overside”, “outboard”, “overboard”, etc.

Such work generally involves an increased risk of personnel entering the water. Therefore, when in progress a higher state of readiness should be maintained on the vessel providing response and rescue support. This may be referred to as providing “close stand-by” support.

When requested to provide such support the Master should take the following actions:

1. Establish details of personnel at risk, including numbers and locations.
2. Ensure that personnel and equipment on the vessel are at the required state of readiness.
3. Ensure that the vessel is maintained in a position relative to the facility and the environment such that rescue facilities can be deployed in the most expeditious manner.
4. Ensure that the terminology to be used has been agreed and understood by all involved.
5. Ensure that communication have been established and are maintained with the watch-men responsible for monitoring the activities of each work party.

Unless agreed, it is **not** the responsibility of the vessel to maintain a visual watch of the various work-sites.

Any request to maintain such a watch should be challenged, since this could compromise the safe navigation of the vessel and would be impossible where several work-sites are involved.

12.8.8 Sharing of SBV Support Services

Where several offshore facilities are located within close proximity of each other the services of one vessel may be shared between them. This may include situations where several Operators are also involved.

In such circumstances clear procedures and protocols should be developed and agreed between all the parties involved, including the vessel Owner, to ensure that the primary functions referred to above can be supported at all the facilities involved.

12.9 Guard/Chase Vessels

12.9.1 General Requirements

From time to time a requirement may be identified for a vessel to be chartered to maintain watch over an asset or equipment associated with offshore operations. Such a requirement includes warning other vessels in the vicinity should their activities or actions be thought to pose a risk to facilities involved.

Such vessels may include:

1. Guard vessels chartered for the purpose of protecting and monitoring marine traffic in the vicinity of fixed assets of any type.
2. Chase vessels chartered for the purpose of protecting the array of streamers deployed in the course of seismic survey operations.
3. Security Guard Vessel
4. Any other vessels chartered for similar purposes.

Vessels mobilised for this purpose should comply with the requirements relating to such support which exist in the jurisdiction in which they are operating.

It is the responsibility of all parties involved to ascertain the requirements for vessels providing support of this nature in the current area of operations and ensure that these are complied with.

Where no such requirements exist the documents listed in Table 3 may provide useful guidance in ensuring that adequate standards for this support are established and maintained.

12.9.2 Other Requirements

In addition to the requirements relating to the outfitting and equipping of vessels set out in the above documents it is also recommended that, if not required by legislation, where a single watch keeper is likely to be on duty for extended periods, a watch alarm should also be fitted.

This alarm should be fitted with the following features:

1. Positive response by watchkeeper required at periods not exceeding 15 minutes.
2. Response arrangements to be located remotely from any seating facilities.
3. In event of non-response from watchkeeper general alarm to be activated throughout accommodation within further 5 minutes.

Override or disablement of any of the above facilities only being possible with positive agreement of Master and Chief Engineer

Table 3: Guard and Chase Vessel Guidance

SOURCE	DOCUMENT PARTICULARS	
	NUMBER	TITLE
IMO	MSC.1-Circ.1474-23.5.14	Guidance on the Bridge Navigational Watch Alarm System (BNWAS) Auto Function
ERRVA	April 7th 2018	Emergency Response and Rescue Vessels Survey Guidelines
ERRVA	April 6th 2018	Emergency Response and Rescue Vessels Management Guide-lines
MSF		Guard Vessel Good Practice

12.9.3 Further Information to be Provided to Masters

Where vessels are taken on hire to support any asset protection, guarding or monitoring requirements the following information should be provided:

1. Full particulars of the assets to be protected, guarded or monitored, including plans of any surface and/or sub-sea architecture.
2. Reporting protocols and relevant contact arrangements.
3. Actions to be taken in the event that an approaching vessel is assessed as posing a threat to the assets being guarded or monitored.

This information should also be provided to any ERRV which may be required to guard or monitor assets in the vicinity of the offshore facility being supported.

12.9.4 Operational Categories

It should be noted that some of the vessels to which this section of the Guidelines relates may be operated under the provisions relating to small water craft referred to below.

12.10 Small Vessels & Water Craft

From time to time operations either off- or near-shore may be supported by smaller vessels or water craft.

12.10.1 Vessels or Craft Included

Vessels or Craft involved may include:

1. Any vessel or craft with load water line length of 24 metres or less.
2. Vessels or craft with displacement hull forms within this length range.
3. Rigid or semi-rigid hull forms within this length range.

Offshore, such craft may be deployed from a larger host vessel, though in certain circumstances they may be capable of autonomous operation. For near-shore operations they are likely to operate independently from convenient port or other safe haven.

12.10.2 Craft Excluded

This section of the Guidelines does not relate to the following craft:

1. Fast rescue *boats* mobilised on any vessel in compliance with the International Life-Saving Appliance Code, as modified from time to time
2. Fast rescue *craft* mobilised on any Emergency Response and Rescue Vessel.
3. Daughter craft mobilised on any Emergency Response and Rescue Vessel to provide extended rescue and response support which are operated under the provisions of a Load-line Exemption or similar arrangements.
4. Small work-boats deployed from a larger vessel to support its operations, for example buoy boats associated with the maintenance of seismic cable arrays.

Craft of this type are likely to operate under provisions attached to the vessel from which they are deployed or dispensation from the relevant flag state.

12.10.3 Construction, Operational and Competency Requirements

Small craft mobilised to support either off- or near-shore operations should comply with the requirements relating to such support which exist in the jurisdiction in which they are operating.

It is the responsibility of all parties involved to ascertain the requirements for such craft in the current area of operations and ensure that these are complied with.

Where no such requirements exist, the documents listed in Table 4 may provide useful guidance in ensuring that adequate standards are established and maintained.

Other guidance exists, but guidelines prepared by the MCA is unique in that matters relating to construction, operation and competencies are addressed in a single document.

It should also be noted that where small craft are mobilised to provide response and rescue support additional requirements are likely to exist.

Table 4: Small Vessel and Water Craft Guidance

SOURCE	DOCUMENT PARTICULARS	
	NUMBER	TITLE
MCA	MGN 280(M)	Small Vessels in Commercial Use Code
IOGP	Report 655	Watercraft & water in geophysical operations – a guide to operations & management

12.10.4 Further Information to be Provided to Masters or Coxswains

Where small craft are taken on hire to support any operations the following information should be provided:

1. Full particulars of the nature of operations to be supported.
2. Reporting protocols and arrangements.
3. Actions to be taken in the event of an emergency or other unforeseen event.

Contents

Revision History

Revision Number	Date	Section	Changes
1	Feb 2020	13.4; Port Emergency	Amended to read: Ship-owner and vessel's Master are responsible for ensuring provision of adequate internal emergency procedure covering their own vessel as well as ensuring sufficient familiarization with relevant procedures from Port Authority and/or Offshore Base Operator in this respect.

13 Emergencies

13.1 Emergency Preparedness Procedures

Facility Operators and Vessel Owners shall prepare and maintain emergency preparedness procedures for those assets for which they are responsible.

The Operating Company shall prepare and provide to all parties a bridging document linking the involved parties' emergency procedures.

This shall include but not be limited to:

1. Organisation Chart.
2. Relevant Communication, and contact numbers.
3. Notification plans.
4. Area charts showing facilities, etc.
5. Overview of local resources in emergency: vessels, helicopters, etc.
6. Incident response protocols.
7. Media response protocols.

13.2 Facility Emergency

When facility emergency alarms sound OIM / facility manager will issue instructions to all vessels. Any emergency is to be handled in accordance with the Emergency Preparedness Procedures.

13.3 Vessel Emergency

Within the Safety Zone, vessel emergency to be handled in accordance with the Emergency Preparedness Procedures. OIM or Facility Manager shall be informed to the nature of the emergency. Upon being notified of an emergency on any vessel within the Safety Zone he should take such actions as necessary to minimise the risk to the facility and its personnel.

Outside the Safety Zone emergencies on vessels shall be handled in accordance with the Owner's Emergency Response Plan, as described in their Safety Management System. Local and Regional agencies will be involved as necessary.

13.4 Port Emergency

Ship-owner and vessel's Master are responsible for ensuring provision of adequate internal emergency procedure covering their own vessel as well as ensuring sufficient familiarization with relevant procedures from Port Authority and/or Offshore Base Operator in this respect.

GOMO Chapter 14

Further Information & References

Revision History

Revision Number	Date	Section	Changes
1	May 2024	14.1 Further Information Sources & Organisations	Complete overhaul of this chapter focussing more on the higher-level source / organisations that support and produce guidance or legislation related to the offshore energy sector.

Contents

14 Further Information & References

14.1 Further Information Sources & Organisations

Further relevant material relating to the information included in this guidance document is available from a variety of sources, a number of which are listed in the table below.

Where possible, this information is open source, available in the public domain and can be viewed at or downloaded from the source's web portal, which are also listed as hyper-links.

Organisation	Description
Classification Societies DNV: Det Norske Veritas ABS: American Bureau of Shipping NK: Nippon Kaiji Kyokai LR: Lloyds Register BV: Bureau Veritas RINA: Registro Italiano Navale IR Class: Indian Register of Shipping	Various vessel classification societies that establish and maintain technical standards for the construction and operation of ships and offshore structures.
Danish Shipping	Danish Shipping is a trade and employers' organisation for Denmark's shipping industry - Denmark's largest export trade - with more than 90 members, including shipping and offshore companies. Half of the members sail under the Danish flag, while the other half, comprised of associate members, operate from Denmark without ships sailing under Danish flag. Danish Shipping is the voice of the shipping companies, dedicated to advancing Danish shipping interests both domestically and globally.
Element NL	In the Netherlands, 12 companies have a permit for the exploration or production of natural gas. These oil and gas companies conduct research into possible gas reserves in our soil and under the North Sea, and after drilling ensure the extraction of natural gas. These companies are united in Element NL. Element NL represents the interests of these companies. Together we are working on a CO2-neutral energy system. Our natural gas is basic for this. It provides security for households and raw materials for industry. During the transition, the Netherlands can therefore count on safe, clean and affordable gas production. And we look further: today natural gas still flows through our pipes, but the day after tomorrow it will mainly be new forms of energy.
ERRVA: The Emergency Response & Rescue Vessel Association	The Association has been established to coordinate the common interests of the Owners and Operators in the future development of Emergency Response and Rescue Services with the aim of being the world leaders in rescue and recovery services.

G+: Global Offshore Wind Health and Safety Organisation	G+ is the global health and safety organisation, bringing together the offshore wind industry to pursue shared goals and outcomes. It is run in partnership with the Energy Institute and works in the main areas of: Incident data reporting, Good practice guidance, Safe by Design workshops and Learning from incidents.
IMCA: International Marine Contractors Association	An international trade association with members operating in the offshore construction industry around the world. IMCA promotes areas of common interest, such as health, safety, quality, environmental and technical standards with a well-respected, strong technical background.
IMO: International Maritime Organization	IMO is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. IMO's work supports the UN sustainable development goals.
MCA: UK Maritime & Coastguard Agency	The Maritime and Coastguard Agency (MCA) is an executive agency of the UK that is responsible for implementing British and International maritime law and safety policy. It works to prevent the loss of lives at sea and to prevent marine pollution. It is a subsidiary executive agency of the UK Department for Transport and also responsible for land-based search and rescue helicopter operations since 2015. Its motto is “Safer Lives, Safer Ships, Cleaner Seas”.
MSF: Marine Safety Forum	The Marine Safety Forum is primarily focussed on actively promoting safety within the marine sector of the offshore energy industry producing guidance and good practice documents as well as sharing safety alerts relevant to the industry.
NMA: Norwegian Maritime Authority Sjøfartsdirektoratet	The Norwegian Maritime Authority is a Norwegian government agency responsible for life, health, working conditions and the environment for Norwegian registered ships and ships at Norwegian ports. The main job for the authority is to ensure that Norwegian ships and shipping companies meet high safety- and environmental standards, to ensure that Norwegian seamen have high qualifications and good working- and living conditions, and to ensure that foreign ships in Norwegian territory and ports meet international rules.
NOD: Norwegian Offshore Directorate Sokkeldirektoratet	The Norwegian Offshore Directorate is a Norwegian government agency responsible for the regulation of the petroleum resources on the Norwegian continental shelf. Based in Stavanger, its mission is to ensure that the petroleum resources are allocated in an optimal way, at the same time incurring minimal environmental impact.
NSA: Norwegian Shipowners Association	The Norwegian Shipowners' Association is a trade organization representing Norwegian shipowners and operators in the maritime industry. Founded in 1909, it serves as a collective voice for the Norwegian shipping industry, advocating for its interests both domestically and internationally. The association works on issues such as regulatory compliance, safety standards, sustainability, and economic policies affecting the shipping sector. It plays a crucial role in promoting the competitiveness and growth of Norwegian shipping companies while also fostering collaboration within the industry.

OCIMF: Oil Companies International Marine Forum	The Oil Companies International Marine Forum is a voluntary association of oil companies having an interest in the shipment and terminalling of crude oil, oil products, petrochemicals and gas, and includes companies engaged in offshore marine operations supporting oil and gas exploration, development and production. Our vision is a global marine industry that causes no harm to people or the environment. Our mission is to lead the global marine industry in the promotion of safe and environmentally responsible transportation of crude oil, oil products, petrochemicals and gas, and to drive the same values in the management of related offshore marine operations. We do this by developing best practices in the design, construction and safe operation of tankers, barges and offshore vessels and their interfaces with terminals and considering human factors in everything we do.
OEUK: Offshore Energy UK	Our vision is for a thriving UK powered by homegrown, affordable energy which is produced safely and sustainably. Our members boost the UK economy, unlock rewarding jobs and drive innovation. Our mission is to proudly engage, inform and champion the sector and its people. We work with our members to deliver the UK's energy needs.
Offshore Norge	Offshore Norge is an industry association for companies which conduct or are suppliers to oil and gas operations, offshore renewable energy generation and offshore mineral extraction in Norway. Its ambition is to apply its resources to maintaining the development of Norway as a reliable energy nation in line with the climate goals, and its stated purpose is to safeguard the member companies' common interests vis-à-vis authorities, employee organizations, other national and international institutions, organizations, and society at large.
UK Chamber of Shipping	The UK Chamber of Shipping is the trade association and the voice of the UK shipping industry. The Chamber has over 200 members and is open to shipping companies of all sizes, sectors and flags and works to unite, promote and champion an environment for shipping in the UK to thrive. The Chamber influences policy development at UK and international level, offers expert advice and facilitates the sharing of good practice and horizon-scan's for emerging trends.
UK HSE: UK Health & Safety Executive	The Health and Safety Executive (HSE) is Britain's national regulator for workplace health and safety. The HSE is dedicated to protecting people and places and helping everyone lead safer and healthier lives. Their role goes beyond worker protection to include public assurance. They work to ensure people feel safe where they live, where they work and, in their environment.

Appendix 1-A
Persons & Organisations Contributing to these Guidelines

APPENDIX 1 - A

PERSONS AND ORGANISATIONS CONTRIBUTING TO THESE GUIDELINES

STEERING GROUP

The Steering Group responsible for moderating the outcomes of the various work groups and the preparation of this document included the following individuals:-

Name		Representing
Ole Steinar	Andersen	Statoil a/s
Gustav	Bretton-Meyer	Maersk Supply Service a/s
Terry	Brown	Gulf Offshore North Sea Ltd.
Mike	Close*	GL Noble Denton
Bjorn Inge	Furuli	Bourbon Offshore Norway a/s
Ane	Heidema	Total E & P (Nederland) B.V.
Iain	Hepplewhite	Gulf Offshore North Sea Ltd.
Andy	Holt	SBS Marine
Soren	Jeppsen	Maersk Drilling a/s
Per Sund	Lindtner	Seadrill Management
Fergus	Mack	Marathon Oil UK Ltd.
Neil Trier	Madsen	Maersk Supply Service a/s
Tor Ståle	Moen	ConocoPhillips Norge a/s
Stig	Rabben	DOF Management a/s

* Chairman

WORK GROUPS

The various work groups were comprised of the following individuals:-

Work Group 1 (Anchor Handling and Rig Moving Operations)

Name		Representing
Terry	Brown*	Gulf Offshore North Sea Ltd.

APPENDIX 1 - A

PERSONS AND ORGANISATIONS CONTRIBUTING TO THESE GUIDELINES

Name		Representing
Knut Idar	Haugland**	Statoil a/s
Iain	Hepplewhite	Gulf Offshore North Sea Ltd.
Soren	Jeppsen	Maersk Drilling a/s
Per Sund	Lindtner	Seadrill Management
Neil Trier	Madsen	Maersk Supply Service a/s
Stig	Rabben	DOF Management a/s

* Chairman

** Co-Opted

Work Group 2 (Competencies)

Name		Representing
Ole Steinar	Andersen	Statoil a/s
Gustav	Bretton-Meyer	Maersk Supply Service a/s
Bjorn Inge	Furuli*	Bourbon Offshore Norway a/s
Ane	Heidema	Total E & P (Nederland) B.V.
Iain	Hepplewhite	Gulf Offshore North Sea Ltd.
Andy	Holt	SBS Marine
Neil Trier	Madsen	Maersk Supply Service a/s

* Chairman

Work Group 3 (Logistics and Supply Operations)

Name		Representing
Gustav	Bretton-Meyer	Maersk Supply Service a/s
Mike	Close*	GL Noble Denton
Iain	Hepplewhite	Gulf Offshore North Sea Ltd.

APPENDIX 1 - A

PERSONS AND ORGANISATIONS CONTRIBUTING TO THESE GUIDELINES

Name		Representing
Andy	Holt	SBS Marine
Fergus	Mack	Marathon Oil UK Ltd.
Kjetil	Vea**	Statoil a/s
Neil Trier	Madsen	Maersk Supply Service a/s

* Chairman

** Co-Opted

Work Group 4 (General Operations and Project Support_

Name		Representing
Ole Steinar	Andersen	Statoil a/s
Terry	Brown	Gulf Offshore North Sea Ltd.
Ane	Heidema*	Total E & P (Nederland) B.V.
Andy	Holt	SBS Marine
Per Sund	Lindtner	Seadrill Management
Fergus	Mack	Marathon Oil UK Ltd.
Neil Trier	Madsen	Maersk Supply Service a/s
Tor Ståle	Moen	ConocoPhillips Norge a/s

* Chairman

SUPPORT SERVICES AND FACILITIES

The Steering Group would like to thank the Norwegian Oil and Gas Association (formerly Oljeindustriens Landsforening (OLF)) for occasional secretarial support and facilitating access to the Project Place web site. The latter proved to be an invaluable tool in sharing information between members.

The Group would also like to thank those organisations who acted as hosts for its meetings and those of the various work groups, including:-

ConocoPhillips Norge a/s Stavanger

APPENDIX 1 - A

PERSONS AND ORGANISATIONS CONTRIBUTING TO THESE GUIDELINES

GL Noble Denton	Aberdeen
Gulf Offshore North Sea Ltd.	Aberdeen
Maersk Supply Services	København
Marathon Oil (UK) Ltd.	Aberdeen
Statoil a/s	Bergen

Appendix 1-B
Document Style and Structure

1 STYLE OF THIS DOCUMENT

The principles adopted in assembling this document are described below.

1.1 STRUCTURE

The structure of this document is based on the following principles:-

1. Principal guidance should be included in the main body of the document.

2. General guidance relating to all operations, particularly that relating to the safe management of activities will be included in the early chapters of the document.

3. Where possible, the information included in the document should follow the flow of a typical voyage to and from an offshore facility.

4. Supporting information and / or procedures relating to specific operations will be included as Appendices.

5. To facilitate citing of references from this document a maximum of 3 paragraph hierarchy levels has been used wherever possible.

   Lists are all numbered, with no bulleted points being included.

1.2 NUMBERING CONVENTIONS

1.2.1 Figures

Figures are assigned a numeric designation based on the sequence they appear in the relevant chapter, as follows:-

NN - YY

Where:-

NN	=	Chapter in which figure appears
YY	=	Figure number within the chapter

Thus:-

Figure 2 - 1	=	First figure appearing in Chapter 2
Figure 2 - 2	=	Second figure appearing in Chapter 2

This convention has been adopted to enable figures to be subsequently added or removed with minimum disruption to numbering elsewhere in the document.

1.2.2 Appendices

Appendices are assigned an alpha-numeric designation as follows:-

NN - AA

Where:-

NN	=	Chapter to which appendix most relates
AA	=	Order designator within the NN sequence.

Thus:-

Appendix 9 - A	=	First appendix relating to Chapter 9
Appendix 9 - B	=	Second appendix relating to Chapter 9

This convention has been adopted for two principal reasons, as follows:-

1. The order of the appendices relates more closely to that of the main document.
2. Further appendices can be added in the appropriate place at later dates without causing major disruption to general structure of the document.

1.2.2.1 Figures in Appendices

Figures in Appendices are assigned a numeric designation based on the sequence they appear in the relevant Appendix, as follows:-

NN - AA - XX

Where:-

NN - AA	=	Appendix Number as described above
XX	=	Figure number within the Appendix

Thus:-

Figure 12 - A - 1	=	First figure appearing in Appendix 12 - A
Figure 12 - A - 2	=	Second figure in Appendix 12 - A

This convention has been adopted to enable figures to be subsequently added or removed with minimum disruption to numbering elsewhere in the document.

Figures included in Appendices are assigned the number of the Appendix followed

Appendix 1-C
Hierarchy of Authorities

1 HIERARCHY OF AUTHORITY

The hierarchy of authority of this document in the overall maritime environment is summarised in the diagram below.

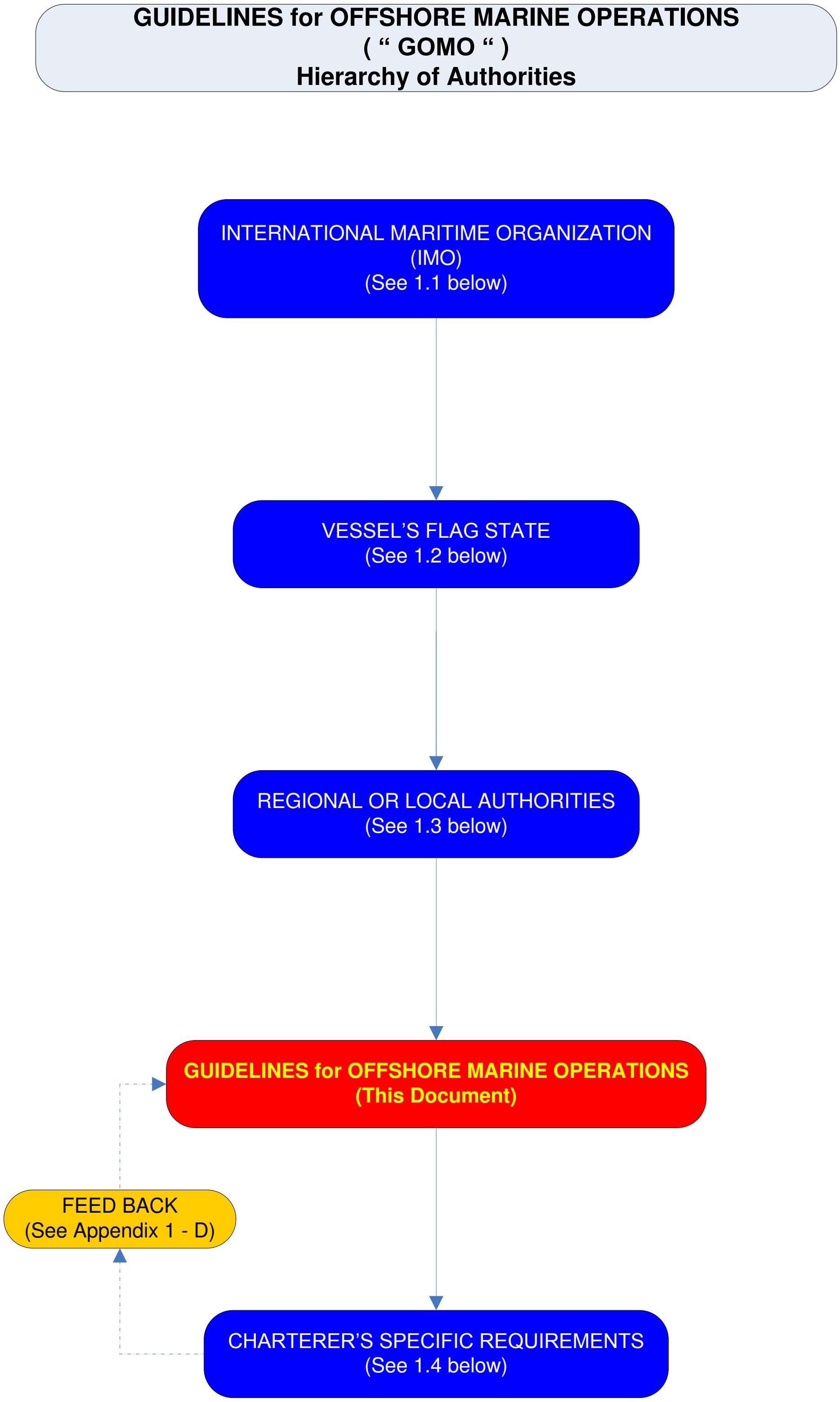


Figure 1 - C - 1 "GOMO" - Hierarchy of Authorities

HIERARCHY OF AUTHORITIES

1.1 INTERNATIONAL MARITIME ORGANIZATION (IMO)

This is the United Nations body supported by all major maritime nations and responsible for international marine legislation which is then ratified by and included in the statute books of member countries.

Such legislation is supported by 4 primary "pillars", as follows:-

1. International Convention for the Prevention of Pollution from Ships (MARPOL)

2. International Convention for the Safety of Life at Sea (SOLAS)

3. International Convention for Standards of Training, Certification and Watchkeeping for Seafarers (STCW)

4. Maritime Labour Convention (MLC)

"Pillars" 1 ~ 3 have been ratified and are currently in force. Following ratification in 2012 "pillar" 4 will be implemented in 2013.

Subsidiary legislation flows from each of the "pillars" referred to above.

1.2 FLAG STATE

In addition to international regulations flowing from the IMO as described above the state where the vessel is registered may have further, supplementary rules.

These are likely to include those developed by Classification Societies acting on behalf of the flag state.

1.3 REGIONAL OR LOCAL AUTHORITIES

Compliance with legislation originating from IMO or the flag state is mandatory wherever the vessel is operating geographically.

However, the authorities responsible for marine activities in its present trading area may have further local requirements relating to, for example, such matters as environmental measures, etc.

It is the responsibility of vessel Owners and Masters to ensure that all the above requirements are understood and complied with at all times.

This document has been prepared on the understanding that this is indeed the case.

1.4 CHARTERER'S SPECIFIC REQUIREMENTS

Each charterer may have specific requirements, both relating to general marine activities or of a more particular nature should a vessel be taken on hire for any specialised operation.

Such requirements may be summarised in the charterer's marine operations manual or in any relevant project-specific procedures

It is the responsibility of the charterer to ensure that Owners and Masters are made aware of any such specific requirements.

Appendix 1-D
Document “Ownership” and Management

CONTENTS

1 ORGANOGRAM

The organogram for the "ownership" of this document and its revision arrangements is shown below.

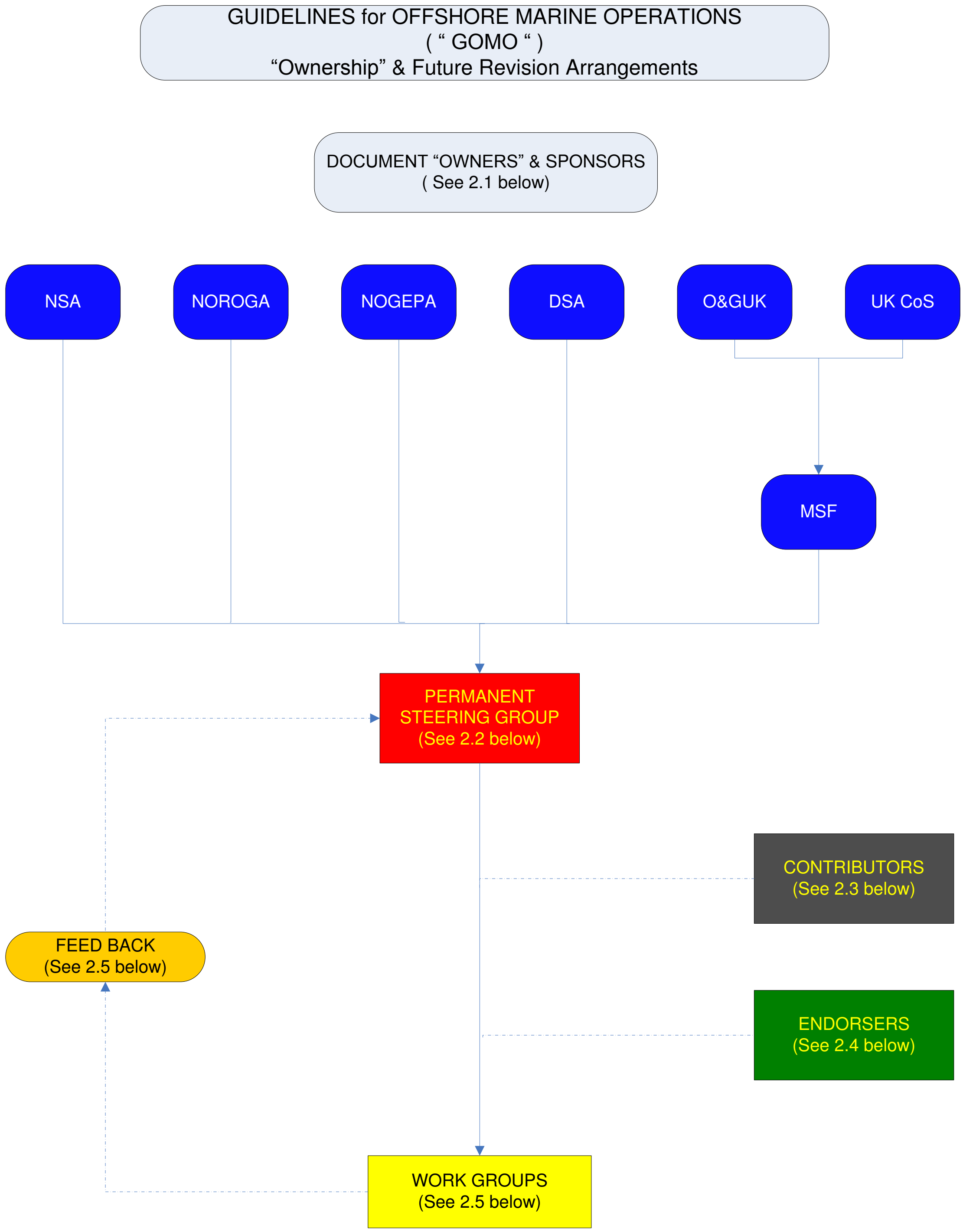


Figure 1 - D - 1 "GOMO" - "Ownership" & Revision Process

2 PARTIES INVOLVED IN MANAGEMENT OF DOCUMENT

2.1 DOCUMENT "OWNERS" & SPONSORS

The "owners" and sponsors of this document will be required to provide the resources, including funding and other support services required for future revisions.

2.2 PERMANENT STEERING GROUP

The steering group will be a permanent establishment which will assess requirements for future revisions of the document. The current steering group will continue until permanent arrangements have been established.

It is presently anticipated that the document will be reviewed on a tri-annual cycle.

Outwith any revision period the steering group will convene every six months, the dates and venues to be mutually agreed.

Such assessments will normally take into account the following:-

1. Period of time since last revision
2. Outcomes or implications of any major incidents.
3. Outcomes or implications of any major changes in technology or operational practices.
4. Outcomes or implications of any major changes in legislation

Between revisions the group may choose to prepare interim supplements to the document should any matter be considered to be of significant interest and may, of course, elect to call forward the next revision should this be thought necessary.

Each sponsor may appoint one member of the group, subject to a quorum of not less than four persons.

The term that any member may serve on the group will be limited to a period of 2 years. Individuals may be re-appointed for 2 further periods of 2 years, making a total of 6 years in all. Such re-appointments are to be endorsed by all document sponsors.

However, it should be noted that in the initial stages 2 members of the group will be limited to a term of 2 years and a further 2 will be limited to a term of 4 years. Such arrangements will be necessary to ensure on-going continuity in later years.

The members of the steering group will appoint the Chair, who will normally serve for a period of 2 years. On appointment, the Chair will take contact with all of the document sponsors and discuss their particular concerns or expectations for the next 2 years.

Appointments are to be based on a member's function within his or her present organisation. Should this change continuing participation in the steering group should be re-assessed.

2.2.1 Temporary Arrangements to Ensure Continuity of Stewardship

As a temporary measure and to ensure continuity a core team of the steering group responsible for preparing this document will retain stewardship of it until the permanent arrangements described above have been established.

On establishment of these permanent arrangements procedures for the transfer of stewardship will be agreed, and those members of the present steering group included in the core team will stand down.

This sub-section will be deleted at the first revision of this document.

2.3 CONTRIBUTORS

Contributors to this document are anticipated to include those trade associations or organisations having a particular interest in operations in support of the offshore or marine renewables industries.

Whilst not part of the formal revision process their contributions will be invited and they will be included in subsequent document review.

2.4 ENDORSERS

Endorsers of this document are anticipated to include contributors as described above and also relevant government agencies or other trade organisations.

Where appropriate, endorsers may be invited to give permission for their logo to appear on the document.

2.5 WORK GROUPS

The requirement for one or more work-groups to review or develop guidance relating to any matter of particular concern will be identified by the steering group.

The terms of reference and objectives for each work group will be developed by the steering group.

Each work group will normally be led by a nominated member of the steering group, who may co-opt any other external expertise considered necessary to deliver the objectives as described above.

The group leader will be responsible for keeping the steering group appraised of progress or of any problems encountered which may adversely impact on the delivery of the group's objectives.

On the delivery of its objectives to the satisfaction of the steering group the work group will disband.

Appendix 1-E
Preparation, Format and Contents of Regional or Local Supplements

PREPARATION, FORMAT AND CONTENTS OF REGIONAL OR LOCAL SUPPLEMENTS

1 INTRODUCTION

It has been identified that in some instances additional guidance specifically relating to operations within a particular region or national area of interest may be required.

As noted in Section 1.7 of this document the team responsible for it will not prepare such regional or local guidance which should be seen as supplementary to it but in the interests of ensuring consistency and minimising the risk of misunderstandings by users will suggest some general principles which should be adopted in the preparation of such guidance.

These principles are set out in this Appendix.

2 PREPARATION AND MANAGEMENT

2.1 PREPARATION

Guidance to be included in any regional or local supplements to this document (GOMO) should be prepared by a SINGLE regional or national industry body, which has the competencies and resources to do so.

It should relate to all marine activities undertaken in support of offshore operations within the area to which the guidance relates.

It should not be prepared or viewed as specific requirements of a particular Charterer or Operator, but should relate to all responsible for chartering or managing vessels or other marine craft operating in the area.

The particular requirements of any Charterer or Operator should continue to be addressed through the normal chartering process, as at present.

2.2 MANAGEMENT

The guidance referred to in this Appendix should be prepared and published as a controlled document.

A process for review and revision at regular intervals as appropriate to the circumstances relating to the area to which the guidance relates should be established.

3 STRUCTURE AND STYLE

It is suggested that documents which contain the guidance described in this Appendix have the following contents:-

1. Area to which it relates, including maps and other aids.
2. Authorities controlling activities in the area, including contact details
3. Regional or industry bodies, including contact details
4. Sources for relevant local legislation.
5. Sources for relevant local official notices
6. Sources for other relevant local guidelines.

It is suggested that the information is included in the order it appears above.

Internet links to relevant sites should be included wherever possible.

Appendix 1-F
Summary of Contents

SUMMARY OF CONTENTS OF THIS DOCUMENT

CONTENTS IN RELATION TO DOCUMENT REPLACED

As explained above it is intended that this be considered a new document, replacing the previous “NWEA Guidelines for the Safe Management of Offshore Supply and Rig Move Operations”.

However, to promote continuity a summary of the contents of this document, together with a comparison of that which it replaces, is included below.

The numbers relate to the chapters in this document.

1 INTRODUCTION

General information relating to purpose and use of document, together with protocols adopted.

Extensive references to appendices for further information relating to style and structure, hierarchy of authorities and document management, together with the regional supplements

2 ABBREVIATIONS AND DEFINITIONS

This chapter is self-explanatory and relates to material included in the former document, updated as required.

3 RÔLES AND RESPONSIBILITIES

This chapter is self-explanatory and relates primarily to Section 2 in the former document.

However, other references to roles and responsibilities also appear elsewhere in that document which have been consolidated into this chapter.

4 OPERATIONAL RISK MANAGEMENT

Explanation of good practices in the management of risk on any vessel supporting operations.

Similar information was included previously included in Sections 5 and 7 of the former document but it was believed that these should be consolidated and expanded to ensure clear guidance relating to all operations undertaken by or onboard vessels supporting operations were included.

5 CERTIFICATION, TRAINING, COMPETENCY & MANNING

Explanation of the competencies recommended , both personal and as a team, on board vessels supporting offshore operations.

It should be noted that these recommendations are in addition to and support any requirements laid down in the STCW convention.

Extensive new material is included but also relates in part to Section 9 of the former document.

SUMMARY OF CONTENTS

6 OPERATIONAL COMMUNICATIONS & MEETINGS

This chapter is self-explanatory.

It relates in part to Section 3.3 of the former document though other references to communications appear throughout it.

Section 2.3 of the former document has been transferred into this chapter.

7 OPERATIONAL BEST PRACTICE

Explanation of general best practice to be adopted on vessels supporting offshore operations.

Whilst this chapter relates in general to Section 3 of the former document extensive new material is included.

Recommendations relating to security have been included in this chapter.

8 COLLISION RISK MANAGEMENT

Explanation of best practice to be adopted by vessels approaching an offshore facility (whether or not a safety zone has been established) maintaining station in its vicinity or departing from the location.

Whilst this chapter relates principally to Section 3.3 and Appendix C of the former document extensive new material is included.

9 LOGISTICS AND CARGO HANDLING OPERATIONS

Explanation of best practices to be adopted in the transportation and delivery of containerised or other cargo items carried on deck to offshore facilities.

This chapter relates principally to Section 3 of the former document, but new material is also included.

10 BULK CARGO OPERATIONS

Explanation of the best practice to be adopted in transportation and delivery of bulk (dry or liquid) cargoes to offshore facilities.

This chapter relates almost entirely to Section 4 of the former document but extensive new material has been added, including recommendations relating to attendance of personnel on the facility whilst hose transfers are in progress, main block operations and the transfer of noxious liquid products in the hours of darkness.

Section 18 of Appendix K in the former document has also been transferred into this chapter.

11 ANCHOR HANDLING AND MOU MOVING

Explanation of best practices to be adopted on board both the mobile units involved and supporting vessels in the course of moving from one location to another.

This chapter relates principally to Section 6 of the former document but extensive new material has been included.

SUMMARY OF CONTENTS

12 PROJECT SUPPORT OPERATIONS

This is a new section relating to a variety of offshore operations likely to require marine support involving vessels.

Extensive references are made to guidelines prepared by other recognised industry bodies.

Guidelines relating to response and rescue support are included, as is information relating to the use of smaller craft on project-related activities.

13 EMERGENCIES

This chapter is self-explanatory.

Whilst it relates in part to Section 10 of the former document a more general; view relating to primacies and the responsibilities for the various parties involved to ensure that appropriate emergency response arrangements are in place is adopted.

14 FURTHER INFORMATION, REFERENCES

This chapter is self explanatory

APPENDICES

The appendices included in this document are summarised in the table below, which also includes their relationship to those in the existing document.

APPENDIX DETAILS (This Document)		NUMBER (Existing Document)	REMARKS
NUMBER	TITLE		
1 - A	Personnel and Organisations Contributing to these Guidelines		New
1 - B	Document Style and Structure		New
1 - C	Hierarchy of Authorities		New
1 - D	Document “Ownership” and Management		New
1 - E	Preparation, Format and Contents of Regional or Local Supplements		New
1 - F	Summary of Contents		New
3 - A	Examples of Platform, MOU Data Cards	H	
3 - B	Examples of Base Operator and Port Data Cards	M	

Summary of Contents

APPENDIX DETAILS (This Document)		NUMBER (Existing Document)	REMARKS
NUMBER	TITLE		
4 - A	Minimum Personal Protective Equipment, Typical Examples		New
7 - A	Guidance on Operations in Environmentally Extreme Conditions		New
8 - A	Safety Zone Entry Check List	D	
9 - A	Deck Cargo Plan, Typical Example	G	
9 - B	Transport of Tubular Cargoes		New
9 - C	Guidance on Make-Up and Use of Tag Lines		New
10 - A	Flowcharts Illustrating Handling of Bulk Cargoes in Port and at Offshore Facility		In main body of former document
10 - B	Bulk Transfer Check List	B	
10 - C	Bulk Hoses, Best Practice Guidelines	K	
10 - D	Hose Markings and Connections		In main body of former document - new material also added.
10 - E	Carriage of Oil Contaminated Cargoes on Offshore Support Vessels	A	
10 - F	Tank Cleaning Check List	E	
10 - G	Tank Standards		Section 5.1.2.3 of existing document
11 - A	Guidance for the Content or MOU Move and Anchor Handling Workscope		New
11 - B	Anchor Handling Systems, Set Up and Handling	N	

SUMMARY OF CONTENTS

APPENDIX DETAILS (This Document)		NUMBER (Existing Document)	REMARKS
NUMBER	TITLE		
12 - A	Adverse Weather Criteria, Response and Rescue Support		New
OTHER APPENDICES (Existing Document)			
	Offshore Support Vessel Bridge Procedures at Offshore Installations	C	Now included in Chapter 8
	Segregation Tables	F	Deleted
	FPSO Specific Check List	I	Deleted
	Communications with Vessels	J	Now included in Chapter 6
	Hand Signals for Crane Operations	P	Deleted
	References	Q	Now included in Chapter 14
	National Addenda		Omitted - to be included in Regional Supplements

NOTES

1. Designation of appendices is explained in note included in the introductory section relating to the style of the document and again immediately prior to that part of the document.
2. It is anticipated that this Appendix will be removed on first revision of this document.

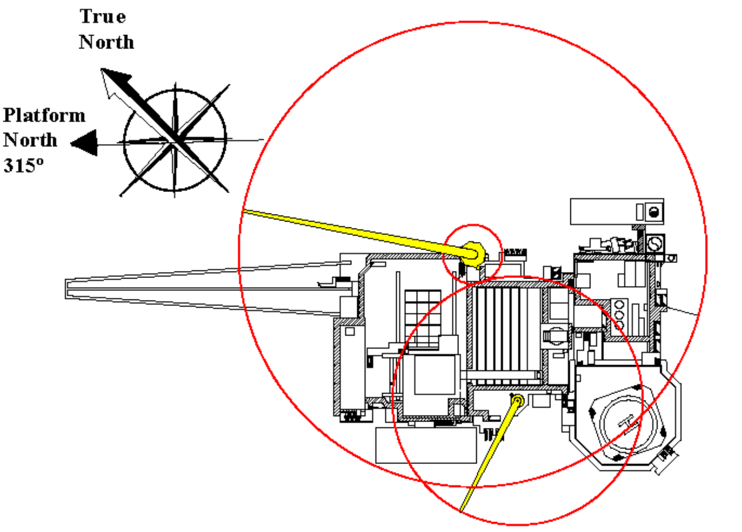
Appendix 3-A
Examples of Platform, MOU Data Cards

EXAMPLES OF PLATFORM, MOU DATA CARDS

PRODUCTION PLATFORM, Example

Alba North
UKCS 16 / 26
PSV / AHV Data Card

Location	Alba Field 16 / 26
Latitude	58° 03' 31" N
Longitude	01° 04' 53" E
Heading	315° (T)
Water Depth	138 metres 453 feet
Call Sign	MPTK4



Specific Marine Hazards

- Various pipelines, umbilicals etc.
- Overboard discharges
- Field activities e.g. shuttle tanker
- Tidal information
- Installation ongoing operations

Communications	General	Emergency
VHF	Ch. 108 (P1) Ch. 50 (P2) Ch. 8 & 12	Ch. 16
Telephone	01224 334000	00 871 (874) 144 5734
Fax (Radio Room)	01224 335680	N/A

Helicopters	Bristows
Log Traffic Emergency	126.400 MHz 123.550 MHz 121.500 MHz
Telephone Tel. (out of hours)	01224 756214 01224 756321
Fax	01224 756348

East Crane	Approx. SWL	Radius	Sea SWH
Whip Line	15 Tonne	23 m	1.6 m
Whip Line	5.2 Tonne	40 m	3.9 m
2 Fall	24 Tonne	18 m	1.6 m
2 Fall	16.6 Tonne	22 m	2.8 m
2 Fall	12.6 Tonne	40 m	3.9 m

West Crane

The west crane is not normally used for Marine op's due to lack of visibility. Priority lifts that do not exceed 5 Tonnes at max. radius and min. sea state can be carried out with the permission of the OIM.

EXAMPLES OF PLATFORM, MOU DATA CARDS

Nearby Installations			Shore Distances	
Alba FSU	(Chevron)	248° (T) x 1.6 mls.	Aberdeen	241° (T) x 115 mls.
Britannia	(Britannia)	108° (T) x 1.9 mls.	Peterhead	250° (T) x 97 mls.
Andrew	(BP)	094° (T) x 10.3 mls.	Wick	280° (T) x 134 mls
Balmoral	(AGIP)	005° (T) x 10.3 mls.	Sumburgh	326° (T) x 130 mls.

Rig Alarms	Fire & Emergency	Abandon Rig	Toxic Gas
Sound	Intermittent	Continuous Variable Tone	Continuous Steady Tone
Light	Flashing Yellow	Flashing Yellow	Flashing Red

Hoses & Connections (East Crane)

Grade	Connection
Diesel	4" Avery Hardol
Pot Water	4" Weco
Drill Water	4" Weco
Cement	4" Weco
Barite / Bent.	4" Weco
Liquid Mud	4" Avery Hardol
Brine	4" Avery Hardol

Cargo Transfer Operations

- Agree product & quantity to be transferred
- Ensure agreed pump pressures / rates before discharge commences
- Confirm who will decide the routine halting of the operation
- Cargo transfer should commence slowly to check integrity of system
- Rates should only be increased when integrity of hose proved
- Confirm regularly with Control Room the amount of cargo transferred

Vessel Co-ordination

The co-ordination of Marine Operations will be as per the Master's Instructions issued to the vessel by Team Marine prior to departure from port. Daily reporting requirements are detailed within these instructions.

When in field area report :

Name of vessel
Arrival at the installation
Departure from the installation
Upon being sent to standby
Upon ceasing operations due to weather

Upon leaving the field report :

Name of vessel
Location and time of departure
ROB bulk products
Fuel and water requirements
ETA at port or next installation
Deck area utilisation (e.g. 80%)
Liquid tank status

Oct. 2005
Rev. 4

EXAMPLES OF PLATFORM, MOU DATA CARDS

MOU Example

To Follow

Appendix 3-B
Examples of Base Operator and Port Data Cards

Examples of Base Operator and Port Data Cards

BASE OPERATOR DATA CARD, Example

PETERHEAD INFORMATION SHEET

BASE RULES
Vessel to be adequately manned at all times.

All personnel must wear appropriate PPE & High Viz at all times when outside of vessel's accommodation, including when transiting the base.

A safe means of access must be provided by vessel.

Moorings and Gangway to be properly tended.

It is the Master's responsibility to ensure that there is sufficient water depth under the keel.

Weather forecasts are available from on Ch 11.

The Master and Mates should read North Sea Section

PRIOR TO ARRIVAL AT
CONTACT PORT CONTROL ON CH 16 & CH 14.
CONTACT BASE ON CH 11 1 HOUR PRIOR TO ARRIVAL AND AT 1 MILE FROM THE BREAKWATER.

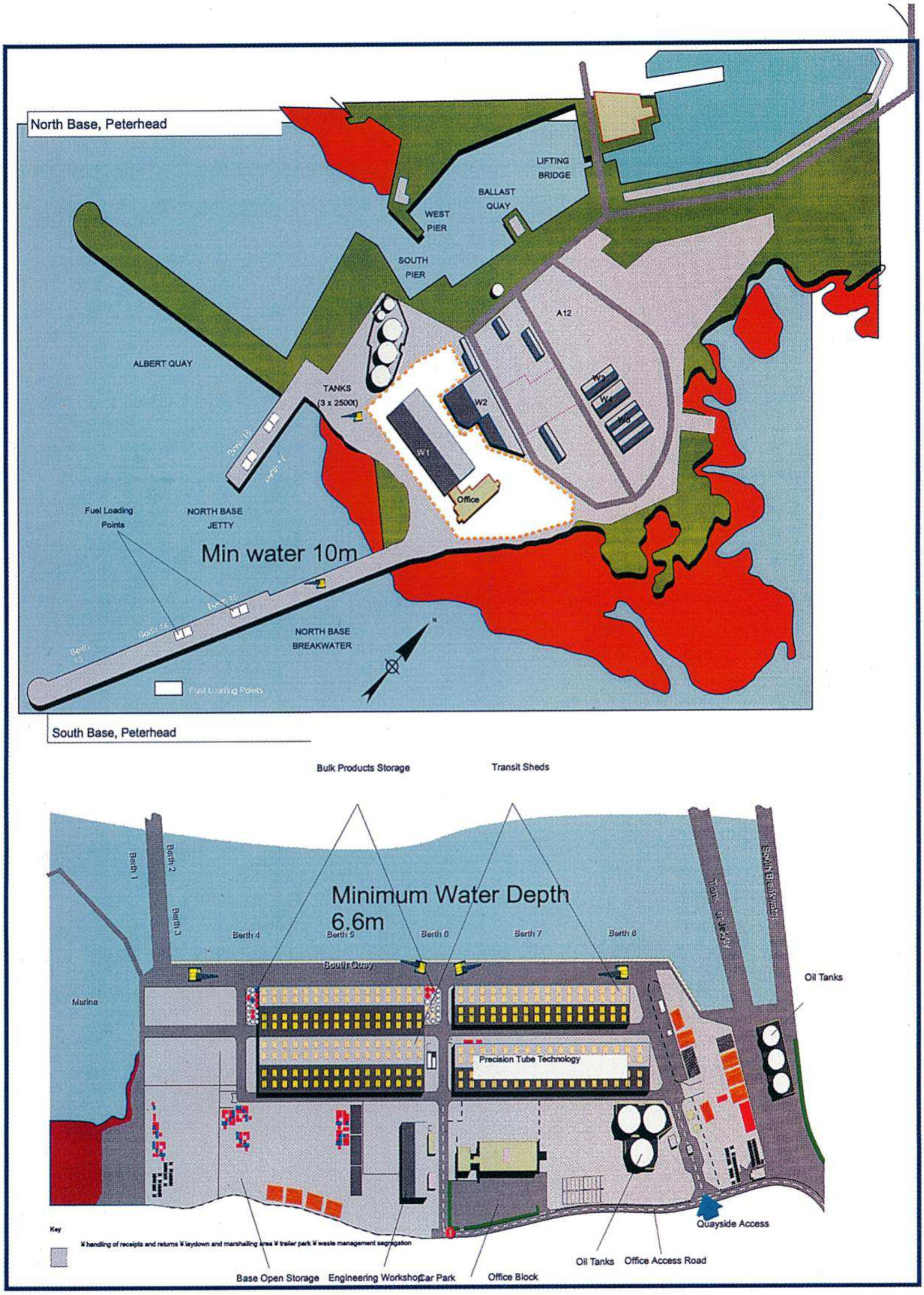
Station	Frequency & Telephone No
* Harbours	Ch 16 & Ch 14
* Base	Ch 11

NAME	FUNCTION	CONTACT NO
*	Marine Operations Supervisor - In charge of the day to day running of the Supply Vessel Fleet.	* or through Operations Desk
*	Marine Co-ordinator - Responsible for scheduling of vessels. Main point of contact for vessels on charter to *	* or through Operations Desk
*	Assistant Marine Co-ordinator. Back-up to *	* or through Operations Desk
Operations Desk	Responsible for berthing of vessels, organising fuel, water, skips, labour, craneage. Boatmen. Main point of contact for vessels not chartered to *	* or through Operations Desk
*	Marine Technical Manager - Responsible for ensuring vessels are fit for purpose, incident/accident investigations, answering any queries of a technical nature.	* or through Operations Desk
*	Assistant Marine Technical Manager - Responsible for running the Stand By Vessel fleet and providing technical back up to the Marine Technical Manager.	* or through Operations Desk
*	* Department	* or through Operations Desk
*	* Surveyors, carry out tank inspections and verify liquid bulks loaded.	* or through Operations Desk
*	Environmental Chemist - will give advice on any chemicals being carried or requiring disposal.	*
*	Marine Operations Manager - Responsible for Anchor Handlers.	*

GOMO APPENDIX 3 - B

EXAMPLES OF BASE OPERATOR AND PORT DATA CARDS

PORT DATA CARD, Example



Appendix 4-A
Minimum Personal Protective Equipment, Typical Examples

MINIMUM PERSONAL PROTECTIVE EQUIPMENT, TYPICAL EXAMPLES

Suggested Minimum Requirements for Typical Shipboard Work

NATURE OF WORK	PROTECTIVE & PREVENTITIVE MEASURES REQUIRED									
	HAND	HEAD	EYE	EAR	FACE	FOOT	FALL	FLOTATION	HIGH VISIBILITY	RESPIRATORY	ADDITIONAL
Chemical Handling	1	2	1		1	1				2	Apron may be required
Cleaning, Heavy Duty	1	2	1		2	1				2	Long sleeved coveralls
Cleaning, Light Duty	1	2	1			1					
Deck Work, Anchor Handling	1	1	1	2		1		1	1		
Deck Work, General	1	1	1	2		1			1		
Deck Work, Tending Pilot	1	1	1	2		1		1	1		
Electrical Work	1	2	1	2		1			2		Insulating mat may be required
Enclosed Space Entry	1	1	2	2		1	2		2	2	Long sleeved coveralls
Food Preparation	1					1					Apron may be required
Hot Work	1	2	1	2	2	1					
Machinery Spaces, General Work	1	2	1	1		1			2		
Using Manual Tools	1	2	1	2		1					
Using Power Tools	1	2	1	2	1	1					
Welding	1	2	1	2	1	1				2	Apron and spats required
Working at Height	1	1	1	2		1	1	2	2		Tool Belt required
Working Overside	1	1	1	2		1	1	1	2		Tool Belt required

KEY

1	=	Mandatory
2	=	As determined by risk assessment, company procedures or by the nature of the work

Appendix 7-A
Guidance on Operations in Environmentally Extreme Conditions

CONTENTS

GUIDANCE ON OPERATIONS IN ENVIRONMENTALLY EXTREME CONDITIONS

1 ENVIRONMENTALLY EXTREME CONDITIONS

This Appendix relates to the following conditions:-

1. Air temperatures of less than -10º Celsius.

   Please note, however, that navigation in ice is NOT included. Guidance in this matter should be sought from other sources.

2. Air temperatures greater than +35º Celsius.
3. Safety-Critical Equipment in Environmentally Extreme Conditions
4. Operations in Extended Periods of Darkness

2 COLD WEATHER OPERATIONS (< -10º CELSIUS)

2.1 PERSONNEL CONSIDERATIONS

Working in cold weather environments has significant implications on human capabilities, and unless proper precautions are made, these can be hazardous to a person's health. In recognition of these implications on human health and performance due to working in cold climes,

1. Basic information on human performance and health hazards when working in cold conditions
2. Guidance for design or selection of clothing
3. Information that can be used to help generate cold weather operations safety and operating procedures
4. Information that can be used to preserve the health of persons working in cold environments
5. The information that follows is provided for those owners, or operators to consider in the course of ship operation.

2.2 HUMAN RESPONSE TO COLD EXPOSURE

The core (trunk) of the human body should remain within a small temperature range for healthy function. Excessive cooling or excessive heating will result in abnormal cardiovascular and neurological function. The skin is the organ through which a person regulates body temperature. With an average skin temperature of 33°C (91.4°F), conductive heat loss occurs at temperatures below this value, therefore, it is easy to see how cold weather performance can significantly influence normal body function. As a person cools:

Metabolism is increased to generate more body heat – as cooling continues a person will begin to "shiver" – a visible sign that body cooling has progressed beyond a comfortable level. Increased metabolism will reduce the amount of time a person can sustain work.

Safe manual materials handling tasks require the use of sense of touch, hand dexterity, strength, and coordination. Decreases in the ability to produce force, exhibit fine control over objects, and sustain muscular work loads occur in cold working environment.

Work in cold environments is related to an increased risk for musculoskeletal injury.

Motor function impairments of the arms and hands will occur long before cognitive or hypothermic-related disabilities occur. Impaired cognitive performance will lead to poor decision-making and increased risk for accident.

Persons suffering from arthritis or rheumatism will generally experience increased levels of pain during cold weather operations.

2.3 WIND CHILL EFFECT

Wind chill is the perceived decrease in air temperature due to the flow of cold air over the body.

Heat is lost from the human body through a variety of processes, including convection, conduction and radiation. In still conditions the air immediately next to exposed skin heats up forming an insulating boundary layer. Air movements disrupt this boundary layer, allowing new, cooler air to replace the warmer air immediately next to the skin, resulting in the apparent cooling effect. This effect is accentuated as the wind speed increases.

The effects of wind chill are illustrated in the diagram below.

WIND CHILL INDEX

WIND SPEED				AIR TEMPERATURE (Celsius)												
m / s	knots	BEAUFORT (Approximate) Force	Description	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
1	2	1	Light Air	10	5	-1	-6	-12	-17	-23	-29	-34	-40	-45	-51	-56
2.5	5	2	Light Breeze	9	3	-3	-9	-15	-21	-27	-33	-39	-45	-50	-56	-62
5	10	3	Gentle Breeze	8	1	-5	-11	-17	-24	-30	-36	-42	-49	-55	-61	-67
7.5	15	4	Moderate Breeze	7	0	-6	-13	-19	-26	-32	-38	-45	-51	-58	-64	-71
10	20	5	Fresh Breeze	6	0	-7	-14	-20	-27	-34	-40	-47	-53	-60	-67	-73
12.5	25	6	Strong Breeze	6	-1	-8	-15	-21	-28	-35	-42	-48	-55	-62	-69	-75
15	30	7	Near Gale	5	-2	-8	-15	-22	-29	-36	-43	-50	-56	-63	-70	-77
17.5	35	8	Gale	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-78
20	40			5	-2	-9	-16	-23	-31	-38	-45	-52	-59	-66	-73	-80
22.5	45	9	Severe Gale	4	-3	-10	-17	-24	-31	-38	-45	-53	-60	-67	-74	-81

(after JAG/TI and DNMI)

Figure 7 - A - 1 Wind Chill Index

Colour coding in Figure 7 - A - 1 relates to the potential for onset of frostbite in exposed skin, as follows:-

	Frostbite highly likely within 30 minutes, particularly if skin is already cold.
	Frostbite will occur within 10 minutes or less, particularly if skin is already cold
	Frostbite will occur within 2 minutes or less, particularly if skin is already cold

2.4 EFFECT OF COLD EXPOSURE ON COGNITION & REASONING ABILITY

Tasks requiring vigilance may be hampered after prolonged exposure to cold. Decision verification procedures should be implemented.

Cold weather operations, coupled with other physical distracters, such as noise or motion environments, will influence the quality of perception, memory and reasoning and compound the risk of decision-making error.

2.5 HEALTH HAZARDS RELATING TO COLD EXPOSURE

The list of potential injuries and issues for occupational work in cold environments is lengthy. Personnel should have adequate training to enhance preparation for work in cold environments. Proper planning and precaution can deter the potential risks of cold work.

2.5.1 Hypothermia

Hypothermia is a rapid, progressive mental and physical collapse due to the body's warming mechanisms failing to maintain normal body temperatures.

While hypothermia is often associated with immersion in cold water, it can also occur in air when suitable cold weather protection is not employed. Conditions of extremely low dry-ambient temperature or mildly cold ambient temperatures with wind and dampness can lead to a general cooling effect on the body. If metabolic heat production is less than the gradient of heat loss to the environment hypothermia becomes an issue.

2.6 MONITORING ENVIRONMENTAL CONDITIONS

Working in cold environments requires an understanding of the interaction between ambient temperature, wind speed, relative humidity, personnel protective equipment and task being performed. In order to limit the risk during operational activities due to cold stress and further prevent local cold injuries and general freezing, specific preventative measures should be evaluated and introduced during the planning and execution of the daily work activities.

Climatic metrics such as temperature, wind speed, and humidity should be regularly monitored in the locations where outside work is to be performed. Of primary importance is a regular reporting of the wind chill or equivalent temperature.

Regular communications should be maintained regarding allowable time to work outside. Indoor personnel should regularly monitor outside workers so best work-to-rest/warming schedules are maintained.

2.7 CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT

For appropriate protection/isolation against cold climate conditions, adequate clothing should be selected and used onboard during cold periods. Such optimal clothing should be able to mitigate water and humidity during work and at the same time insulate sufficiently to maintain thermal comfort during rest. The insulating effect of the clothing is influenced by different factors including temperature, wind and humidity.

Specific guidance is to be provided covering:

1. Hand Protection
2. Head and Eye Protection
3. Foot Protection

2.8 NUTRITIONAL CONSIDERATIONS IN COLD CLIMATES

The added weight of protective clothing and the limitations in mobility created by protective equipment will increase the mobility demands of the operator, thus increasing the metabolic needs for a given task.

2.9 WORKSTATION DESIGN AND OPERATIONAL CONSIDERATIONS

An analysis of outdoor work situations should be performed early in design/layout development, and should be updated when design changes are made that will influence personnel's exposure to cold stress.

Outdoor operations analyses (an examination of the tasks to be carried out in cold conditions) should be carried out for open work areas and semi-open work areas. The objective of these analyses is to identify and remedy task performance issues due to overall exposure to temperature, wind, icing and precipitation, including investigation of the weather protection necessary to comply with exposure limits.

2.10 SAFETY SYSTEMS

Cold environments present many significant challenges to the design and use of emergency, evacuation, and rescue devices. Much of the hardware devised for such use is designed for more temperate climates. Fire mains can freeze. Materials (such as used in life vests) become brittle. Working devices (such as sheaves, blocks, and davits) can freeze in place – refusing to move.

2.11 FIRE FIGHTING EQUIPMENT

Significant risks are associated with fire fighting equipment, the most significant being the potential freezing of fluids in lines, thereby depriving crew of the use of the firefighting systems.

Specific risks include:

1. Freezing of fire water hoses, piping, nozzles, etc.
2. Portable fire extinguisher storage may be obstructed or frozen
3. Fire dampers may freeze in the stowage position.
   (generally closed in temperate climates)

Appliance types include lifeboats, life rafts, rescue boats, launching stations, ice gangways, immersion suits, alarms, escape routes, and access routes.

2.12 HULL CONSTRUCTION, ARRANGEMENTS AND EQUIPMENT

Specific features which should be included when planning operations in cold conditions include:-

1. Ballast Tanks.

   Means must be provided to prevent freezing of the ballast water in tanks and vents

2. Superstructure and Deckhouses.

   External access to the navigation bridge windows is to be provided to facilitate ease of cleaning. Alternating navigation bridge windows are required to be heated.

3. Personnel required to perform external duties such as being a lookout when underway, security at the gangway when in port, or being on deck during loading operations are to be provided with a safe haven.

2.13 ICE LOADS ON DECKS

In particular, one of the potentially significant consequences for any ship in transit through cold weather waters is the concentration of ice on deck.

2.14 SEA WATER SUPPLIES

During navigation and at port in ice-covered waters, attention must be paid to sea water supplies for essential operational systems and safety systems. Sea water supplies are needed for the ballast system, the cooling water system serving propulsion machinery, main and emergency fire pumps supplying the fire and wash deck system and the water spray system.

2.15 PROTECTION OF DECK MACHINERY, SYSTEMS AND EQUIPMENT

Generally, deck machinery and systems are not prepared for freezing temperatures. Essential equipment and systems must be available at all times and in any temperature conditions.

The lubricating oil and hydraulic oil used in rotating machines exposed to the weather must be suitable for low temperatures.

3 WARM / HOT (> 35º CELSIUS)

3.1 ULTRA VIOLET PROTECTION, PERSONNEL

Personnel should be made aware of the risks associated with excessive exposure to ultra violet radiation.

It should be noted that the risk of over-exposure to ultra-violet radiation is not limited to warm / hot conditions, and may also occur in middle or high latitudes.

Operations should be planned or equipment provided so that the risk of personnel being exposed to excessive or extended radiation is minimised.

3.2 ULTRA VIOLET PROTECTION, EQUIPMENT

Certain items of equipment, including some plastics and ropes manufactured using artificial fibres, will quickly degrade when exposed to intense ultra violet radiation, leading to failure in use which may result in a dangerous situation developing.

Arrangements should therefore be made to protect such equipment form exposure to radiation of this type.

It may be inevitable that equipment cannot be protected whilst in use, but every effort should be made to provide adequate protection when not actually deployed.

3.3 PRECAUTIONS AGAINST INFECTION

Operations in certain tropical or equatorial parts of the globe may result in personnel being exposed to the risk of contracting infections or diseases against which their natural immune system will provide little or no defence.

Personnel should therefore be made aware of such risks and the measures to be taken to minimise them.

Where appropriate, barrier arrangements, insect repellents and prophylactic medicines should be provided. Personnel are to be instructed in their use as required.

3.4 PRECAUTIONS AGAINST DEHYDRATION

Dehydration, with its associated risks, may be experienced by personnel engaged in strenuous activities which result in increased perspiration.

Whilst this may occur in temperate climates this risk increases in tropical and equatorial conditions, particularly since even minor levels of activity may give rise to excessive perspiration.

Personnel should therefore be made aware of the risks associated with dehydration, and sufficient drinking water should always be made readily available.

As described in standard medical reference sources urine colour is an easy way to monitor an individual's hydration status. These should be consulted for further information regarding this matter.

4 SAFETY CRITICAL EQUIPMENT IN ENVIRONMENTALLY EXTREME CONDITIONS

Marine equipment, including that of a safety critical nature, is normally designed and manufactured to operate within a temperature range from -10º to +35º Celsius.

Where there is any likelihood that vessels will be required to operate in conditions outwith this temperature range it should be ensured that all elements of safety critical systems are designed and manufactured accordingly, or are adequately protected to ensure their continuing operability.

A programme of regular inspection and testing of safety critical systems when operating outwith the normal temperature range should also be implemented to ensure that such systems remain available if required.

5 OPERATIONS IN EXTENDED PERIODS OF DARKNESS

Operations in higher latitudes (north and south) in the winter months will be undertaken in circumstances where the period of natural daylight is restricted or absent altogether and will involve extensive use of artificial illumination.

In such circumstances due recognition should be taken of the risk that personnel will experience depression or other adverse effects due to seasonal affective disorder (SAD).

Clinical advice should be sought to identify the appropriate precautions to be taken to minimise this risk.

GOMO Appendix 8-A

Safety Zone Entry Check Lists

Revision History

Revision Number	Date	Section	Changes
1	November 2021	All	Transferred to new template

Contents

1 Check Lists for Vessels

1.1 All Vessels, Arrival at Offshore Facility

Vessel	
Facility	
Date & Time	

	All Vessels	**Status**		**Comments**
		Yes	**No**	
1	Environmental conditions acceptable for a safe operation *(including wind, sea, swell, visibility and current)*			
2	Limitations due to sea / weather condition			
3	Safe approach / exit routes identified Stand-off location identified			
4	Confirm whether any simultaneous operations anticipated whilst vessel is within safety zone			
5	Confirm whether any prohibited zones are present at facility			
6	Bridge and Engine room manned in accordance with GOMO			
7	Communication established: • VHF Channel(s): • UHF Channel(s):			
8	No hot work / smoking on deck within safety zone			
9	Auto Pilot off			
10	All manoeuvring and steering gear systems tested including changeover between control positions and manoeuvring modes			
11	Emergency manoeuvring system confirmed to be operational			
12	Operating location confirmed with facility			
13	Status of overside discharges confirmed with facility			
14	Vessel to be manoeuvred to set-up position before changing mode *(1.5 to 2.5 x ship's length depending on whether in drift on or drift off situation)*			
15	Vessel operational capability reviewed / confirmed *(to include power, thrust, location, heading etc.)*			
16	Risk assessments for alongside operations reviewed/confirmed *(if working weather side, complete additional RA)*			
17	Facility to confirm readiness for vessel arrival and operation *(including no overboard discharge)*			
18	Manoeuvring mode during the operation to be agreed *(if DP mode vessel specific DP checklist to be completed)*			
19	On-going and/or planned activities within safety zone confirmed between facility and any other vessel(s)			

Further Check Lists to be Completed as Appropriate

Permission Received to Enter Safety Zone			
Date		**Time**	
From		**Function**	
Name		**Name**	
Signature		**Signature**	
Position / Rank		**Position / Rank**	

1.2 Vessels Engaged in Logistics Support

Is this Check List Relevant: YES / NO

(Mark as appropriate – if not relevant also cross out list)

Vessels Engaged in Logistics Support		Status		Comments
		Yes	No	
1	Proposed operations confirmed with facility Discharge and back-load *(Cargo, bulks, fluids, etc.)*			
2	Anticipated duration of operations confirmed			
3	Confirm discharge / back-load sequence with facility 1. Can stow be broken safely? *(adequate escape routes to safe havens etc.)* 2. Any priority lifts? *(must not require "cherry picking" of stow)* 3. Sufficient space for back-load except at last call? *(*see notes below)*			
4	Confirm any other activities which may occur whilst vessel is alongside and connected to facility *(particularly any operations involving crane driver or deck crew)*			
5	Confirm availability of facility personnel and equipment *(particularly for any operations involving hoses)*			
6	Confirm whether any changes of working face will be required *(if so, move from one to the next to be planned accordingly)*			
7	Confirm whether any unusual lifts will be involved 1. Any main block lifts? 2. Any vulnerable / sensitive lifts? 3. Any lifts involving use of tag lines? 4. Any other unusual lifts? *(including long objects or not pre-slung lifts etc.)*			
8	Confirm readiness to commence dry bulk transfer operations 1. Is hose buoyancy adequate? 2. Has valve configuration been correctly set?			
9	Confirm readiness to commence liquid transfer operations 1. Is hose buoyancy adequate? 2. Has valve configuration been correctly set? 3. If required, is illumination adequate? 4. If required, is additional monitoring in place?			
10	Confirm whether vessel will be required to receive and back-load wet bulk cargoes *(if so, confirm recent analysis report will be available prior to accepting cargo)*			

Notes

1. As a contingency, 10% of usable cargo deck or one clear bay is normally considered to be sufficient for back-load cargoes.

1.3 All Vessels, Departure from Offshore Facility

All Vessels		Status		Comments
		Yes	No	
1	Vessel to be manoeuvred well clear of facility before changing mode *(1.5 to 2.5 ship's length depending on whether in drift on or drift off situation)*			
2	All controls set to neutral position before changing mode			
3	Where practical, vessel to depart down weather or down current from facility			

2 Check List for Offshore Facilities

2.1 All Vessels Entering Safety Zone

All Vessels		Status		Comments
		Yes	No	
1	Confirm anticipated working locations with vessel			
2	Confirm status of facility, where relevant *(heading, movement, thruster use, etc.)*			
3	Communication established • VHF Channel(s): • UHF Channels(s):			
4	Confirm that vessel is aware of any prohibited zones around the facility			
5	Confirm whether any simultaneous operations anticipated whilst vessel is within safety zone *(nature and duration of any such operations to be advised to vessel)*			
6	Status of overside discharges to be confirmed and advised to vessel			
7	Vessel operational capability confirmed *(vessel to advise any concerns and/or operational limits)*			
8	Facility to confirm readiness for vessel arrival and operation *(including overboard discharges stopped where practical)*			
9	Vessel to advise proposed station keeping arrangements during the operation *(if DP mode confirm proposed operational mode)*			
10	Confirm name(s) of any other vessel(s) attending facility 1. ERRV / SBV: 2. Vessel 1: 3. Vessel 2:			

Further Check Lists to be Completed as Appropriate

Permission Given to Enter Safety Zone			
Date		**Time**	
Name		**Name**	
Signature		**Signature**	
Position		**Position**	

2.2 Vessels Entering Safety Zone for Logistics Support

Is this Check List Relevant: YES / NO

(Mark as appropriate – if not relevant also cross out list)

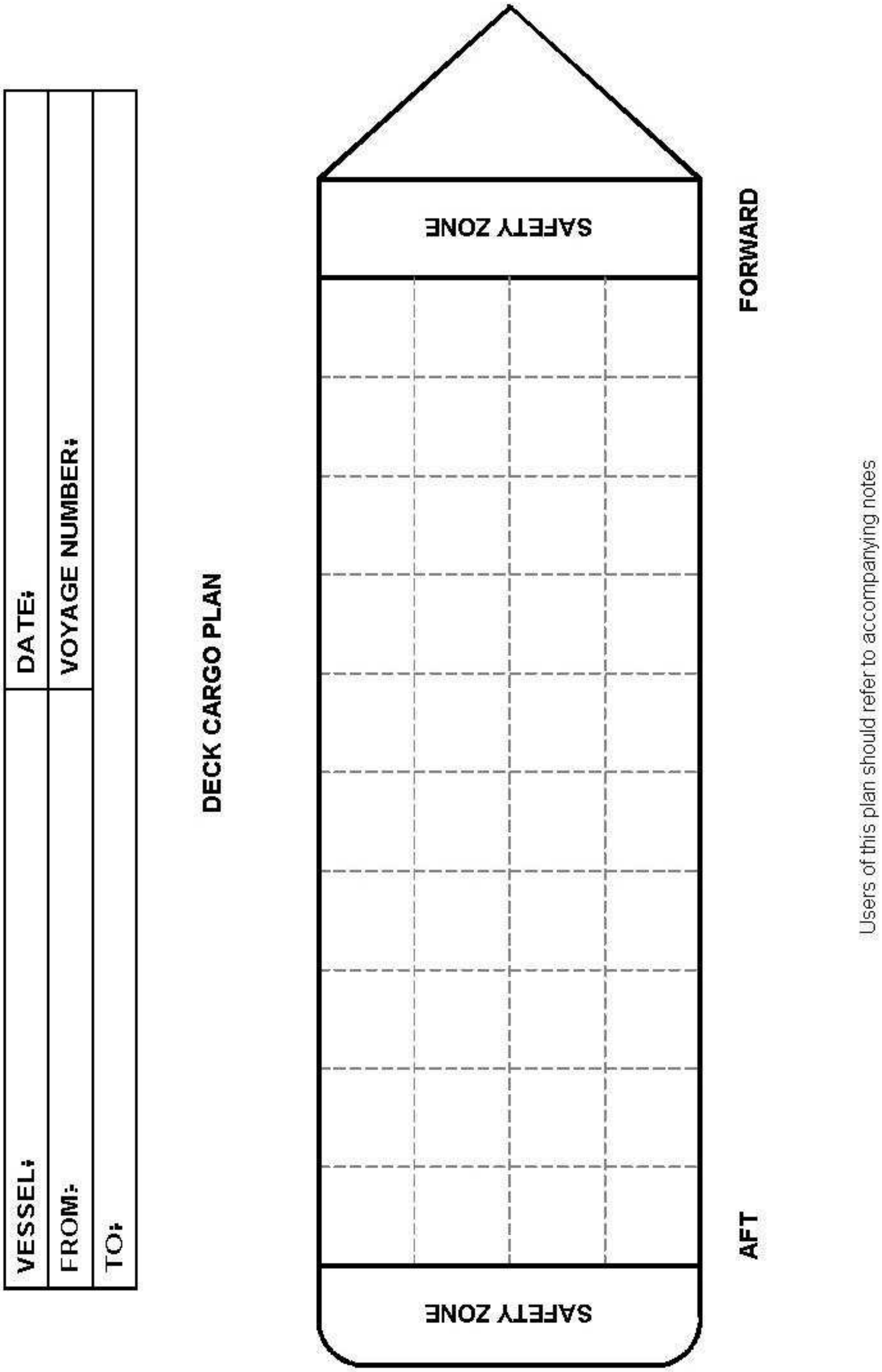
Vessels Providing Logistics Support		Status		Comments
		Yes	No	
1	Proposed operations confirmed with vessel Discharge and back-load *(cargo, bulks, fluids, etc.)*			
2	Anticipated duration of operations confirmed			
3	Vessel to be informed of any anticipated delays during operations			
4	Confirm discharge / back-load sequence with vessel 1. Are there any priority lifts? *(must not require "cherry picking" of stow)* 2. Has vessel sufficient space for back-load?			
5	Confirm any other activities which may occur whilst vessel is alongside and connected to facility *(particularly any operations involving crane driver or deck crew)*			
6	Confirm availability of facility personnel and equipment *(particularly for any operations involving hoses)*			
7	Confirm whether any changes of working face will be required			
8	Confirm whether any unusual lifts will be involved 1. Any main block lifts? 2. Any vulnerable / sensitive lifts? 3. Any lifts involving use of tag lines? 4. Any other unusual lifts? *(including long objects or not pre-slung lifts etc.)* 5. Has crane driver appropriate competency and experience? *(previous experience of lifts of this nature)*			
9	Confirm readiness to commence bulk transfer operations 1. Is hose buoyancy adequate? 2. Has valve configuration been correctly set?			
10	Confirm readiness to commence liquid transfer operations 1. Is hose buoyancy adequate? 2. Has valve configuration been correctly set? 3. If required, is illumination adequate?			
11	Confirm whether vessel will be required to receive any back-load wet bulk cargoes *(if so, confirm recent analysis report will be available prior to cargo being transferred to vessel)*			

UNCONTROLLED WHEN PRINTED

Appendix 9-A
Deck Cargo Plan, Typical Example

GOMO APPENDIX 9 - A

DECK CARGO PLAN, TYPICAL EXAMPLE



Appendix 9-B
Transport of Tubular Cargoes

Best Practice Transport of Tubulars

TRANSPORT OF TUBULAR CARGOES

CONTENTS

TRANSPORT OF TUBULAR CARGOES

1 GENERAL

1.1 PURPOSE

The purpose of this document is to describe the recommended practice for safe transportation and handling of tubular cargo on offshore service vessels. Important interface issues in relation to bases and installations are included.

According to governing regulations, it is the responsibility of the captain to make sure that the cargo is properly secured before the departure. This document does not in any way or manner exempt the captain from this responsibility, but is intended to serve as the recommended practice for handling of tubular cargo on vessels in connection with cargo handling at bases and offshore as well as during transport.

1.2 DEFINITIONS, IMAGES AND REFERENCES

Tubular cargo: Round objects which are shipped not in separate cargo carriers but using slings to bundle one or more such objects together in a bundle.

Figure 9 - B - 1 **Marine risers**

Figure 9 - B - 2 **Conductors (**Dimension 26” to 32”)

Figure 9 - B - 3 **Casing (**Dimensions range from 7” to 26”)

Figure 9 - B - 4 **Drill pipe**

Figure 9 - B - 5 **Slip joint**

”Telescope” which absorbs vertical drilling riser movements on a floating rig

Figure 9 - B - 6 **Drill collars**

Collars used to increase the weight of the drill bit during drilling. Has the same outside diameter across the entire length

Figure 9 - B - 7 **Tubing** (Dimensions range from 2 7/8 to 7”)

Figure 9 - B - 8 **Tubulars for pipelaying vessel (transport pipeline)**

Figure 9 - B - 9 **ASFA (**Automatic Sea Fastening Arrangement)

Pup joint: Short casing / tubing joints used as "space out" for connecting pipelines sections of a pre-determined length.

Centralizer: Device fitted on the outside of the casing / liner to align it in the centre of the bore hole during cementing.

2 CARGO REQUIREMENTS

1. The slinging shall be in accordance with national requirements & branch standards, and proper secured with wire clamps or similar ex. Welcro bands.
2. Units shorter than 6 metres should be transported in a cargo units
3. Slinging of tubular cargo must ensure the bundles remain stable.
4. Tubular cargo should preferably be bundled in “odd” numbers when practicable

5. As regards 9 5/8"-13 3/8" casings fitted with centraliser, consider having only 1 tubular in each bundle as it may be difficult to split them on the pipe deck
6. The slinger must take into consideration the WLL of the slings and the weight of each tubular when slinging the bundles.
7. Certified lifting points fitted on the tubulars shall be used during loading of large and heavy dimensions if they cannot be strapped in a prudent manner or handled in certified cargo carriers
8. Inspect for loose/damaged protectors during all phases before lifting the cargo

3 PREPARATIONS BEFORE LOADING AT BASE

- The vessel must be informed of the tubular cargo well before loading; *dimension, weight, length, quantity.*
- Dedicate the most suitable deck area based on destination, which crane will be used and weather reports. And if relevant, how many layers may be loaded.
- Hull loads and reduced stability in case tubulars become filled with water must be taken into consideration upon assignment of area.
- Position hawsers:

  Three hawsers are recommended across the deck for each joint, one approx. in the middle, and one 1-2 m from each of the ends.

- Position chains:

  Two chains are recommended below the first layer for each joint, about 1/3 and 1/4 of the distance from each end. It may not be necessary to use the chain during the loading. But if the offloading operation must be interrupted before all cargo has been unloaded, the chains may be used to secure the remaining cargo

- Prepare pipe supports. The vessels will normally have pipe supports approx. 1/3 in from the cargo rail on each side.
- Prepare Automatic Sea Fastening Arrangement if necessary on vessels equipped with this.
- Pay special attention during loading on steel decks on anchor handling vessels. The vessel crew must position a sufficient amount of friction material (hawsers) before the loading starts. Chains must also be used
- A sufficiently safety zone must be established fore and aft of the dedicated cargo area. The area must be minimum 1 m

4 LOADING AT BASE

1. A representative from the vessel, preferably an officer responsible for loading, must monitor and supervise during the loading operation
2. It is important to ensure bundles are stowed as close together as possible to avoid the risk of shifting cargo during the voyage
3. When loading large dimensions with one tubular in each bundle, evaluate whether to fit wedges below each tubular joint to avoid the risk of shifting cargo during transportation or offloading.
4. If wedges are used, these should be nailed to a wood deck if possible to reduce the risk of shifting
5. Large dimensions must never be loaded on top of smaller dimensions
6. When stacking cargo, take into consideration the strength of the deck, as well as the working height for seamen. Two metres is normally the maximum stacking height
7. Vessels must always be loaded in a manner that make it possible easy securing of remaining cargo on board in case of interrupted offloading offshore

8. If possible, tanks and other frame/skid-type cargo units shall not be positioned just fore or aft of tubular cargo due to the risk of snagging
9. Slings on bundles must be extended and laid across the tubulars to avoid becoming wedged between the bundles.
10. Determine the appropriate placement in relation to openings and escape routes in cargo rails, etc.
11. Cargo units shall not be used as the only barrier to secure tubular cargo on vessel decks

5 TRANSPORT

1. The risk of shifting cargo is normally highest during the voyage/ sailing to from an installation
2. In the event of marginal weather conditions , the risk of shifting tubular cargo must be taken into account when selecting the time of departure, route and speed

6 PREPARATIONS FOR OFFSHORE LOADING / OFFLOADING OPERATIONS

Conduct an internal Pre-Job Talk on the vessel to assess / clarify the following as a minimum:

1. Communications
2. Positioning of the vessel
3. Distribution of work / roles between the seamen on deck when two pendants / hooks are used
4. Operation-specific issues such as the weather, type of tubulars, location, any securing arrangements

Conduct a Pre-Job Talk between the vessel and the crane operator to clarify the following as a minimum:

5. Communications
6. How many bundles for each lift (recommended 2 bundles)
7. Any use of tag lines during offloading to the installation
8. Positioning of the vessel as regards vessel movements, reach and line of sight from the crane
9. Operation-specific issues, including risk of snagging

7 OFFLOADING AT INSTALLATION

1. Pay special attention during removal of any lashings used during the voyage out to the field
2. It is important to use correct footwear (protective footwear covering the ankles) if anyone has to walk on top of tubular cargo.
3. Focus on correct dogging. Recommended 2 eyes in each hook depending on lifting equipment
4. The deck crew, hook and cargo on the vessel deck must be within line of sight of the crane operator
5. Good radio discipline is important – ”Talk where the hook is”
6. Avoid the use of tag lines if possible. If tag lines must be used, fasten and prepare these before dogging of the individual lifts
7. The risk of snagging on the vessel deck and cargo rails, as well as in potential blind zones, must be taken into account during positioning of the vessel

8 LOADING TO VESSEL AT INSTALLATION

In addition to issues addressed under Section 7; Offloading at installation, the following issues are important during loading onto vessels at the installation:

1. Vessels must be informed of the type, quantity and weight to be returned well before loading starts
2. The vessel crew must prepare the necessary hawsers as well as chains and pipe supports
3. All tubular cargo to be returned to a vessel should be washed first to avoid slippery tubulars on the vessel deck
4. It is important to use correct footwear (protective footwear covering the ankles) if anyone has to walk on top of tubular cargo.
5. Tubulars shorter than 6 metres should be shipped in baskets
6. If possible, avoid tubular cargo where the crew of the vessel must unhook / hook lifting yokes
7. Tag lines should not be used during loading of return cargo onto vessels
8. The crew of the vessel must never touch lifts of tubulars or walk underneath such lifts before the lift has been landed properly
9. Slings on bundles must be extended and laid across the tubulars to avoid becoming wedged between the bundles.
10. During loading of return cargo, pay special attention to rolling cargo. In connection with large dimensions and if the vessel is rolling, any vessel without ASFA or equivalent must use wedges to secure large dimension cargo before unhooking it. It may be useful to have the vessel list somewhat towards the side where the first lifts will be landed

9 INTERRUPTED OFFLOADING / LOADING AT INSTALLATION

In the event of interrupted offloading or loading at the installation, the vessel must be able to and be given enough time to secure the remaining cargo in a proper manner

10 OFFLOADING AT BASE

1. The deck crew must be careful during removal of sea lashings upon arrival at the base
2. If other cargo is placed adjacent to tubular cargo upon arrival at the base, pay special attention during offloading of this cargo.

11 LOADING OF TUBULARS ONTO PIPELAYING VESSELS

Loading of tubulars for pipeline installation projects are normally handled by the pipelaying contractor chartering and employing the vessel, and not by the technical developer.

1. Lifting beams are normally used during offloading of this type of tubulars, and they are lifted by inserting each end of the tubulars to be lifted into the lifting equipment
2. During loading of large quantities of tubulars onto pipelaying vessels, take into consideration that the seamen need a safe workplace as well as the maximum total cargo that the vessel can hold. In the event of large heights, start loading from the middle to avoid work towards the outer perimeter of the cargo deck (risk of falling overboard?)

3. Hull loads and reduced stability resulting from weight of tubulars, including water inside and between them, must be included in the stability calculations.
4. The Monsvik method for loading of tubulars prevents very large open spaces between the pipeline bays. The distance down to the deck with 4 or 5 tubulars stacked on top of each other may be several metres. A fall may prove fatal.

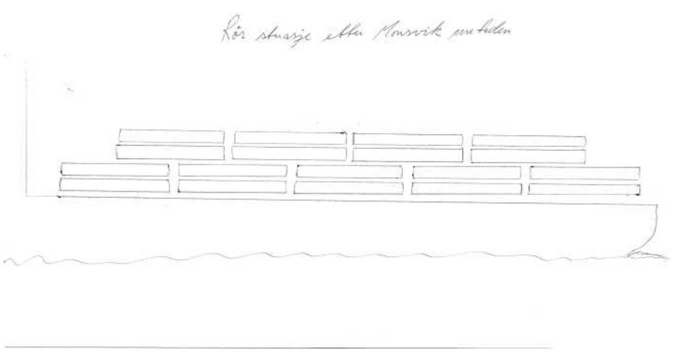


Figure 9 - B - 10 **Illustration of Monsvik method of loading tubulars**

Appendix 9-C
Guidelines on Makeup and Use of Tag Lines

"TAG" LINES

1.1 DESCRIPTION

In certain circumstances light, soft lines may be used to assist in the handling of long and / or fragile items of cargo. These are often referred to as "tag" lines.

It must be recognised that whilst such aids may assist operations their use does introduce some additional risks, as described below.

1.2 RISKS

Additional risks associated with the use of tag lines include the following:-

1. Potential injuries from dropped objects as a result of personnel handling cargo having to work in closer proximity to suspended loads than would normally be the case.

2. Potential injuries resulting from personnel handling cargo being dragged across the handling area through a heavy load rotating in an uncontrolled manner and the tag line being fouled in limbs or clothing.

3. Potential injuries resulting from tag lines being secured to adjacent fixed structures parting and whipping back as a result of a heavy load rotating in an uncontrolled manner.

1.3 MITIGATION OF RISKS

1.3.1 Make-Up of Lines

1. Tag lines must be made up from single, continuous lengths of rope.
2. Apart from the knot attaching the line to the cargo, there must be no other joints or knots in the line.
3. Tag lines must be of sufficient length to allow personnel handling cargo to work in a safe position well clear of the immediate vicinity of the load. It this regard it is recommended that the length of the line should be not less than 1.5 times the maximum height above the handling area at which the arrangements will be used.

1.3.2 In Use

Whilst in use, precautions should be observed as follows:-

1. Tag lines are an aid to positioning the load when landing, and as such must only be used when weather conditions would permit the lifting of the item without the use of such arrangements. It must not be assumed that in conditions more severe than this the use of tag lines will allow the operation to be completed safely.
2. At all times personnel handling tag lines must work at a horizontal distance from the load equivalent to its height above the handling area, maintaining an angle between the line and the horizontal of not more than 45º.

3. All sections of the line, including slack must be kept in front of the body, between the handler and the load.
4. Where two or more persons are handling the same line, ALL must work on the same side of the line. Any slack must be kept in front of the group.
5. Tag lines must be held in such a manner that they can be quickly and totally released. They must not be looped around wrists, or other parts of the body.
6. Particular care must be taken when using tag lines whilst wearing gloves, to ensure that the line does not foul the glove.
7. Tag lines must not be secured or attached in any manner to adjacent structures or equipment. This includes the practice of making a “round turn” on stanchions or similar structures and surging the line to control the load.
8. Where pre-installed lines are used consideration should be given to providing personnel with boathooks or similar equipment to retrieve the lines without having to approach the dangerous area in the vicinity of the suspended load. An example of such circumstances would be when lines are attached to a load on the deck of a vessel, the load being then transferred to an offshore installation.

Appendix 10-A

Flowcharts Illustrating Handling of Bulk Cargoes in Port and at Offshore Facility

Revision History

Revision Number	Date	Section	Changes
1	December 2022	1. Bulk Transfer Operations in Port	References to “Avery Hardoll” and “Weco” connections used and replaced with type + reference to appendix 10-E
			Comment added regarding underwater vents
			7 bar pumping pressure reference for fuel and glycol changed to maximum agreed pressure
			Comment added on regular volume checks
		2. Bulk Transfer Operations at Offshore Facility	Comment added on hose flotation collars
			References to “Avery Hardoll” and “Weco” connections used and replaced with type + reference to appendix 10-E
			Comment added re crane operator availability during transfer operations
			7 bar pumping pressure reference for fuel and glycol changed to maximum agreed pressure
			Comment added on regular volume checks

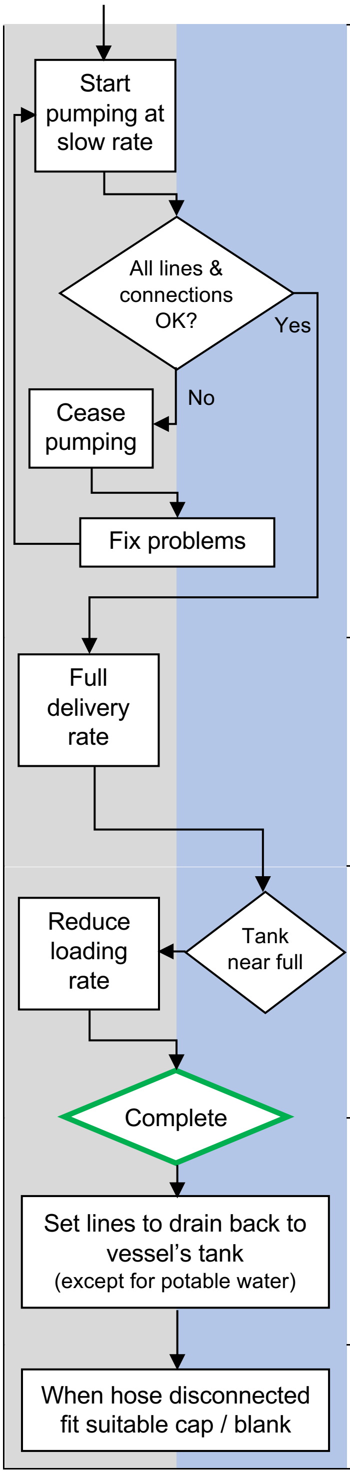
Contents

1 Bulk Transfer Operations in Port

Base	**Vessel**	**Notes**
Formulate & agree cargo transfer plan between parties		• Product to be loaded • Tanks to be used • Load / discharge rates required / possible • Procedures for topping off tanks • Procedure for emergency stops • Stoppage of all external hot work and revocation of hot work permits if a hydrocarbon-based product is being transferred

Pre-commencement checks		• Loading / discharge line and tank valves correctly set
		• Correct hose(s) is fitted with appropriate coupling(s)
		• Loading / discharge hose condition
		• Moorings checked to effectively prevent strain on hose(s) from vessel movements
		• Sufficient hose deployment to handle worst case ranging of the vessel on the quay
		• Communication routine between all parties is established
		• Vessel's tank level monitoring system is proven
		• Watchperson with suitable communication equipment on duty at deck manifold
		• Any relevant company safety checklists or dangerous goods safety checklists are reviewed and signed off
		• For hydrocarbons ensure:
		    o Appropriate hose connections as per appendix 10-E are fitted and used
		    o Scuppers are plugged and Hot Work permits withdrawn
		• Pollution prevention equipment is in place as per SOPEP
		• Drip trays, fire hoses, fire extinguishers, gas concentration test equipment and explosimeter are provided at vessel hose/manifold/reception site
		• "No Smoking" conditions are imposed
		• Harbour/base operators emergency pollution procedures displayed

	Prepare & inspect bulk tanks	A deck officer and/or separate surveyor must ensure, and log, that tanks are ready for product and quantity to be shipped. Check: 1. Clean and empty 2. Air distribution slides and tank access seals in good condition Shipper double-checks bulk tanks onboard are prepared before commencing loading
	Request information	• Type, quantity of product to be discharged and order of discharge • Estimate pumping rate for each • Length of warning/estimate of time required to stop • Whether stop will be initiated from vessel or installation/port operations • Establish emergency stop procedure • Confirm method of draining liquid bulk lines on completion of transfer
Connect hoses and set lines		• Vent lines connected and line + tank vented to atmospheric pressure • Check any underwater vents are correctly lined up to avoid water being drawn in by vacuum



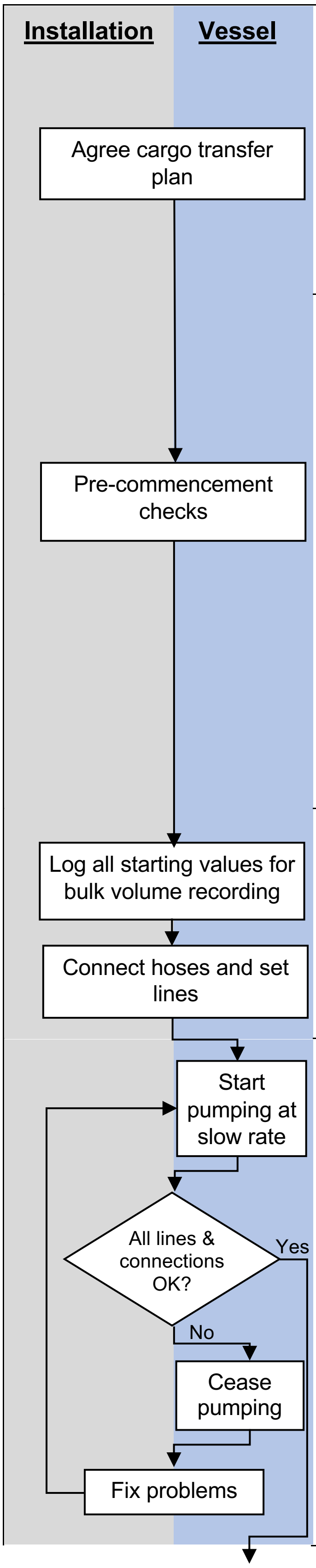
- Check all system manifold connections for leaks
- Check product entering correct tanks
- For dry bulk transfers, use air purge first to clear lines, prove connections and ensure a good vent is obtained

- During liquid loading manually check the level monitoring system, especially when loading to near capacity of individual tanks
- Pumping pressure may not exceed maximum pressure discussed at pre-transfer checklist
- No more than requested quantity of bulk cargo should be discharged
- All parties to conduct volume checks at regular intervals

- As tank(s) are approaching full the loading rate should be reduced to top off safely

- Use vacuum breaker if fitted to aid draining
- Where suitable use crane to raise hose to aid draining
- For dry bulk, use purge air to clear line

2 Bulk Transfer Operations at the Offshore Facility

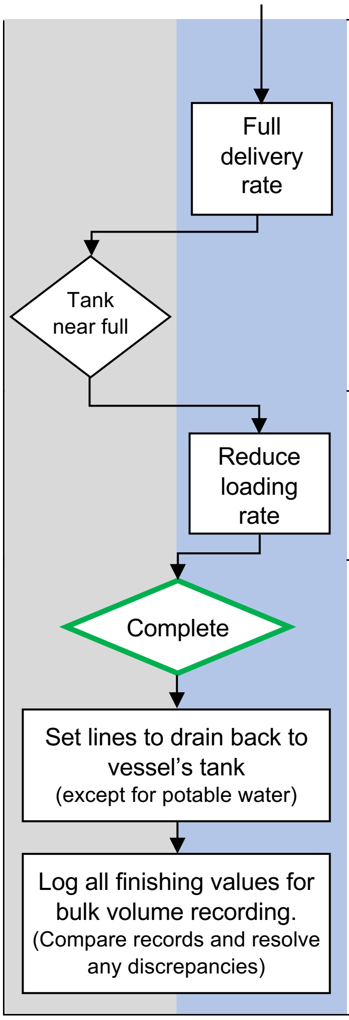


Notes

- Product(s), quantities and sequence of discharge
- Estimated timings for each discharge
- Tanks to be used and procedures for topping off
- Load/discharge rates required/possible and maximum safe working pressure
- Stoppage procedures – required advance warning, and time required to stop
- Pump control and emergency stop facilities
- Conformation lines can be drained back to vessels tank(s)

- Loading / discharge line and tank valves correctly set
- Correct hose(s) is fitted with appropriate coupling(s)
- Loading / discharge hose condition
- Vessel position keeping settled to prevents strain on hose(s) from vessel movements
- Sufficient hose deployment to handle worst case ranging of the vessel
- Sufficient number and positioning of flotation collars
- Communication routine between all parties is established
- Vessel’s tank level monitoring system is proven
- Watchperson with suitable communication equipment on duty at deck manifold
- Any relevant company safety checklists or dangerous goods safety checklists are reviewed and signed-off
- Appropriate hose connections as per appendix 10-E are fitted and used
- Pollution prevention equipment is in place as per SMPEP
- Drip trays, fire hoses, fire extinguishers, gas concentration test equipment and explosimeter are provided at vessel hose/manifold/reception site
- “No Smoking” conditions are imposed

- Check all system manifold connections for leaks
- Check product entering correct tanks
- For dry bulk transfers, use purge air first to clear lines, prove connections and ensure a good vent is obtained



- Emergency shut-off valves manned throughout operation with permanent radio contact between installation and vessel
- Crane is manned whenever hose is attached to crane hook
- Crane operator to be readily available, contactable and nearby during bulk hose transfer operations
- During liquid loading manually check the level monitoring system, especially loading to near capacity of individual tanks
- Pumping pressure may not exceed maximum pressure discussed at pre-transfer checklist
- No more than requested quantity of bulk cargo should be discharged
- All parties to conduct volume checks at regular intervals

- As tank(s) are approaching full the loading rate should be reduced to top off safely

- Use vacuum breaker if fitted to aid draining
- Where suitable use crane to raise hose to aid draining
- For dry bulk, use purge air to clear line
- When hose disconnected fit suitable cap / blank

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Appendix 10-B

Bulk Cargo Transfer Checklist

Revision History

Revision Number	Date	Section	Changes
1	December 2022	1 Wet Bulk Transfer Checklists	Specific gravity added to point 1 on checklists 1.1 and 1.2
			Range of tide comment added to point 6 on checklist 1.1
			Point 13 on checklist 1.1 updated to refer to connection type table at Appendix 10-E
			Comment added at point 9 of table 1.2 regarding flotation collars
			Reference to “Master” changed to “Bridge Team” at point 14 on checklist 1.2
			Point 16 on checklist 1.2 changed from “close at hand” to “readily available throughout transfer”
			Point 4 of checklist 1.4 re monitoring of hose position reworded
			Point 6 added to checklist 1.4 re rate reduction
		2 Dry Bulk Transfer Checklists	“incompatible” added to point 1 of checklist 2.1
			Specific gravity added to point 4 and 2 on checklists 2.1 and 2.2
			Purge rate added to point 9 and 4 on checklists 2.1 and 2.2
			Point 15 of checklist 2.2 re monitoring of hose position reworded
			Point 16 on checklist 2.2 changed from “close at hand” to “readily available throughout transfer”
			Word “vent” added to point 2 of checklist 2.4

Contents

1 Wet Bulk Transfer Checklist

1.1 Pre-Start Checklist – PORT		
1	Type, quantity and specific gravity of product(s) to be transferred, confirmed and MSDS available	
2	Allocate tanks to product	
3	Confirm transfer rate and max. allowable rate per product	
4	Topping off procedure agreed	
5	Emergency stop procedure agreed	
6	Hose(s) confirmed as fit for purpose and of sufficient length. Tidal range to be considered	
7	Hose(s) connected to correct coupling(s)	
8	Vessel moorings tensioned to limit movement	
9	Communications procedure established for transfer, including agreement on central control point, i.e. bridge	
10	Appropriate pollution prevention equipment deployed as SOPEP	
11	Scuppers plugged if hydrocarbons to be transferred	
12	All Hot Work Permits withdrawn if hydrocarbons to be transferred	
13	Couplings / connections to be in accordance with Appendix 10-E	
14	Lines & valves set ready for cargo transfer – *consider two-person check*	
15	Tank monitoring system proven	
16	Watch established on manifold with suitable communications in place	

1.2 Pre-Start Checklist – OFFSHORE		
1	Type, quantity and specific gravity of product(s) to be transferred, confirmed and MSDS available	
2	Order of discharge confirmed, if more than one	
3	Confirm transfer rate and maximum allowable rate per product	
4	Emergency stop procedure agreed	
5	Tank changeover/topping off procedure agreed	
6	Confirm notice required to stop cargo	
7	Confirm whether vessel or installation stop	
8	Slings and lifting arrangement satisfactory	
9	Hose(s) visually inspected and found suitable Flotation collars, number and position to be checked	
10	Hose(s) connected to correct coupling(s)	
11	Communications procedure established and agreed for transfer	
12	Appropriate pollution prevention equipment deployed as per SOPEP	
13	Ensure lighting adequate for task in hand	
14	One person from vessel appointed to sight hose(s) and advise Bridge Team of position	
15	Lines and valves set ready for transfer – *consider two-person check*	
16	Crane Operator and both installation and vessel deck crews readily available throughout transfer	

1.3 Transfer Checklist – PORT		
1	All communications to be routed via control point which should be vessel bridge	
2	Start transfer slowly until cargo confirmed as entering correct tank(s)	
3	Volume checks conducted at regular intervals with receiver/provider	
4	All personnel involved in transfer in regular contact	
5	Adequate warning given of tank changeover	
6	Rate reduced for topping off	

1.4 Transfer Checklist – OFFSHORE		
1	Start transfer slowly until cargo confirmed as entering correct tank(s)	
2	If fuel to be transferred, line checked for leaks at start up	
3	Volume checks conducted at regular intervals with receiver/provider	
4	Hose(s) position to be monitored at all times whilst connected and bridge kept informed	
5	Adequate warning given of tank changeover etc.	
6	If tank be loaded near agreed max, consider rate reduction	

2 Dry Bulk Transfer Checklists

2.1 Pre-Start Checklist – LOADING

1	No incompatible residue remaining from previous cargo and tank(s) dry	
2	Tank air distribution slides are in good condition	
3	Tank access seals are in good condition	
4	Type, quantity/weight and specific gravity of product(s) to be loaded confirmed and MSDS available	
5	Tank(s) allocated to product	
6	Moorings tensioned sufficiently, particularly springs, to limit ranging	
7	Order of loading confirmed, if more than one product to be loaded	
8	Proper vent line connected to vessel	
9	Confirm loading rate and max. allowable rate per product along with agreed purge rate	
10	Emergency stop procedure agreed	
11	Confirm whether cargo will be stopped by vessel or provider & notice required to stop agreed	
12	Confirm tank(s) and lines are vented to atmospheric pressure	
13	Confirm lines & valves set for cargo – *consider two-person check*	
14	Hose(s) connected to correct coupling(s) / manifold(s)	
15	Hose(s) inspected and fit for purpose.	
16	Communications procedure established for transfer, including agreement on central control point, i.e. Bridge	
17	Watch established on manifold with suitable communications in place	

2.2 Pre-Start Checklist – DISCHARGING

1	Vessel settled in position and ready to receive hose(s)	
2	Type, quantity/weight and specific gravity of product(s) to be transferred confirmed and MSDS available	
3	Appropriate tank(s) on vessel lined up and ready for discharge	
4	Confirm transfer rate and max. allowable rate per product along with agreed purge rate	
5	Emergency stop procedure agreed	
6	Notice required to stop agreed	
7	Confirm whether cargo will be stopped by vessel or receiver	
8	Hose Lifting arrangement satisfactory	
9	Hose(s) visually inspected and found fit for purpose	
10	System de-pressurised, ready for hose(s)	
11	Hose(s) connected to correct coupling(s) / manifold(s)	
12	Communications procedure established and agreed for transfer	
13	Underdeck lighting Ensure lighting adequate for task in hand	
14	Vent position(s) identified	
15	One person from vessel appointed to sight hose(s) and advise Bridge Team of position	
16	Crane Operator and both installation and vessel deck crews readily available throughout transfer	

2.3 LOADING Checklist

1	All communications to be routed via control point which should be vessel bridge	
2	Good vent confirmed prior to start up	
3	Bulk hose(s) and vent checked throughout operation for blockages	
4	Contact with loading personnel maintained throughout	
5	Lines cleared back to vessel	
6	System de-pressurised on completion, before disconnection	

2.4 DISCHARGING Checklist

1	Good vent obtained from receiver before commencing discharge of cargo	
2	Good watch maintained on hose(s) / vent in case of blockage	
3	Contact with receiver's personnel maintained throughout	
4	Lines blown clear to receiver on completion of cargo	
5	System de-pressurised before hose disconnection	
6	Blank cap(s) fitted to hose end(s) before passing back to receiver	

Appendix 10-C

Bulk Hose Management, Handling & Connection Guidance

Revision History

Revision Number	Date	Section	Changes
1	December 2022	All	Appendix title changed to better reflect contents
			Combined and simplified version of appendices 10-C and 10-D as new revision 10-C
			Removed references to Integra and Step Change in Safety
			Revised table showing flotation collar colours and diameters
			Remove redundant Bunker Checklist
			Remove weekly checklist
			Remove references to NWEA and replace with GOMO
			Previous section on "Vessel Approaching Location" removed as this is adequately covered elsewhere in GOMO

Contents

1 Introduction

1.1 Background

This appendix provides guidance for safely managing bulk hose systems and creates a common practice throughout the industry. Information on good working practices involving bulk hose systems has been collated and the following guidelines indicate good practices which will reduce the number of hose failure incidents in the industry and the resulting exposure to the environment.

1.2 Environmental Issues

Hose related incidents account for 21% of spills to the sea. The most common bulk hose failures are due to abrasion to the outer cover of the hoses rubbing on the installation structures, resulting in leakage from the hose string. The wear on the hose is accelerated when the hose radius exceeds the recommended minimum bend radius criteria, causing premature failure. Both examples can cause the hose to leak into the sea if not controlled by a robust hose management system. All environmentally sensitive products should have suitable hose connections or similar self-sealing connections on the hose end.

2 General Requirements

The following recommendations apply to any hose which carries products, including those that are harmful to the environment if containment is lost.

Hose manufacturers recommend that a bulk hose should be changed out approximately every two years due to internal fatigue to the hose layers. This is based on information taken from previous incidents on installations. When the hose is not in use, an end cap, commonly known as a blank, should be used on the connection that marries the hose to the vessel manifold. Where possible, protect the hose ends with a waterproof cover preventing contamination, corrosion or damage to the hose connection

Hose strings suspended from the installation should be suspended well clear of the sea and restrained to the installation, minimising movement and abrasion to the hoses' outer cover and preventing the waves from twisting the hoses. Any points where the hose may contact part of the installation structures should be covered with a form of protection. Floatation collars can be used or alternatively, sections of redundant hose can be fitted to the structures at impact abrasion points. Floatation collars should be used either side of the hose couplings to prevent the coupling damaging an adjacent hose in the hang-off points (fingers).

To prevent excessive load on a suspended hose string, the hose should be drained back to the vessel or installation once offloading is completed. Hoses should be suspended from sound structures or certified lifting/hang-off points on the installation to prevent kinking in the hose string. If required, the Lifting Operations Lifting Equipment Regulations (LOLER) competent person or equivalent, or structural engineer, should be consulted for guidance. Hoses should never be suspended or supported by wire slings as they may cut into the hose and damage the hose structure. The LOLER competent person should be consulted for selection of correctly certified and appropriate slings.

When replacing a length of hose in a string, the string must be brought in board and barriers erected round the hose indicating no unauthorised entry during the replacement of the hose and/or floatation collars. Once a hammer lug union is installed and tightened, it should be marked across both faces with paint or similar permanent marker to monitor the fitting is continually taut and fit for purpose.

Care should be taken when using cutting tools to remove packaging from a new hose. It is imperative that no damage comes to the hose section during unpacking.

The hose string should be visually inspected for damage prior to commencing any offloading operations, using the list below as a minimum check:

- Leaks at the hose fitting or in the hose make-up
- Damaged, cut or abraded covers
- Exposure of reinforcement wires from the hose material
- Signs of kinked, cracked, crushed, flattened or twisted areas in the hose sections
- Hose ends degraded, pitted or badly corroded at the fittings
- Ensure sufficient numbers of floatation collars are on the hose string
- On completion of bunkering operations, the hose should be re-examined for any damage that may have occurred during the transfer operation

3 Installation Procedures

Documents should be in place clearly specifying how the site will control the maintenance and inspection of all bunkering hose strings and associated equipment, i.e., lifting equipment and support mountings. This document should be approved by the relevant Technical Department and entered into their pertinent system for review as per the Company Procedures. The appointed system owner is responsible for ensuring all relevant persons are aware of and understand the procedure. It is recommended that this is confirmed by frequent lifting equipment audits carried out by a competent/responsible person.

3.1 Recommended Content of Procedures

- The system owner should indicate who is responsible for ensuring the procedure is being adhered to and act as focal point on all matters relating to bulk hoses maintenance and inspection.
- On locations where bunkering of drilling products takes place, an interface should exist with the Drilling Department and Operations Departments where responsibilities are clearly defined, documented, and agreed, i.e., who is responsible for inspection and change-out of drilling product hose assemblies. The role of Service Team Leaders, Barge Engineers or Deck Supervisors should be considered for System Owner positions.
- Hose manufacturers guidance on the life span of in-service hoses before mandatory change-out is required. Identify the time periods between physical and visual inspections

including pre and post use checks of the equipment. This decision is addressed with relevant parties such as Suppliers and Company Technical Authorities. An Electronic Maintenance System (EMS) would be ideal to populate/generate change-out dates and inspection dates, and guidance on the required documents, e.g., Permits to Work, Control of Substances Hazardous to Health (COSHH) and Method Statements to carry out the work scope safely. On completion of any parts being changed-out, documents and identification (ID) of equipment must be updated in the hose register. In the case of replacement hose assemblies already stored offshore, a guidance note on the correct procedure of storage and shelf life should be obtained from suppliers.

- To assist in the managing, ordering and replacement of bulk hose equipment, drawings which may be electronic or hard copy, consisting of the following, would ensure the correct parts are ordered and installed at all times:
    - The correct hose lifters (hooky hooks) and their SWL
    - The type of delivery coupling, be it self-sealing or hammer lug unions
    - The correct type and quantity of floatation aids / collars and their positions in relation to the string and joining couplings
    - Describe the type and SWL of the hose lifting assembly used for transferring the hose string during operations
    - In the case of strings being made up from both hard and soft wall sections their chosen positions should be identified in the drawings
    - Identify all components by part numbers

Method Statements, Lifting Plans and Risk Assessments must be in place and available for the work party. The System Owner and work party should review these documents before use; however, if, on completion of the task, lessons were learned, the documents should be updated accordingly by identifying the changes in the procedures.

<u>Bad Practices</u>

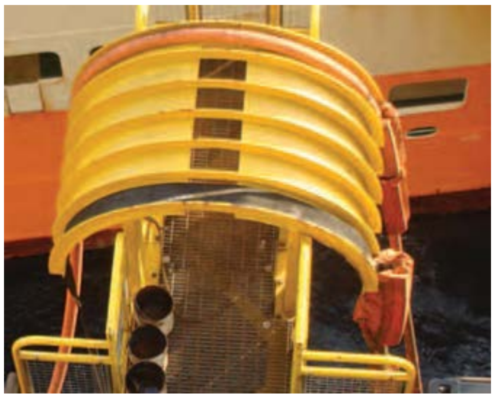
The hose should be suspended avoiding sharp bends and protrusions when in the hang-off position.

<u>Good Practice</u>

There are alternative systems available such as portable saddles which support the arc of a hose when in storage. The structure from which the hose is to be suspended must be surveyed by a competent person to ensure the hang-off point is of sound structure.

Portable Saddles

Permanent structure, used to support bulk hoses and forms a perfect arc, enhancing the life span of the hose.



4 Transfer Hoses

Due to the increased manual handling risks associated with hard wall hoses, it is recommended that the first and second section of the hose suspended from the installation manifold should be hard walled, and the last section which is offered to the vessel to be of soft wall type.

4.1 Hose Components and Construction

All new hose sections are hydro tested to at least 1½ times their working pressure.

A water hose is made from orange coloured, soft, reinforced rubber with the cover being made of ethylene propylene diene-terpolymer (EPDM). Hose reinforcement is provided by multiple layers of rot-proof synthetic textile yarn. The central core/tube is made from non-toxic and non-tainting rubber. The cover is abrasion and weather resistant, and care should be taken when handling and stowing. It should be noted that new floating hoses are also coloured orange and these hoses can carry a range of products.

A fuel hose is heavy and commonly soft wall type but can be of hard wall construction. The outer wall is made of black oil resistant neoprene synthetic rubber and is reinforced with synthetic textile yarn with antistatic copper wire. It has a black nitrile tube. The outer cover on this hose is susceptible to mechanical damage. The hose carries a brown lazy spiral stripe for identification.

4.2 Hose String

A hose string can be made up of 3 or 4 lengths of 15.2mtr, 16.3mtr or 18.3mtr lengths of hose joined together by quick release self-sealing couplings (hammer unions). The hose comes complete with a hose lifting assembly that consists of a hooky hook, lifting sling not less than 2 metres in length and a safety pin shackle. A “split pin” must be used to secure the nut and not an “R” clip. “R” clips can spring off the pin affecting the security of the shackle.

The final hose string length will depend on the installation needs and the elevation of the manifold. There is no requirement to have the first section of bulk hose leading from the manifold and not coming into contact with water, to be of the floating type.

A typical hose string of 3 lengths would be:

Length 1: Hard wall

Length 2: Floating hose (preferred)

Length 3: Soft wall (outboard/vessel end)

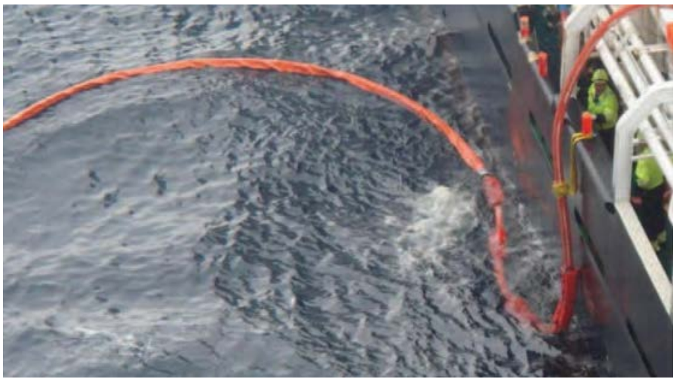
When ordering new hose sections, stipulate the direction of the lifting eye, as the hooky hook can be installed on the hose with the lifting eye facing up or down on the hose. If the hose is stored in a support frame, then the eye in the hooky hook should be facing upwards; If using any other type of hose support, then the eye on the lifter can be either way on the hose. **Hose Lifter** (Commonly known as **hooky hook**)

4.3 Bulk Hose Floatation

4.3.1 Floatation Collars

The hose should be fitted with the correct number of floatation collars to prevent the string sinking and being drawn into the supply vessel's thrusters. The floatation collars can also be used to help form a barrier between the hose and installation structure by simply adjusting the collar straps on the hose. Reflective floatation collars have an advantage when bulk is being transferred to an installation in the hours of darkness as the crew can see the hose is floating freely rather than being too close to the vessel side thrusters.

4.3.2 Floating Hoses



Sections of hose strings with integral buoyancy are also available and eliminate the need for floatation aids to be used.

4.3.3 Recommended Floatation Collars for Bulk Hose Strings

Hose Application	Hose Diameter	Floats per Section
Potable Water	3” 4”	4 4
Oil Based Mud	3” 4”	9 10
Dry Cement	4” 5”	7 8
Diesel Fuel	3” 5”	4 4
Dry Barite	4” 5”	10 13
Methanol	2” 3”	4 4
Drill Water	4”	4

Table 1

The above information is a recommended good practice for number of floatation collars on hose sections that will be in the sea. A collar either side of any coupling that is in the water during bunkering operations is also advised.

Trials of “floating type” bulk hoses have been carried out extensively and these have proven to be very successful, with positive feedback from all concerned platform and supply vessel personnel.

4.4 New Hose Storage

Hoses delivered to the installation are normally shrink wrapped and rolled up with one end of the connection in the middle of the roll. It is preferable to store these hoses flat, out of sunlight and free from water ingress. Ultraviolet radiation and kinking during storage may shorten the life span of the hose. Manufacturers’ recommendations on hose storage should be available for crews to ensure optimum methods of use to prolong hose life.

4.5 Replacing Sections of Hoses in a String

Only competent personnel should carry out the installation of hoses and connections when joining hammer lug unions. When repairing a hose string, the hose should be landed instead of left hanging from a crane hoist line. When replacing a section of hose, it should be inserted in the coupling and secured whilst free from tension.

Once the necessary controls such as permit, method statement and risk assessments are in place, remove and replace the worn parts of the string. When hammer lug unions are disturbed, the unions should be tightened up and marked across the body with paint or a similar permanent marking. This is a simple way to ensure that the coupling has not slackened off due to movement whilst in service.

On completion of hose installation, the hammer lug union should be checked to ensure the marks across the coupled joint confirm security. If possible, pressure test the hose string to 5 bar and check the assembly is free of leaks over a 5-minute period. Check the correct quantity of lace up or similar types of floatation collars are on the hoses in accordance with Table 1 in section 4.3.3.

Note: Trials of "floating type" bulk hoses have proven to be very successful, with positive feedback received from both platform and supply vessel personnel.

4.6 Weekly Inspections

- A regular inspection Planned Maintenance Routine / Work Order signifies a competent person has assessed the hose and lifting equipment and that it is in good working order. This person records the findings electronically in a controlled register. This system indicates to any 3rd party auditors that a sound maintenance strategy is in place to manage bulk hose assemblies.
- Ensure all lifting slings, shackles and hooky hooks are in good condition and display current lifting colour codes.
- Check the hose for any physical damage for chafing, cuts, blisters, splitting, perishing, lacerations or other forms of deterioration.
- Renew any damaged hoses in the string and, where minor damage is evident, record details on the check sheet.
- Check that markings across the hammer lug union line up correctly, as this indicates the fitting is tight on the coupling.
- Check hoses are protected from platform structure and stowed properly in hang-off points.
- Check that hang-off point structures shows no sign of deflection or excessive corrosion.
- Consider inspecting hoses inboard once per trip as there are blind spots on the installation structure that restrict visual inspections.
- Ensure the under-deck lighting on the installation is operational at valve manifolds.
- Check gates on the bunkering station hang-off points (fingers) are lubricated and easy to open and close.

A record of visual and routine inspections should be available for history and evidence of hose checks.

STORMS

A visual inspection should be carried out to confirm hoses show no signs of physical damage. Examples would be chafing, splitting, perishing or any other form of deterioration. It is not uncommon for hoses to become twisted around each other if they were not far enough out of the water when exposed to severe weather, making it an operationally difficult when realigning the bulk hoses.

4.7 Visual Inspection Pre and Post use

A visual inspection must be carried out prior to and after vessel operations. The following checks should be carried out as a minimum:

- Correct colour coded hooky hooks, slings and shackles with proper split pins are attached to the hose. Hoses must show no signs of physical damage to fabric by chafing, splitting, perishing, blistering, deep lacerations or any other forms of deterioration.
- Check installation manifold couplings are tight and ready for operation.
- When using certain types of hose fittings, remove the end screw dust cap before lowering the hose to the vessel, and, on return to the installation, replace the dust cap and check it is secured to an anchor point.
- Check gates on the bunkering station hang-off points (fingers) are maintained, lubricated and easy to open and close.

The preferred way to visually check a hose is from a safe location at the hose station while directing the crane operator to slowly raise the hose, allowing the hose to be inspected for wear.

Never allow the hose to be lifted close to the crane hoist rope safety cut-out. A similar method can be used to check the hose for damage when returning the hose to its hang-off point.

Note: Avoid lifting the hose immediately over the head of the person doing the inspection.

5 General Platform Alarm (GPA)

If the installation goes to a GPA status, then bunkering operations must cease. The supply vessel's Captain and crane operator must be notified immediately of the GPA and company specific procedures are then followed before reporting to their muster station.

6 Pollution Safety

During fuelling operations, there is always the risk of pollution. This may be due to hose and/or instrument leaks, hose wear, mechanical breakdown or as a result of a hose becoming fouled in the vessel's propulsion. It is important that an individual is appointed to visually and operationally check the hose remains functional during bunkering operations.

If an oil sheen is detected on the surface of the water, bunkering operations must cease immediately. The incident must be reported to the installation control room and the cause investigated.

7 Bulk Transfer Operations at Installation

During bulk hose operations, the following should be observed:

- The vessel Master, crane operator and deck crews to confirm radio communication prior to operations.

- The person appointed to supervise the bunkering process must ensure they can see the bulk hose(s) at all times, and that they are familiar with the alignment of valves and tank levels. They should not allow other distractions during the operation.
- The installation dry bulk vent line positions are identified.
- The vessel bridge, or equivalent, and OIM/Barge Master, or equivalent, should confirm quantities discharged and received at regular intervals, to ensure that there are no leaks within the respective systems.
- The vessel deck crew and installation crane operator must be readily available and close at hand throughout any transfer operation.
- Sufficient warning/instructions shall be given by each party prior to changing over the tanks.
- If, at any stage, in the operation the vessel Master or provider is in any doubt as to the integrity of the operation, then that operation shall be suspended until integrity can be reinstated.
- When pumping is finished, both the receiver and provider shall set their line to allow the hose to be drained back to the vessel's tank. In suitable conditions, the crane may also be used to lift the hose to aid draining. In the case of dry bulk, purge air should be used to empty the hose and clear the line.
- Hoses used for potable water must not be used for transferring other bulk liquids. Potable water lines should be flushed through prior to transferring water to avoid any residues within the lines contaminating the installation's supplies.
- During periods of darkness, adequate lighting must be available over the hose and support vessel throughout the operation.
- To identify hoses, they may be fitted with hi-vis bands, tape or alternative means.
- Hoses are normally colour coded for manufacturers' identification and approval, frequently by way of spiral coloured bands within the hose structure. Ensure the management system is aware of the markings on the hoses.
- The manufacturers' colour coding of the hose should not be confused; any markings on receivers or structure should adopt the universal colour coding as described in Appendix 10-E to identify bulk hose products.
- All bulk hoses used offshore are to be of sufficient length and good condition; unapproved repairs shall not be carried out, and, in the interests of safety, the hose should be disposed of immediately.
- In the event that the crane operator has to leave their cab, they shall inform the Master of the vessel. See 10.10 for further guidance
- Any bulk hose should be disconnected from the vessel as soon as possible after the bunkering has been completed and retrieved to the platform, unless otherwise agreed by the Master of the vessel.

Vessel should ensure that:

- All pollution prevention equipment is in place as per vessel's Shipboard Oil Pollution Emergency Plans (SOPEP).
- If a connection other than a self-sealing quick release coupling is used, particular care must be exercised when disconnecting the load hose and a drip tray must be in place.
- All manifold valves have been checked and confirmed to be in good condition.
- Correct couplings have been identified for the product(s) to be transferred.
- The person in charge of the operation performs no other duties during the transfer(s).

7.1 Bulk Hose Operations in marginal conditions

In marginal weather, great care is required by the vessel Master to avoid over-running the hose especially if deck cargo is also being transferred. Consideration should be given to the connecting of bulk hoses only at this time. During hose work, deck foremen must listen to all communications on selected radio channels, which can be transmitted to the control room and platform crane operator should a hose assembly leak or significant changes in weather conditions occur.

8 Bulk Hose Handling & Securing Methods

8.1 Sling and Pin Method

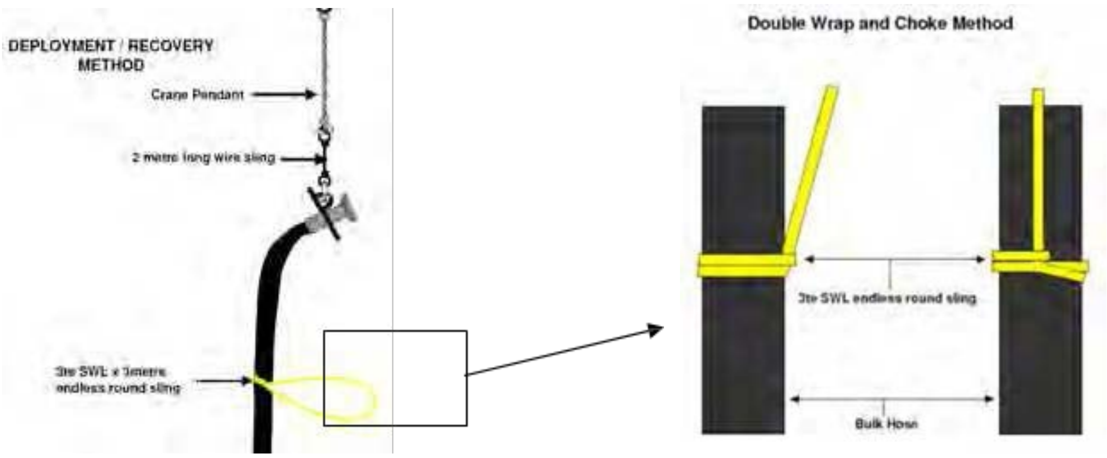
The use of an endless round web sling attached to the bulk hose and hung over a dedicated point on the supply vessel enhances the operation of passing the hose to the vessel from the installation. This process only relates to the attaching of the web sling to the bulk hose and the frequency of inspection.

The requirement for this endless round sling will depend entirely on the facility of a suitable attachment point on the supply vessel being available.

A dialogue between the Services Supervisor and each vessel shall take place to establish the requirement for this sling and the distance from the end of the hose to attach it.

Attaching the Endless Round Sling to the Bulk Hose

- An endless round sling of 3 tonnes SWL shall be used.
- The sling shall be of 3 metres effective working length.
- The sling shall be signed out of the rigging loft and attached before each use and detached and returned to the rigging loft for correct storage after every use.
- The sling will be attached to the bulk hose using the “double wrap and choke” method.
- The attachment point for the endless sling will be approximately 7 metres from the end of the bulk hose offered to the supply vessel; this distance will be confirmed by the vessel master.
- The endless round sling must only be attached to the bulk hose by a competent Rigger or a competent slinger / load handler.
- Once in position it shall be secured by tie-wraps or light cord to prevent slippage/loosening of the sling.



Inspection and Storage of the Endless Round Sling

The LOLER focal point or a competent person must inspect the sling before and after each use to ensure it is still "fit for purpose".

The sling is to be inspected to cover the following points as a minimum:

1. Check SWL.
2. Check colour code is current, and ID Number is legible.
3. Check entire length for cuts, tears or chafing.
4. Check joint for burst stitching.
5. Check for chemical damage and heat damage.
6. Check there has been no ingress of foreign bodies into the fibres.

When checking the round sling, should any cuts be found in the outer protective cover then the sling should be **condemned** i.e., DO NOT USE as the inner strength core may be damaged.

When the bunkering operation is complete the round sling shall be removed and returned to the rigging loft for storage.

Requirement

This requires three pins reasonably spaced out on the upper rail or taff rail on each side of the vessel to be welded in place, adjacent to the bulk hose manifolds.

These pins are used to hook the eye of an endless webbing strop on to a 3te SWL and ca. 2-3 metres long webbing sling when attaching the hose to the vessel.

Method

The vessel Master may ask for the sling on each hose to be adjusted for his manifold and hang-off points prior to coming alongside. This may vary according to the distance from the hang-off position of the required product manifold on the vessel. Under instruction, the crane operator will transfer the hose from the installation to the vessel in the normal fashion. During the lowering of the hose, as the hang-off strop nears the vessel's side rail, the crew will retrieve the eye of the strop by hand, or if necessary, by boat hook, and fit the eye of the sling over one of the pins. The vessel crew must take care to avoid positioning themselves under the suspended hose during this operation. The crane operator, upon instruction, continues to lower the hoist rope until the sling takes the weight of the hose. The vessel deck crew then signal the crane operator to lower the hose end into the safe haven where they unhook the hose end, allowing the crew the freedom to manoeuvre the hose end onto the manifold.

On completion of transferring bulk, the vessel deck crew drain the line and remove the manifold connection. The connection is moved away from the manifold by the crew prior to signalling the crane operator to lower his pennant to the deck crew. The hose end is attached to the crane hook via the lifting sling, and, once everyone is in a safe position, the crane operator is given the signal to raise the sling until the hose and hang-off strop are clear of the vessel. This modification eliminates unnecessary risk to crews when transferring the hose back to the installation.

A final inspection should be carried out on the hose and lifting assemblies prior to and after use.

Benefits

1. Securing the hose is simple and very effective in comparison to making the hose fast by lashing it to the ship's side rail.
2. Crew exposure to a suspended load is vastly reduced and minimal.
3. Fingers are not exposed to the same risk when lashing the hose.
4. Passing the hose back is much safer, as personnel involvement after hooking the hose end on is virtually eliminated.
5. Minimum alterations required to operate this system.



8.2 Over Rail Method

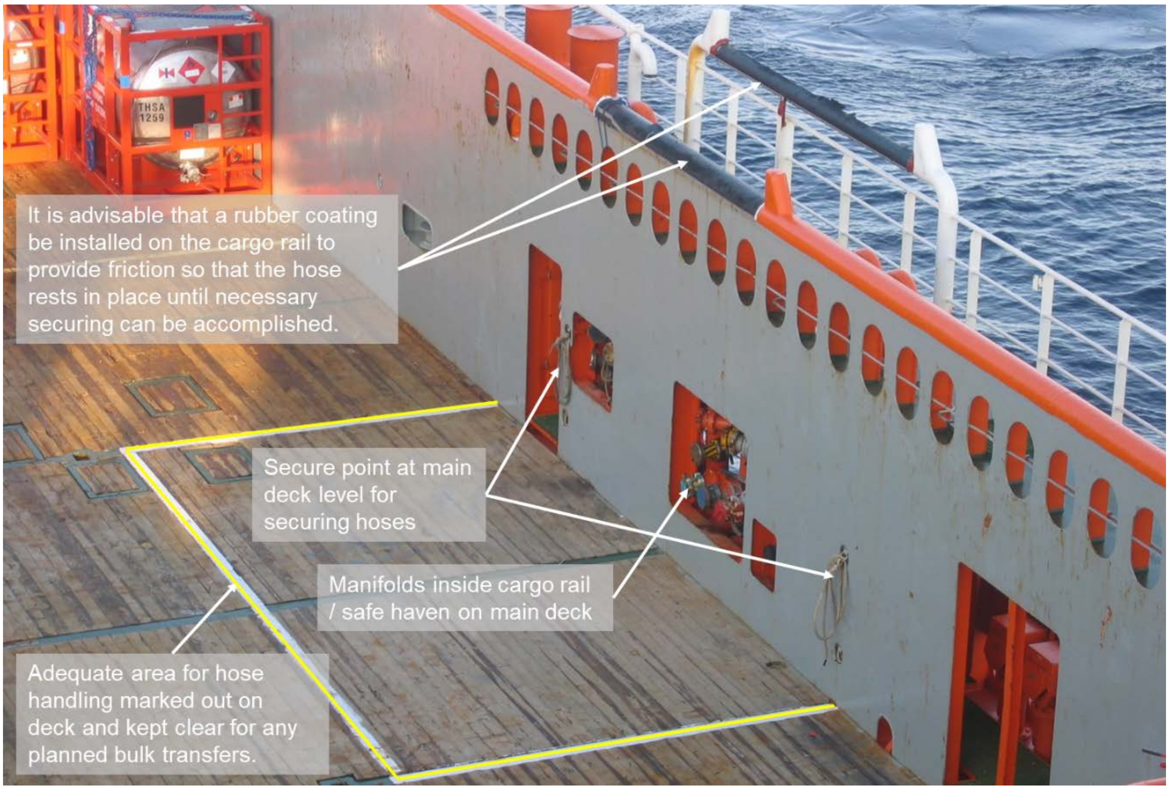
An alternative method of handling bulk hoses is summarised below. This method also requires minimal modifications to the vessel and has been used satisfactorily in various areas.

Modifications / Preparations on the vessel include the following:

- A rubber coating or similar arrangements should be installed on the cargo rails to provide friction so that movement in the hose(s) is prevented until secured to the manifold.
- A sufficiently large area must be allocated and marked on the deck of the vessel so that the hose can be positioned by the crane without assistance from the vessel's deck crew.
- Similar arrangements are required at all bulk handling stations where this method will be used.
- The hose must have sufficient buoyancy elements, which must be clearly visible to vessel personnel

In order to reduce the risks associated with bulk hose handling when using this method, the following precautions should be observed:

- A pre-job talk should be held between crane driver and vessel personnel.
- The hose should be delivered with the crane hook connected to the end of the hose. Where this is not possible, i.e., where the hook is connected to the hose at some distance from the end, the free end must be secured to prevent uncontrolled movement.
- Personnel on the deck of the vessel **must not be** in the allocated landing zone whilst the crane is handling the hose. After the hose is landed within the zone, the crane hook is disconnected.
- After the hook has been disconnected, the hose is connected to the appropriate manifold prior to the commencement of the bulk transfer operation.



Securing after the hose has been landed avoiding the need to walk under a suspended load.

Appendix 10-E

Hose Markings and Connections

Revision History

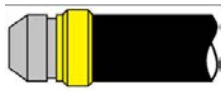
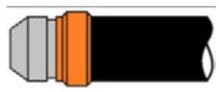
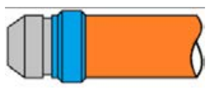
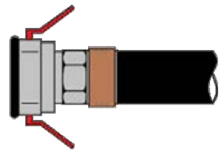
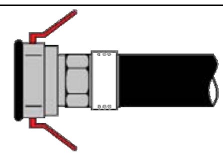
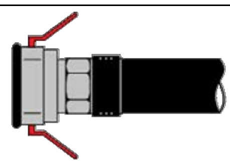
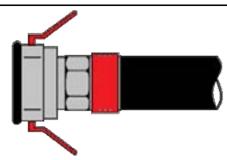
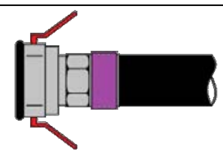
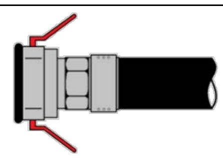
Revision Number	Date	Section	Changes
1	December 2022	1 Standardised Hose Markings & Connections	Table updated to correct previous errors with vessel coupling type and hose outline image
		2 Hose Connections	Updated images for standard hose connection examples. Additional notes added to the end of this section to highlight manual handling and failure point risk related to the use of additional crossovers and adapters.

Contents

1 Standardised Hose Markings & Connections

Hoses and hose terminations should be product-identified via high visibility bands, tape or other means.

Below is the colour coding to be used for the Hose End Coupling (colour refers to coupling and not hose) which is passed to the offshore support vessel.

Hose Application	Coupling Colour	Standard Connection	Vessel Coupling	Standard Pressure Rating *Hoses & Couplings*	Hose Outline
Dry Cement	Yellow	5” hammer lug union *(figure 50)*	Female	Min 12 bar	
Dry Barytes & Bentonite	Orange	5” hammer lug union *(figure 50)*	Female	Min 12 bar	
Potable Water	Blue *(Orange hose)*	4” hammer lug union *(figure 100)*	Female	Min 12 bar	
Diesel / Marine Gas Oil	Brown	4” quick release self-sealing coupling	Male	Min 12 bar	
Base Oil	White	4” quick release self-sealing coupling	Male	Min 12 bar	
Drill Water	Green	4” hammer lug union *(figure 100)*	Female	Min 12 bar	
Oil Based Mud	Black	4” quick release self-sealing coupling	Male	Min 24 bar	
Brine	Red	4” quick release self-sealing coupling	Male	Min 24 bar	
Glycol *(if separated)*	Purple	4” quick release self-sealing coupling	Male	Min 12 bar	
Scale Inhibitor *(if separated)*	No colour	4” quick release self-sealing coupling	Male	Min 12 bar	

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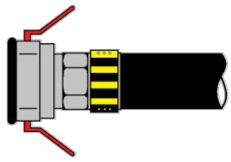
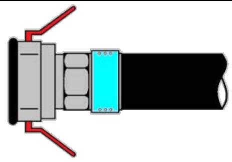
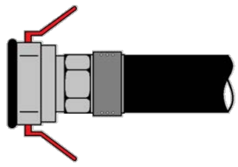
Appendix 10-E
Hose Markings and Connections

Hose Application	Coupling Colour	Standard Connection	Vessel Coupling	Standard Pressure Rating *Hoses & Couplings*	Outline
Drill Cuttings *(if separated)*	No colour	5” hammer lug union *(figure 50)*	Female	Min 24 bar	
Methanol	Black and Yellow *Tiger stripes*	4” quick release self-sealing coupling	Male	Min 12 bar	
Water Based Mud *(if separated)*	Cyan	4” quick release self-sealing coupling	Male	Min 24 bar	
Rig Slop / Wet Bulk Waste *(if separated)*	Dark Grey	4” quick release self-sealing coupling	Male	Min 24 bar	

Notes

1. Manufacturers’ identification or approval of hoses is often by spiral-coloured bands. **Do not confuse** this with product colour markings.
2. References to figure values, in brackets, in the above table relate to particulars of the screw connection.
3. In some areas, the same hose may be used for all classes of mud, being flushed between product changes. The same can be true for methanol, glycol, and scale inhibitor.
4. Further information regarding hose types, testing, flotation etc. can be found in Appendix 10-C included in these guidelines.

2 Hose Connections

Some examples of hose connections are illustrated in the table below.

Description	Picture
Quick release self-sealing coupling	
Hammer lug union	

Notes

1. Self-sealing connections should be inspected when released to ensure full closure and that no liquid is being passed.
2. To accommodate possible mismatches, vessels should carry sufficient crossovers onboard, typically including the following:
   a. From 4” female hammer lug figure 100 to 4” male quick release self-sealing coupling.
   b. From 5” male hammer lug to 5” female hammer lug.
   c. From 5” female hammer lug figure 50 to 4” female hammer lug figure 100
   d. From 4” male quick release self-sealing coupling to 4” female hammer lug figure 100.
3. The use of crossovers and adapters should be carefully considered. Adding crossovers and/or additional connections will lead to increased manual handling risks that should be subject to additional risk assessment.
4. Each additional crossover introduces a potential point of failure and should be avoided unless necessary. Each additional connection should be carefully risk assessed.

Appendix 10-F
Backloading of Wet Bulk Cargoes and Carriage on Offshore Support Vessels

CONTENTS

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Revision History

Revision Number	Date	Section	Changes
1	1/6/18	Title	Title changed to 'Appendix 10-F Backloading of Wet Bulk Cargoes and Carriage on Offshore Support Vessels'
		General	Wording updated throughout this appendix to ensure that good practice steps are applied to ALL wet bulks being planned and transported on offshore vessels
		Annex-10-F-2 - Analysis Form	Title of form changed to "Annex 10-F-2 Backload & Analysis Form"
		Annex-10-F-2 - Analysis Form	Form layout and wording changed

1 OBJECTIVE

To provide specific advice for the safe transportation, offshore handling, tank cleaning, onshore handling and onshore disposal or treatment of all wet bulk backloads from offshore facilities.

This guidance is aimed at offshore installations, Offshore Support Vessels and appropriate onshore staff (e.g. Surveyors, Tank Cleaners, Base Operators, and Waste Processors). In particular, relevant documentation must be made available to the Vessel Master prior to backloading, confirming that Flash Point exceeds 60°C, appropriate steps to avoid H_2S generation and documented acceptable level of Lower Explosive Limit (LEL) have been carried out.

The vessels master must have reliable documentation to assess safe transportation onboard the vessel. The base operators and bulk processors must also have relevant documentation for the handling at the onshore base.

All appropriate sections of the Annex 10-F-2 Backload & Analysis Form must be completed prior to backloading the wet bulk to the vessel.

2 BACKGROUND

Industry, in conjunction with the GOMO Steering Committee and the Marine Safety Forum has produced this Good Practice document to assist operators in better describing the wet bulk backload cargoes they wish to transfer to shore for processing, using the bulk mud tanks on Offshore Support Vessels (OSVs).

In the course of well operations, water based fluids such as seawater, brine or water based mud may become contaminated, commonly with oil based mud or base oil from oil based mud, (herein after called wet bulk waste) which cannot be legally discharged to the marine environment. These contaminated fluids are returned to shore for treatment or disposal. All wet bulk backload must have relevant documentation for the transportation on OSV and subsequent discharge to the shore facility.

Operations giving rise to such fluids include:

- Well bore clean-up operations where oil base mud is displaced from the wellbore to seawater or completion brine.
- Operations where water base mud becomes contaminated with oil based mud during displacements.
- Cementing operations with associated spacers.
- Pit cleaning operations.
- Drilling operations where wellbore fluids are contaminated with oil based mud, crude oil, or condensate.
- Other tank cleaning operations where fluid chemical components cannot be discharged because of the Offshore Chemical Regulations.
- Rig floor drains where the fluid is oil contaminated.
- Any of the above fluids may also be contaminated with hydrogen sulphide (H_2S), typically from sulphate reducing bacteria (SRB) activity.
- Mud that has been in contact with hydrocarbons.
- Any wet bulk planned for backload that has been assessed and found to have no elevated risk during transportation must have this documented on the backload form along with relevant datasheet and a confirmation from the mud engineer / laboratory person.

When fluids are severely contaminated and of small volume, then general industry practice is to transport to shore in Tote tanks or similar type carrying units. For fluids that are “lightly” contaminated, general industry practice has been to backload to the mud tanks on the OSVs. It is this latter practice in particular that has raised grave concerns for the following reasons.

a) It is difficult to accurately describe the chemical make-up of the fluid and hence provide a Material Safety Data Sheet (MSDS) sheet that adequately describes the material.
b) Gas testing on OSVs returning to shore with this cargo has found, on a significant number of occasions, high levels of H_2S in the atmosphere above the cargo. Lower Explosive Limit (LEL) tests also revealed an explosive atmosphere in excess of that which the OSV has the capability to safely transport.
c) The mud tanks on the OSVs are not designed or classified to contain and transport wet bulk cargo with a flash point of less than 60℃. The pump rooms and pumping systems for the discharge of the product tanks are not intrinsically safe. This classification is only found onboard specialist type OSVs.

The reason for the very high LEL % values that have been recorded is contamination with crude oil and condensate. The bulk mud tanks on standard OSVs are not designed for this purpose and under NO CIRCUMSTANCES should fluids contaminated with the mentioned products be backloaded to an OSV's mud tanks.

Recognising the relatively complex nature of the cargo, this Good Practice document has addressed the issue by recognising that a series of tests should be undertaken on the material intended for backload to provide an indicative view of the constituent make up and reactive qualities of the material. It must be recognised that because of the segregation issues described in section 3.0 below, these tests can only be indicative.

The tests can be performed either on the rig or onshore but must be performed by a competent person as determined by the Operator. The rate at which these fluids are generated during certain operations on the rig may preclude sending samples to shore for testing, necessitating rig-based testing. In either case, the results of the tests must be made available to the Master of the OSV prior to the backloading hose connection taking place. Once tests have been carried out, no more fluid should be added to the intended cargo on the offshore installation. If any further additions are made, then a further test will be required.

The results of these tests will allow the Master to establish if the backload is acceptable for carriage onboard the OSV. Acceptance is based on the reported analytical information and the measured physical properties, the known nature of the chemical make-up and the previous cargo carried in the OSV's tanks. A generic risk assessment will be available onboard the OSV and updated when new, improved or different information and circumstances become apparent. Offshore installation staff should be aware that, in certain circumstances, the Master of the OSV may require advice from the OSV's onshore technical advisors and that a response from onshore may take time to progress. **If there is any doubt regarding results repeat the tests and review.**

The backload hose should not be sent to the OSV and connected up unless there is an agreement between the OSV Master and the Installation OIM/Operating DSV that the backload is acceptable for transportation.

3 COMPOSITION OF THE WET BULK WASTE

This section of the guidance relates mainly to Wet Bulk Waste although certain principles to allow for safe transportation may apply to other types of wet bulk.

The final wet bulk waste may contain components and formulated mixtures including but not limited to:

- Water (both seawater and potable water)
- Oil based mud
- Base oil
- Water based mud
- Well bore clean-up detergents
- Completion brine (including corrosion inhibitors, biocide etc.)
- Cement spacers
- Rig wash
- Brines containing various salts
- Other substances, e.g. glycol, pipe dope, etc.

The major component is normally seawater. The proportions of the other constituents are variable. The wet bulk waste is likely to be heterogeneous in that oil mud will separate to the bottom, base oil to the top, with seawater in between. OSV motion will not normally be sufficient to mix and stabilise the cargo to a homogeneous form.

The components and formulated mixtures may arise from different wellbore operations. The volumes of each component are normally known, although the degree of volumetric accuracy is variable depending on how and where this material is stored on the rig prior to backloading to the OSV.

During discharge to onshore storage tanks and road tankers, the make-up of the initial discharge may be different in composition to that discharged later due to separation of components during transportation. This may result in higher concentrations of an individual component being transported in road tankers.

<u>Example</u>

Oil based mud or contaminated wet bulk waste containing:

Seawater	75% (volumes)
Mineral oil base mud	10%
Cement spacer with surfactants	10%
Base oil	5%

The above mixture will separate, leaving the base oil on the surface, the seawater below this and the mineral oil mud on the bottom. The cement spacer will mix with the seawater, although the surfactants will also mix with base oil and oil mud.

During transfer operations from the OSV to road tankers, the initial fluid comprises the heavy oil mud, followed by the lighter seawater and finally the base oil. In the event of a hose rupture or spillage, all component fluids should be treated as oil contaminated and should be contained, preventing discharge to the sea.

4 TESTING PRIOR TO BACKLOAD

Whilst the guidance in this section is specifically aimed at testing of Wet Bulk Waste, some of the tests and test processes may apply to other types of wet bulk and should be used where possible to help ensure safe carriage.

Wet bulk waste may contain a significant number of chemicals for which Material Safety Data Sheets (MSDS) are available offshore. It is not practicable, however, to develop a description of the wet bulk waste from such an array of documents. Although MSDS will be available for formulated mixtures, there may still be uncertainty in describing the properties of the wet bulk waste. As a precaution the following tests should be carried out, prior to backloading, in order to assist confirmation of the potential hazards:

•	pH	Numerical range 0 - 14	
•	Salinity (Chlorides)	mg/l	
•	Retort	Oil content	volume %
		Water content	volume %
		Solids content	volume %
•	Flash point	(closed cup ^{o}C)	
•	Noxious gases	LEL Explosive gases,	
		H_2S,	
		Oxygen	
•	Bulk density	Specific gravity	

As described in section 2.0, tests may be carried out offshore on the installation by trained and competent personnel or samples sent onshore for analysis by the Waste Processor or other competent laboratory.

The analysis and treatment should be carried out in a timely fashion on representative samples of each wet bulk waste intended for backloading to an OSV. If backloading is delayed for any reason, such as bad weather, it should be noted on the Annex 10-F-2 Backload & Analysis Form and the volume and the pH of the Wet Bulk Waste should be monitored daily. If there is any doubt regarding results, repeat the tests and review.

Results of the tests along with the analyst's signature and date completed should be entered on the Annex 10-F-2 Backload & Analysis Form and attached to the appropriate Waste Consignment Note, e.g. SEPA C note.

4.1 KEY TEST RESULTS RANKED

Test	Indicator	Range of results	Interpretation
Flash point	Potential for explosion	>60℃	Should be > 60℃ to backload. If the flash point is low (<70℃) then an explanation should be provided.
LEL	Potential for explosion	Ideally zero. Meter alarm typically set to 10 - 20% LEL	Consistent with Flash point above - for transport only. If measurable LEL, repeat test and review explanation.
H_2S	Poisonous gas	Must be zero	Indication of bacterial activity
pH	Measure of acidity or alkalinity	9.5 – 10.5	To keep H_2S in solution COSHH Personnel Protection Equipment and personnel exposure If pH greater than 11 discuss with OSV Master
Oil % volume	The major component requiring backload	Agrees with components in Annex 10-F-2	Confirm retort agrees with Annex 10-F-2 and waste consignment note
Solids % content	Potential need for tank cleaning	Agrees with components in Annex 10-F-2	Confirm retort agrees with Annex 10-F-2 components and waste consignment note. Tank residue could form a source of SRB and H_2S over time.

More detailed Procedures are provided in Annex 10-F-I attached to this Appendix. Test results should be consistent with the information on the Annex 10-F-2 Backload & Analysis Form.

5 FURTHER GUIDANCE FOR THE OSV

No Wet Bulk should be backloaded until an Annex 10-F-2 Backload & Analysis Form has been received onboard confirming that it is acceptable for transportation.

The form should be completed and signed for all relevant/applicable sections relating to the type of wet bulk being backloaded.

There is no onus on the OSV to carry out further tests. Tank hatches should not be removed offshore because of associated risks to vessel and personnel

Tests on board the OSV at the time of backloading are only possible if sampling ports are available. Consideration should be given to installing suitable sampling ports onboard OSVs to allow the use of the LEL/H_2S meter (Usually this can be dropped from the vent system using the extended sniffer hose).

Loading on top of bulk fluids already in ships tanks should be avoided. Wet Bulk Waste should, where possible, be backloaded to a suitable clean tank. Where this is not possible further guidance should be sought from operator's competent person and with reference to operator's procedures.

The potential for biological activity resulting in H_2S in the dead volume and sludge must be risk assessed. Should the overall pH be reduced through mixing of the fluids, H_2S breakout can occur.

Wet Bulk Waste should be discharged from the OSV as soon as possible. The need to clean the tanks should be reviewed on each trip to minimise the risk of biological activity and H_2S build up from any solid residue.

Experience has shown that round tripping untreated Wet Bulk Waste increases the risk of H_2S breakout occurring due to the additional time Sulphate Reducing Bacteria (SRB) have to be active.

IMPORTANT:
Where Wet Bulk Waste is to be round tripped, a sample should be obtained from the tank and the pH checked to ensure no change has occurred since analysis. The volume of Wet Bulk Waste should also be checked to determine if any ingress has occurred (seawater ingress into the tank will reduce the pH and introduce a food source for bacteria) Where a change has occurred, further guidance should be sought from operator's competent person and with reference to operator's procedures.

6 TESTING IN THE HARBOUR PRIOR TO OFFLOAD

A gas test for LEL and H_2S must always be performed on the OSV tanks containing the backloaded material prior to offloading in port as a matter of standard procedure.

Waste Processors should also check the Annex 10-F-2 Backload & Analysis Form parameters onshore. Prior to discharge, the ullage air space in the tank will be sampled by the Waste Processor, preferably in conjunction with the Surveyor, for LEL and H_2S, to confirm that no change of condition has occurred. Undertaking these tests will confirm that the Wet Bulk Waste is safe to offload.

A sample from the offloaded material should be taken and compared to the original analysis. In the event that there is a significant divergence between offshore analysis and onshore analysis, the Waste Processor should raise a non-conformance. If there is any doubt regarding results, repeat the tests and review. The Offshore Operator, the Offshore location, the OSV Master, Base Operator, Surveyor, and Tank Cleaners should be advised accordingly.

Note.
If the wet bulk waste is backloaded into tanks already containing oil based mud residues as can be the case, then the onshore test results will be different to those measured on the rig.

7 DOCUMENTION AND REPORTING REQUIREMENTS

Material Safety Data Sheets (MSDS) documentation of the components and mixtures must be made available to the OSV Master. IMDG manuals are carried on the OSV for all types of chemical materials shipped.

A Waste consignment note appropriate to the area of operations, e.g. EA or SEPA C, is generated to accompany the wet bulk waste being backloaded. This should reference the attached Annex 10-F-2 Backload & Analysis Form.

The completed Annex 10-F-2 Backload & Analysis Form must be reviewed, signed and dated by the Operator's Representative to confirm the backload is safe to transfer.

The Waste Consignment note, along with duly completed, signed and dated Annex 10-F-2 Backload & Analysis Form is to be made available to the Ship's Master prior to backload operations for review and comment.

Once it is agreed to backload, a copy is forwarded to the Waste Processor onshore by the offshore Installation which will include volume of Wet Bulk Waste and estimated time of arrival in port. This will allow planning to ensure in most cases the Wet Bulk Waste is discharged in a timely and efficient manner reducing delays in port and likelihood of round tripping.

A dangerous goods certificate must be provided by the Offshore Installation based on the requirements of the individual component MSDS.

The Waste Processor checks the samples drawn onshore, comparing the analytical results to those obtained from the offshore analysis. In the event of a discrepancy the Offshore Operator, the Offshore location, the OSV Master, Base Operator, Surveyor, and Tank Cleaners should be advised accordingly.

Test results should be also be provided to tank cleaning companies in the event tank cleaning is required

Whilst every effort has been made to ensure the accuracy of the information contained in this Appendix and its Annexes, neither the GOMO Steering Committee nor the Marine Safety Forum nor any of their member companies will assume liability for any use made thereof.

8 ANNEX 10-F-1

8.1 SAMPLING OF LIQUID AND SOLID COMPONENT PROPERTIES

The sample for the following analyses should be taken from the middle of the pit immediately after adequate agitation.

8.2 FLASH POINT

The minimum acceptable flash Point (Pensky Martin Closed Cup or equivalent) of 60°C is applicable to all wet bulks and will determine whether the material is safe for transportation via the OSV's tanks. SOLAS regulations determine that materials with a flash point below 60°C cannot be backloaded to a OSVs mud tanks unless the OSV is certified for carriage where additional systems of inerting the environment onboard the OSV will be in place. Generally, OSVs do not have the intrinsically safe systems required for the carriage of produced or unrefined hydrocarbons.

Sampling should be set up to detect the worst case situation, particularly where there is potential for crude oil or condensate contamination where the oil will rise to the surface of the tank. Drilling rigs will normally have robust ventilation in the area used to store oil contaminated fluids and this may mask the condition experienced onboard an OSV when carrying hydrocarbon contaminated product. OSV storage tanks are not normally vented. Air sampling from above the drilling rig mud pits may understate explosive gases.

Sampling should reflect the conditions in the OSV tanks, i.e. no agitation. Base oils typically have flash points in the range 70 - 100°C. If the only oil component in a wet bulk is base oil, then the flash point cannot be lower than that of the base oil itself. If the flash point is relatively low (60 - 70°C), an explanation must be provided on the Annex 10-F-2 Backload & Analysis before the form is presented to the OSV Master. Prior to sampling, the installation pit should be left without agitation for at least 30 minutes and then surface sampled. If there is any doubt regarding results repeat the tests and review.

This sample can then be split and one part used for Flash Point testing and the other for Noxious gases. Flash point is tested as per Closed Cup Flash Point equipment manufacturers instructions.

8.3 LOWER EXPLOSIVE LIMIT (LEL)

The LEL gas detector will confirm potential flash point problems. Note that the LEL meter is used in harbour to check vapour condition in the ullage air space above the tank prior to discharge. The test carried out prior to backloading should reflect the conditions in the ships tanks, i.e. there will be no agitation and no forced ventilation unless it is specifically required or requested (unlike rig mud pits).

The Noxious gas test is modified to simulate the unvented ships tanks. The sample is placed in a closed container with a sampling port on top and left to equilibrate for 30 minutes. A tube is then connected from the port to the gas analyser and the sample analysed. This method simulates the unvented ships tank.

The above Procedure has been agreed with gas analyser manufacturers and service companies carrying out the test offshore.

The flash point and LEL results should be consistent with each other. LEL gas meters are normally set so that the alarm goes off in the range 10 - 20% LEL methane equivalent. Any number above 25% would be considered high. Other gases potentially present can have a different LEL range than methane. If there is any doubt regarding results, repeat the tests and review.

8.4 HYDROGEN SULPHIDE (H_2S)

H_2S can occur in wellbore fluids but this source would normally be identified by rig equipment and appropriate measures taken to neutralise and remove the H_2S.

In surface tanks and facilities H_2S most commonly arises from the activity of sulphate reducing bacteria (SRB). SRB will become active provided there is a "food" source and low oxygen conditions. This would be typical of stagnant oil contaminated fluid stored for a long time. This environment can arise on both installations and OSVs in tanks and manifolds. Disturbing stagnant fluids or mixing low pH fluid into a high pH fluid containing H_2S could cause the release of H_2S into the void space above the tank.

Hydrogen Sulphide is a heavier than air and an extremely poisonous gas. Maximum exposure limit is 10 ppm over an 8 hour period. The LEL gas meters currently being used also tests for the presence of H_2S. H_2S is a known danger during drilling operations. Offshore sensors and routine offshore analysis methods will detect if H_2S is a potential problem in wet bulk backloads. In the event of a positive test another sample should be collected to confirm the result. If this second result is positive further work may be required to determine the source of the H_2S. A test using a Garrett Gas train (if available) will determine the levels of H_2S dissolved in the liquid.

The SRB organisms thrive in a pH range of 5.5 - 8.0. The lower the pH, the greater the breakout of H_2S. The backload MUST be treated on the installation to prevent breakout of H_2S in the OSV tanks. Biocides kill the bacteria but do not remove dissolved H_2S. H_2S scavengers will remove dissolved H_2S but do not stop biological activity. Caustic soda (or similar alkaline materials) will raise the pH and prevent H_2S gas breakout.

In the event H_2S is detected, tests should be carried out offshore to determine the best treatment prior to backloading. If H_2S is detected but no H_2S scavenger is added to remove the dissolved H_2S, this should be noted in the conclusions section of the Annex 10-F-2 Backload & Analysis Form.

After treatment, a final headspace H_2S test should be carried out to confirm zero H_2S and noted on the Annex 10-F-2 Backload & Analysis Form before the hose is connected to the OSV for backload.

8.4.1 Example Procedure for LEL% and H_2S meter only

Collection of Sample

The sample should be taken from below the surface of the unagitated tank to simulate the unagitated OSV tank. Most oil will be in the top layer and will give a worst case oil content.

1. Leave tank or pit unagitated for 30 minutes before taking a 2.5 litre sample.
2. Fill the sample into container provided, up to the marked line and replace screw cap lid
3. If a magnetic stirred is available, mix for 1 hour before proceeding to gas detection. Two large magnetic fleas included in kit.

Gas Detection (% LEL value, combustible gases)

1. Ensure batteries have been fully charged. If not, place in charger and allow charging for 12 hours.
2. Switch instrument on in a clean air environment
3. The detector will beep and run a set of self-checks. Once these are complete, the screen will display 3 levels on the screen
   H_2S: 000 ppm
   O_2: 20.9 %
   LEL: 000 %
4. The pump automatically starts and continues to run until the unit is switched off.
5. Remove the plugs in the sample container lid and place the sampling hose into the head space
6. Any combustible gas will be registered on the LEL monitor.
7. After 5 minutes remove the hose and switch detector off by holding down the on/off button for 5 seconds; (the unit will beep 4 times before switching off)
8. Any gases detected should be reported on the Annex 10-F-2.

Calibration

1. O_2 sensor is automatically calibrated each time the unit is switched on.
2. LEL sensor is factory calibrated to Methane and can be calibrated using a calibration gas supplied by BW Technologies.
3. H_2S sensor is factory calibrated but subsequent calibrations can be done using a calibration gas supplied by BW Technologies.
4. It is recommended that the LEL and H_2S sensors be calibrated every three months or when the unit is onshore using the appropriate mixed calibration gas from BW Technologies.

8.5 pH

Seawater pH is typically 8.3. Oil mud is alkaline and could raise the pH slightly. Cement contaminant is highly alkaline. In general, alkaline pH (above 7) protects from corrosion. Highly alkaline materials can be caustic and require care in handling. Cement and sodium silicate can lead to high pH.

Low pH (less than 4) is highly acidic and an explanation should be provided on the Annex 10-F-2 Backload & Analysis Form. Acids such as citric acid or acidizing chemicals such as hydrochloric acid can lead to low pH.

Low pH Wet Bulk Waste is very uncommon and would require large quantities of alkaline material to increase pH above 9.5. In this unlikely event further guidance should be sought from operator's competent person.

Note that low pH (less than 9) means any H_2S present will already have broken out as a gas.

The pH range of 4 – 11 is the acceptable range for transportation of any bulk fluids to avoid damage to OSV tank coatings and seals. Some OSV tanks may be capable of carrying fluids out with this pH range; this should be discussed with the OSV Master prior to backloading.

Wet Bulk Waste will be treated to have a pH of 9.5 – 10.5 as this is the range that H_2S will remain in solution.

8.6 SALINITY – CHLORIDES

Seawater is typically 20500 mg/l chlorides. Oil mud contains some calcium chloride increasing this level slightly. Sodium chloride brine can contain up to 189000 mg/l. Results should agree with the composition.

8.7 RETORT ANALYSIS (SOLIDS, WATER, OIL VOLUME %)

This should match the estimated composition (volume %) on the Annex 10-F-2 Backload & Analysis Form. Note that it may be difficult to get representative samples if the liquid tends to separate. Some divergence is expected e g. if oil is noted as 5%, the range could be 3 - 10%. If separation is likely a range is preferred e.g. 5 - 10%. The solids component can form a residue in the OSV tank and a potential location for SRB activity and H_2S.

8.8 SPECIFIC GRAVITY - S.G.

Common water based fluids cover the range 1.03 (seawater), sodium chloride (1.2), and calcium chloride (1.33). Rarely used brines such as caesium formate can reach 2.2. Oil mud is typically 1.1 - 1.5 but can exceed 2.0. Mixtures will have intermediate values, most tending to 1.03 as seawater is the major component. Note that if mixtures separate the top half can be a different density than the bottom half.

8.9 APPEARANCE

General description confirming if cloudy, clear and colour. Should be consistent with Waste Consignment Note description.

8.10 ODOUR

Slight versus strong odour, consistent with description.

8.11 CONCLUSIONS

Should demonstrate the various parameters measured are in agreement with one another.

9 ANNEX 10-F-2 – BACKLOAD & ANALYSIS FORM

TO BE COMPLETED AND PROVIDED TO OSV MASTER PRIOR TO BACKLOADING

Bulk description		Full analysis required? Y/N	
Offshore asset		If not; what supporting documentation is provided	
Vessel		Risk for the transport phase (H2S, LEL, LFL)	
Sample reference		Date	
Volume		Receiver at shore base	

WET BULK COMPONENTS

Component Name	Concentration	Units	MSDS Available
		% Volume	
		% Volume	
		% Volume	
		% Volume	
		% Volume	
		% Volume	
		% Volume	

LABORATORY ANALYSIS RESULTS (all relevant tests must be conducted)

Test	Method	Units	Result	Range of Results / Guidance
Salinity (Chloride)	Titration	mg / l		
Flash Point	Closed Cup Flashpoint	°C		Must be **>60°C** to backload If flashpoint is low (**<70°C**) then explanation should be provided
Gas Test (H_2S)	Gas Meter	Ppm		**Must be zero** Indication of bacterial activity
Gas Test (LEL)		%		**<25%**, ideally zero. Meter alarm typically set to 10 – 20% LEL. Should be consistent with flashpoint
Gas Test (Oxygen)		%		
pH	pH Meter			4 – 11 is acceptable range for OSV tank coatings. **MUST** be 9.5 – 10.5 to keep any H_2S in solution
Water	Retort	% Volume		
Oil Content	Retort	% Volume		Confirm retort report agrees with Appendix 10 – F, Section 4 components and waste consignment note.
Solids	Retort	% Volume		Confirm retort report agrees with Appendix 10 – F, Section 4 components and waste consignment note.
Bulk Specific Gravity		S.G.		**<2.5** If >2.5 seek further guidance on vessel capability
Appearance				
Odour				
Date and Time of Analysis				

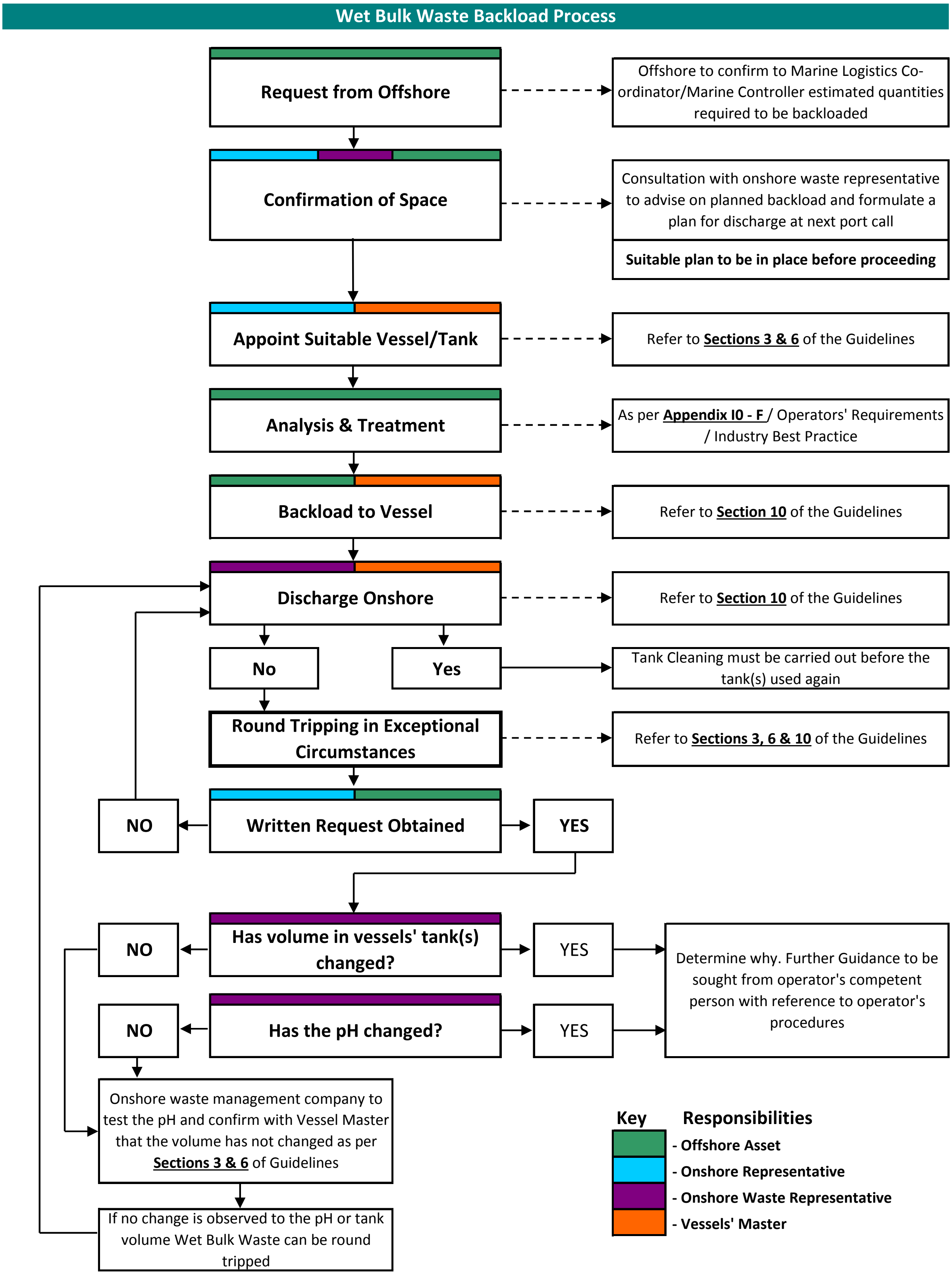
CONCLUSIONS

1.

Analysis to be conducted by person competent to do so	Comments (Yes / No / Details)
The Wet Bulk as detailed above has been assessed in-line with the guidance contained in GOMO Appendix 10–F; The planned backload has been discussed with the vessel Master and confirmed as safe for carriage in a clean tank(s)	
H_2S Avoidance	
Details of mandatory wet bulk waste treatment with biocide (chemical / quantity)	
Details of wet bulk waste treatment in order to produce pH of between 9.5 and 10.5 (chemical / quantity)	
Has waste handling facility been informed of volume and ETA onshore? Y/N	
Does the waste handling facility have the capability to take off the waste at the first port call? Y/N	

	Name	Signature		Date
Analyst				
Operations Representative				

10 ANNEX 10-F-3 - PROCESS FLOW CHART



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Appendix 10-G

Tank Cleaning Check List

Revision History

Revision Number	Date	Section	Changes
1	December 2022	1 Tank Cleaning Checklist	Form layout updated
		2 Gas Monitoring Form	Example form added for gas monitoring readings

Contents

1 Tank Cleaning Checklist

This pre job checklist should be used in preparing the Permit to Work for Confined Space Entry and authorised on completion.

All relevant hazards noted in this checklist should also be discussed as part of the toolbox talk.

Permit No:		**Date:**	
Town / Port:		**Job Description:**	
Site / Quay:		**Tank No's:**	
Vessel:		**Tank Contents:**	

Preparing confined space & work area:	**Yes**	**N/A**	**Comments:**
Hatches opened			
Drained or pumped down			
Water flushed			
Inert gas purged			
Ventilated: *indicate in comments if by natural or mechanical means*			
Mechanical isolations: *use comments field to note details*			
Electrical isolations: *use comments field to note details*			
Tank agitators isolated			
Tank agitator blades guarded			
Other Considerations:			
Material Safety Data Sheets available			
10-F-2 Backload Analysis form available			
Suitable Access / Egress provided			
Working area clear of cargo			
Working area adequately lit			
All hose and cable runs clearly visible			
Scaffolding – scaff tag / hand over sheet			
Standby personnel detailed			
Means of communications tested OK			
Area free of flammable materials			
Area free of ignition sources			
Work time / fatigue			
Illuminations			
SIMOPS / other work that could cause hazard			
Other / Comments:			

Continued from previous page

Toolbox Talk:	**Yes**	**N/A**	**Comments:**
Toolbox talk conducted with ALL applicable personnel			
Special training / briefing required			
Means of communication established & tested			
SIMOPS / Interface with other work checked			
Other / Comments:			

Plant / Equipment Required:					
	Yes	**N/A**		**Yes**	**N/a**
Generator / compressor			DISAB / vacuum tanker		
Jetting units			Lighting		
Diaphragm pumps					
Liquid ring tanker					
Other / Comments:					

Hazards:					
	Yes	**N/A**		**Yes**	**N/A**
Noise			Working at height		
Toxic substance			Overhead hazards		
Chemical substance			Potential dropped objects		
Corrosive substance			Entrapment		
Explosive substance			High air pressure		
Flammable substance			High water pressure		
Electrical			Suction		
Static electricity			Trip hazards		
Manual handling			Hot surfaces		
Working time / fatigue			Norm		
Self-closing hatches and doors			Residues within tank spaces		
Other / Comments:					

Continued from previous page **Personal Protective Equipment & Safety Equipment:**					
	Yes	**N/A**		**Yes**	**N/A**
Eye & face protection			Tripod & fall arrestors		
Respirator			Harnesses		
Hand protection			Breathing apparatus		
Foot protection			Rescue breathing apparatus		
Waterproof clothing			Firefighting equipment		
Overalls / fire-retardant overalls			Spill kits		
Full chemical protective clothing			Emergency showers		
Respiratory protective equipment			Safety barriers / signs		
Head protection			Buoyancy aids		
Chemical protection			Personal gas detector (for each tank entrant)		
Hi-visibility clothing					
Hearing protection					
Other / Comments:					

Emergency Procedures & Contacts:					
	Yes	**N/A**		**Yes**	**N/A**
Muster points identified			Alarms understood		
Escape routes identified			Location of fire fighting & first aid equip.		
Contacts No's:					
Vessel bridge					
Radio call sign and channel					
Base operator					
Tank cleaning contractor					
Client contact					
Emergency services					

Other Requirements / Limitations:

Gas Monitoring:	**Yes**	**N/A**	**Comments:**
Is ongoing gas monitoring required? *If yes add frequency requirement in comments field & use form at section 3*			
Competent Analyst(s) required			

Declaration: *I have personally checked the above conditions and consider it safe to enter provided that the conditions laid down are adhered to:*						
Tank Cleaning Contractor	Signed:		Print Name:		Date:	
Client / Vessel Master *(or designate)*	Signed:		Print Name:		Date:	

2 Gas Monitoring Form

Below is an example of a form to be used to record gas monitoring readings where continuous or periodic monitoring is required. The frequency of readings should be noted below based on the assessment of risk.

Vessel:		**Job Start Date:**	
Permit No:		**Tank No's:**	
Site / Quay:		**Tank Contents:**	
Gas Meter No:		**Gas Meter Calibration:**	
Gas Meter No:		**Gas Meter Calibration:**	
Competent Analyst #1		**Competent Analyst #2** (if over more than 1 shift)	

Agreed frequency for checking and recording readings from the Gas Monitor:	

Tank No	Date/Time	O2	H2S	LEL	CO	Analyst Initials
Note below any relevant information or changes in gas monitoring:						

Appendix 10-H

Tank Cleaning Standards

Revision History

Revision Number	Date	Section	Changes
1	December 2022	1 Wet Bulk Tanks	Additional comments added to emphasise use of safest possible cleaning method and consideration of contamination
		1.1 Pump out Standard	Reference to checking discharge suction added
		1.2 Oil Based Mud Standard	Good practice reference added Comments added to cover use of compressed air for clearing lines and consideration of future product.
		1.3 Maintenance Clean Standard	New section added
		1.4 Water Based Mud Standard	Comment added re cleaning as high as practicable without use of scaffolding
		1.5 Brine Standard	Wording update regarding use of scaffold and detergent. Comment added re lines flushing for completion brines
		1.6 Off-Hire Standard	New section added
		2 Dry Bulk Tanks	Comment added regarding removal of build-up of loose product from tank tops
		3	New section added to cover standards related to use of vessel fixed self-cleaning systems

Contents

1 Wet Bulk Tanks

The vessel charterer should, where possible, ensure that tank cleaning operations are carried out in the safest method possible. Consideration should be given for the planned product and risk of contamination. Where possible, the use of scaffolding should be reduced.

Tank inspections should confirm that the tanks have been cleaned to the following standards as required:

1.1 Pump out Standard

Pump out residues from tank and wipe tank floor using rubber mops or equivalent. No requirement for washing. Check vessel discharge suction to prove clear.

1.2 Oil Based Mud Standard

Tank bottoms and internal structure are clear of mud solids and residues. Good practice 1m up from tank bottom including agitators. Cargo lines are flushed through with compressed air / clean water and lines drained depending on future product. Pump suctions are checked and clean. Tank must be empty and clear of all water / mud mixtures.

1.3 Maintenance Clean Standard

Tank bottoms, gauge ports, agitators, ladders, access, and internal structures are clean. Good practice 1m up from tank bottom and agitators. Cargo lines are flushed through with clean water, purged clear with air and drained.

1.4 Water Based Mud Standard

Cargo lines (including tank recirculation lines) and pumps are flushed through with clean water and lines drained. Tank bottoms and internal structure are clean of all evidence of previous cargo as high as practicable from the tank floor without the use of scaffolding. The tank may require cleaning with detergent to achieve the highest standard of cleanliness possible. All traces of water and detergent removed from tank.

1.5 Brine Standard

Cargo lines (including tank recirculation lines) and pumps are flushed through with clean water and lines purged with air or drained. Tank bottoms and internal structure (stringers, frames, etc.) are clear of mud solids, semi-solids, and all evidence of previous cargo. The tank may require scaffolding and cleaning with detergent to achieve the standard required for the next product. All residual water and detergent removed from tank. For completions brines further cleaning and line flushing may be required.

1.6 Off-Hire Standard

Cargo lines (including tank recirculation lines) and pumps are flushed through with clean water and lines purged with air / drained. Tank bottoms and internal structure (stringers, frames, etc.) are clear of mud solids, semi-solids, and all evidence of previous cargo. The tank may require cleaning with detergent to achieve the highest standard of cleanliness possible. All traces of water and detergent removed from tank. For off hire vessel tanks should be returned to the standard inspected at the on hire with consideration for reasonable wear and tear.

2 Dry Bulk Tanks

Tanks to be brushed down and residues removed by vacuum or equivalent. Lines and manifolds should be opened and proven. Slides should be checked for dryness and condition and 'elephant foot' suction checked to ensure clear. Where safe any new build-up of loose product should be removed from tank tops.

3 Vessel Self Cleaning Standards

The vessel charterer should, where possible, ensure that self-tank cleaning operations are carried out in the safest method possible. Consideration should be given for the planned product and risk of contamination.

Vessel self-cleaning can be considered as this reduces tank entry and working at height for personnel. The efficiency of a self-cleaning system onboard a PSV is very much dependant on how the system is operated.

The self-tank cleaning time cycle can be adjusted depending on the previous product and on the standard required. As all self-cleaning systems perform differently, the standard required should be discussed with the vessel crew to ascertain if this is achievable.

As a guide when using a vessel self-clean system consideration should be given to:

- Previous product in the tank(s)
- Acceptable standard for product to be loaded
- Minimum acceptable residues regarding compatibility
- Length of washing cycle
- Temperature of water
- Soap / detergent to be used

Tank inspections should confirm that the tanks have been cleaned to the standards required. If the standard required has not been achieved, tank cleaners should be called to complete the operation and achieve the required standard.

The following pictures show a typical standard achieved from use of vessel self-clean system and would be considered as mud standard.

Appendix 11-A

Anchor Handling Systems, Set Up & Handling

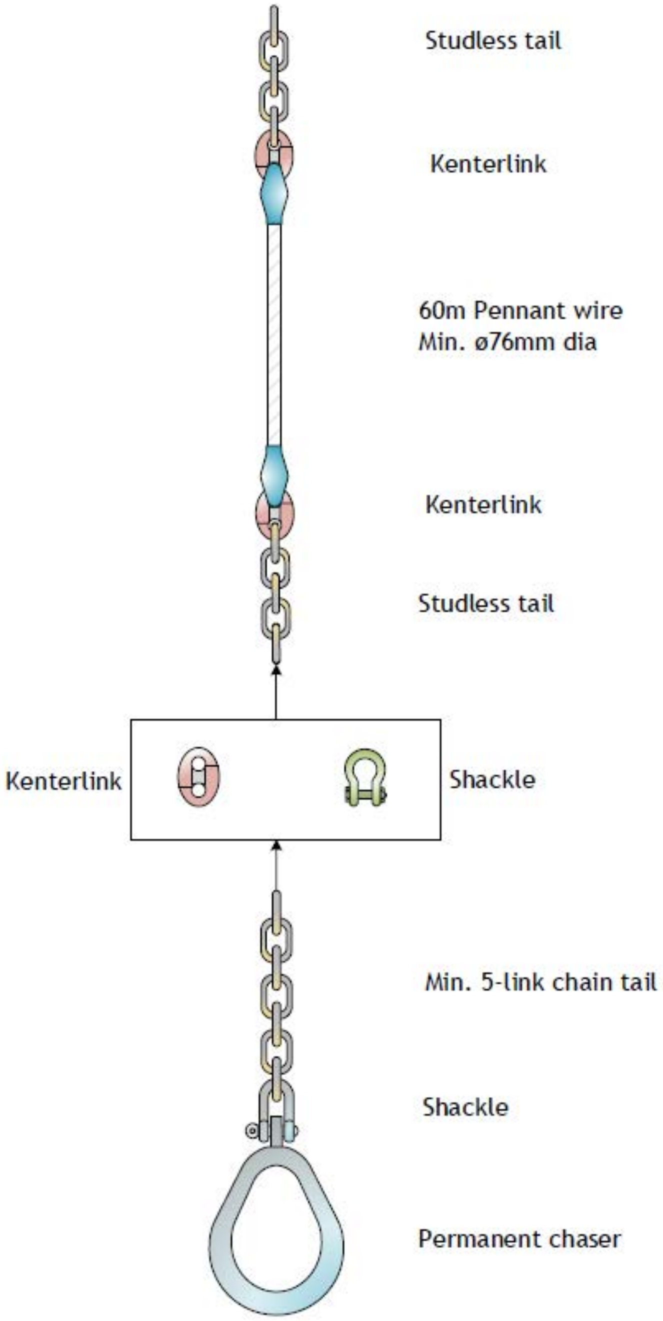
Revision History

Revision Number	Date	Section	Changes
2	May 2024	Full document	Appendix retitled from "11-B" to "11-A". 11-A was previously *"Guidelines for the content of MOU moving and Anchor Handling Workscope"* which has been merged into main Chapter 11.
		Contents	Content updated; new sections added
		1 Permanent Chaser Pennant (PCP)	Content updated
		1.1 Pennant Wire Requirements	Content updated
		1.3 Surface buoy Requirements	Content updated
		3 Working Wire/Chaser Termination on Vessel	Content updated
		5 Chasing Pennant PCP Operation	Heading changed to PCP operation
		7 Fibre Rope Handling	Intro text: Content updated
		7.2 Mobilisation	Content updated
		7.3 Connection of Sub-surface Buoys	Content updated
		7.4 Stopping off Fibre Rope	Heading changed to Stopping Off, content updated
		8 Operation - Fibre in Mooring Lines	Content updated
		8.1 Disconnecting MOU with Fibre Insert	Content updated
		8.2 Connecting Mooring Line with Fibre Insert	Content updated
		9 Handling of Mooring Chain	New section added
		9.1 Mobilization and Demobilisation of Mooring Chain	New section added
		9.2 Offshore Handling of Mooring Chain	New section added
		9.3 Anchor Retrieval Recommendations	New section added
		9.4 Damage Avoidance During Anchor Retrieval	New section added
		10 Use of Grommets	New section added
		11 Quick Release Mooring Connector	New section added
		12 Use of Swivel during Anchor handling Operation	New section added

Contents

1 Permanent Chaser Pennant (PCP)

The diagrams below apply to PCP components. In general, a swivel should not be used in the pennant system, only on the working wire. Illustrated below is the recommended PCP system.



Note: It is recommended that chain connectors (kenter, etc.) are used for connecting for all mooring line segments. The use of shackles in mooring line should be avoided.

1.1 Pennant Wire Requirements

- The wire shall be minimum 3" / 76 mm
- The length of the pennant wire shall be a minimum of 200' / 60 metres. Some operations may require longer pennants.
- The wire shall be galvanized and quality certified with gusseted thimbles to be heavy duty and galvanised.
- The eye towards vessel/shark jaw shall be a socket with an option for connecting a minimum 3" / 76mm connecting link. It is recommended that a 5-link chain tail is attached, to ensure the shark jaw on board grabs the chain tail to avoid damage to the pennant wire.

1.2 Connector Minimum Requirements (Connecting Link or Pear Link)

- To be to R3 quality standard as a minimum
- Minimum dimension 3" / 76 mm
- Certified

1.3 Surface Buoy Requirements

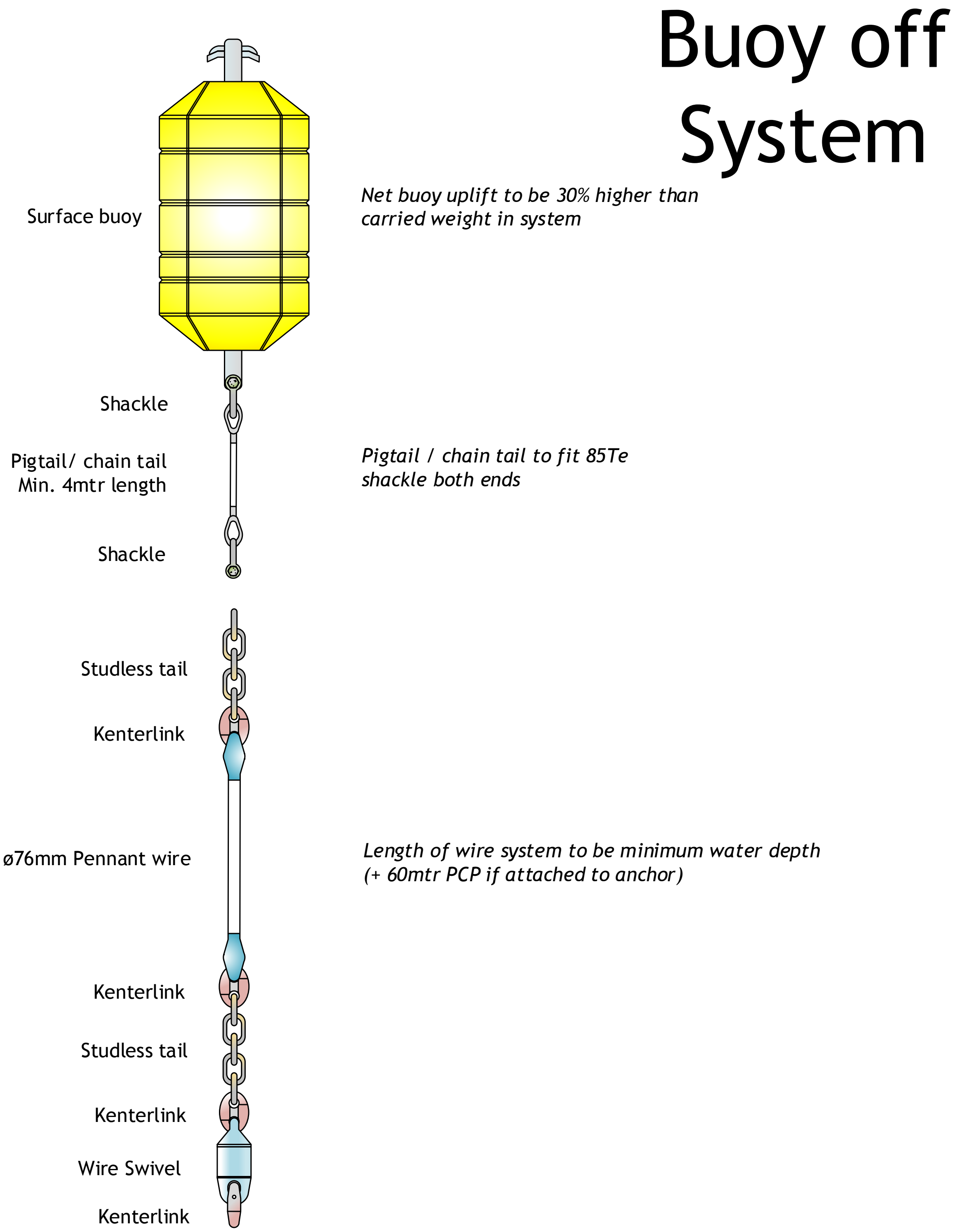
- Load bearing capacity based on water depth and equipment weight.
- Shall have sufficient buoyancy related to weight.
- Marked in accordance with applicable regulatory requirements.
- Fixed pigtail.
- Sufficient shackles, to be identified, depending on expected tension. An open common link is recommended for eyes at bottom end of pigtail.
- Pigtail is connected to a connecting link at the bottom.

Note: Depending on mooring line dimension, shackles should be avoided in the mooring line.

2 Pennant Buoy System

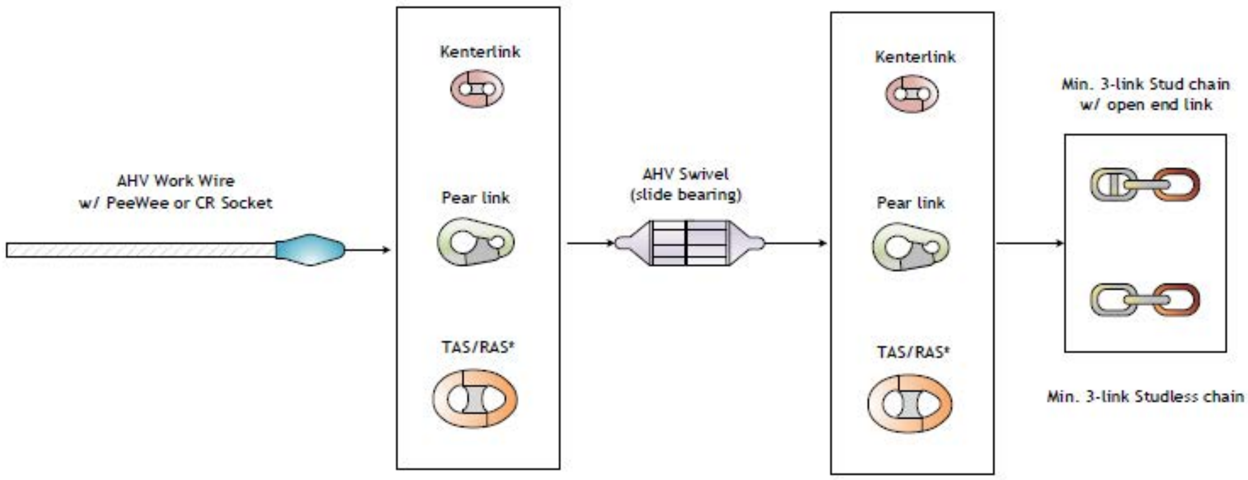
Recommended design of a pennant buoy system with associated equipment: soft eye or socket.

Note: Open end link here means open common link.



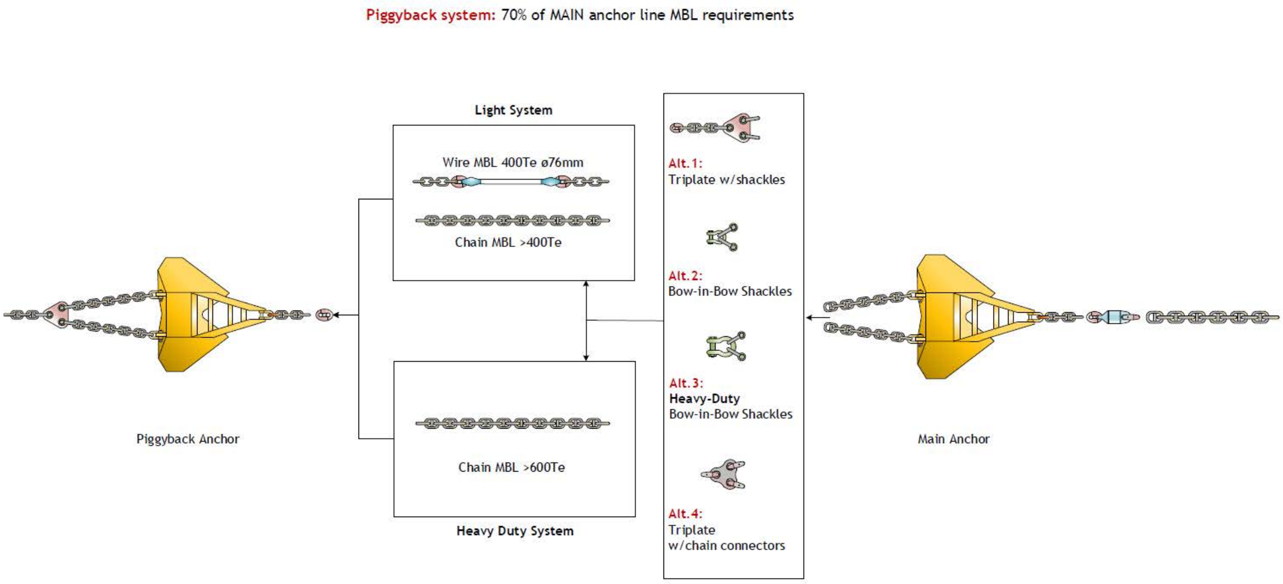
3 Working Wire/Chaser Termination on Vessel

1. Use an appropriate rated swivel in the working wire to prevent wire spinning.
2. A closed socket termination is recommended for the working wire.
3. Minimum thickness of the working wire should be sized to the winch.
4. Use a pear link of an approved manufacturer.
5. Use correct wire length for the water depth, i.e., 1 ½ times water depth. Recommended design is below.



4 Piggyback System

Recommended design of piggyback system with associated equipment.

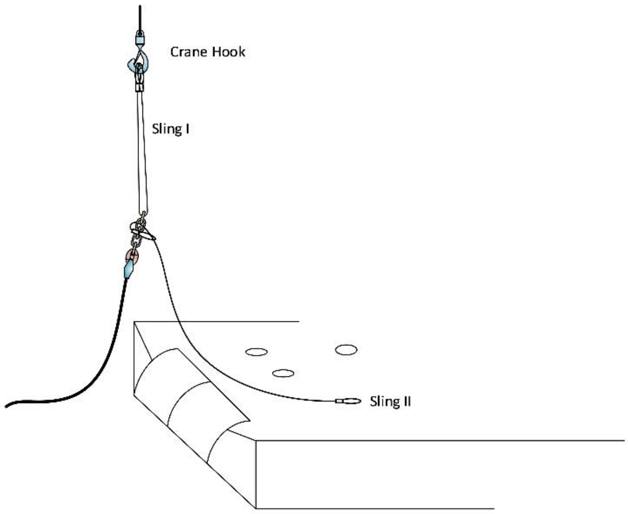


Note: The minimum breaking load of equipment between piggyback anchor and primary anchor shall be a minimum of 70% of the main anchor line minimum breaking load. Piggyback anchor shall be appropriate to sea bottom conditions based on the site survey.

Piggyback should be landed with use of a bridle system to ensure right anchor orientation.

5 PCP operation

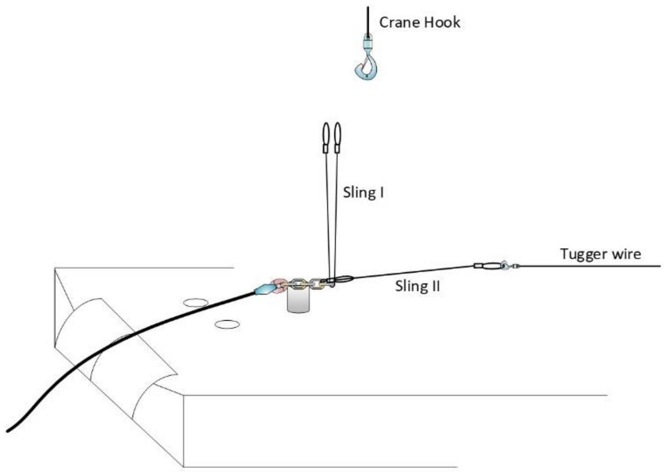
5.1 PCP to/from Rig



Note:
Sling to be min. ⌀19 / 6mtr long

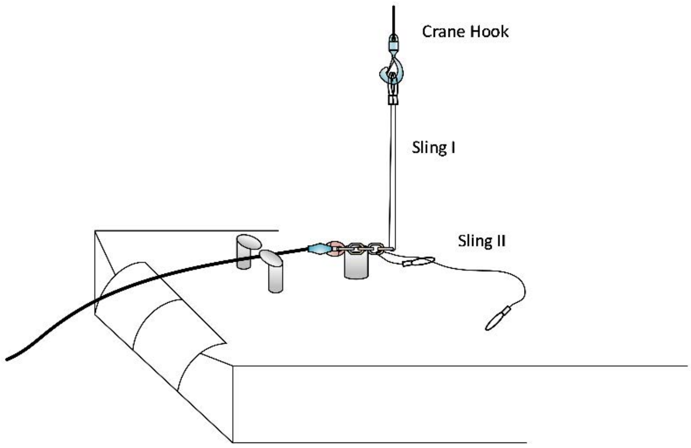
Important:
1) Clear communication between winch, crane and AHV.
2) Rig winch operator to monitor chain length paid out.

5.2 Receiving PCP



1) Connect tugger wire.
2) Pull / position PCP tail into shark jaw and SECURE.
3) Crane operator lower crane hook to deck.
4) Release crane hook.

5.3 Delivering PCP



1) PCP secured in shark jaw.
2) Connect sling I and II.
3) Connect crane hook in sling I.
4) Open and lower tow pins to deck.
5) Crane operator can lift PCP.

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6 Buoy off Prelaid Mooring Line – Safe Release

Vessel connects buoy off swivel, PW and runs out.

Vessel connects surface buoy to end of PW and buoys off using safe deployment method.

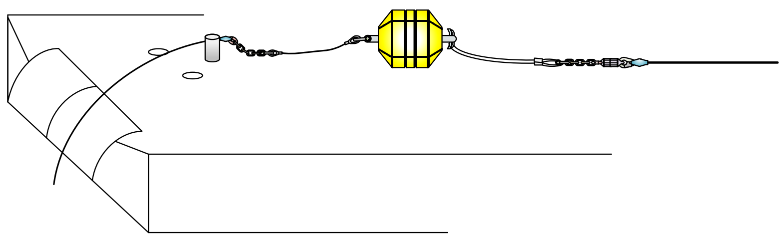
Surface Buoy

Rigging and Safe Deployment

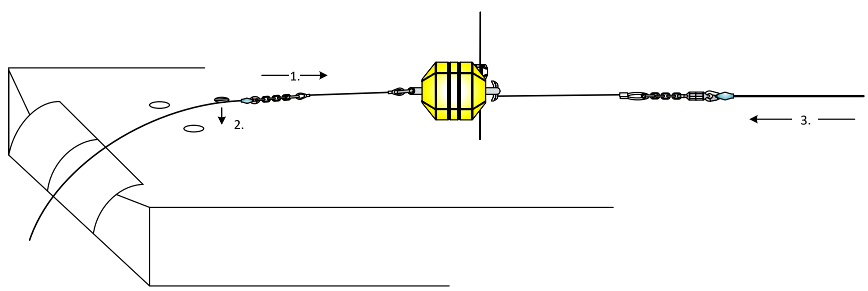
200-400mtr water depth

Preparation

1. Socket placed in shark jaw
2. Wire sling in end of work wire around crucifix (lower part)



Deployment

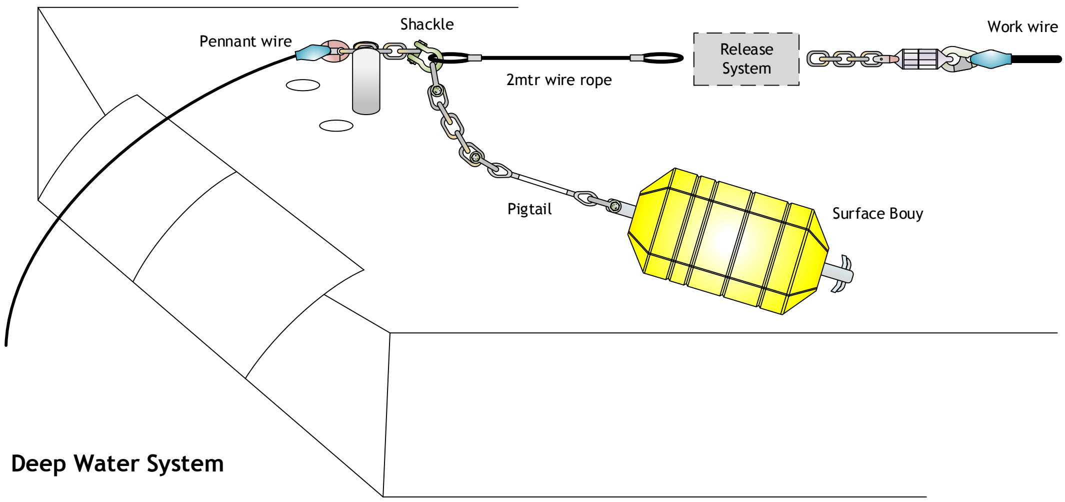


Surface Buoy

Deep Water Safe Deployment

400-1000mtr water depth

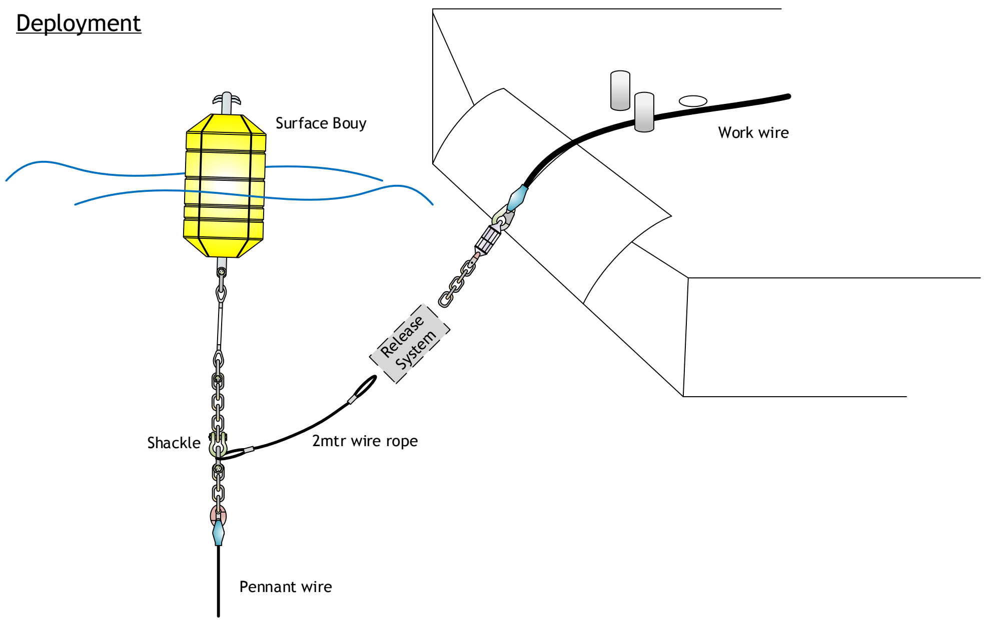
<u>Preparation</u>



Deep Water System

- Chaintail to be placed in Shark Jaw
- The release system and components to be designed and risk assessed before use
- No load on bouy elements or through buoy steelwork
- System size to be calculated case by case according to water depth

<u>Deployment</u>



Vessel to head back to anchor and take position fix of installed anchor (or marker buoy if anchor is not visible). Check that final anchor position is within the acceptance criteria given in Work Specification. An ROV can also be used to observe anchor penetration.

7 Fibre Rope Handling

This section covers the general use of deep rope polyester during mooring and unmooring operations.

The handling of fibre ropes shall be carried out by experienced and trained personnel.

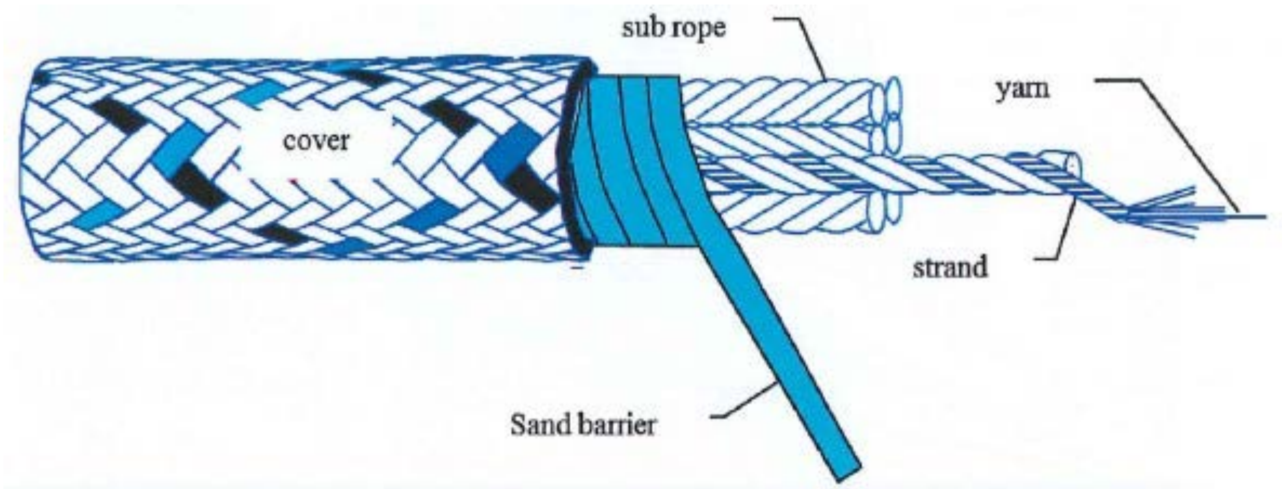
7.1 General

Fibre ropes are extremely robust when handled in accordance with procedures, but can be very easily damaged if there is abrasion caused by 3rd party interaction such as wire ropes, anchor flukes, trawl lines from fishing vessels, welding spots on deck, etc.

Ropes shall under no circumstances be exposed to high temperatures such as welding, welding sparks, flare or grinding.

Ropes must not be exposed to chemicals. If this happens, rinse with fresh water and seek immediate advice from manufacturer prior to use.

A special sand and clay barrier is installed on all fibre ropes used for mooring operations (see figure):



7.2 Mobilisation

The ropes should be spooled on to the vessel's drum, under tension, using a spooling device which shall be either secured on the vessel's deck or secured on the quayside leading to the stern of the vessel.

The Mooring Equipment Representative shall ensure that the following points are in place prior to commencing the loading of the fibre ropes:

- Clear deck policy is adhered to during the operation.
- Ensure clear communication lines between spooling machine operator and vessel winch operator are in place.
- Ensure that there are no obstructions in the path of the fibre rope.
- Ensure that the vessel's winch is free from any sharp edges.
- Check socket compartment for other wire rope / shackles that may damage rope. Also, check that the dimensions of compartment are sufficient to fit the fibre rope eye + fittings.
- The inner end of fibre rope needs to be fitted with a spool piece, shackle and adapter chain. A 10-link chain is recommended. This is to be connected to the wire forerunner on the vessel's winch.
- The spool piece in the eye of the rope shall be secured by lashing 10-12mm ropes through dedicated holes in the steel spool.
- During spooling the fibre should never be in contact with the end-spool termination.
- If spools are to remain in the fibres, protective matting must be utilized on the vessel's drum to avoid damage.

7.3 Sub-surface Buoys

When connecting subsurface buoys onto fibre rope segments during deployment, it is highly recommended to use rope HMPE fibres such as Dyneema, Spectra or equivalent.

It is critical to ensure the buoy is fitted on the exact location, according to the procedures, and that the rope is tight and well placed before over boarding.

If two buoys are connected close to each other, both buoys shall be deployed from deck or retrieved to deck simultaneously.

The buoy and the grommet must be positioned prior to deployment in such a manner that there is no possibility of entanglement in the shackle of the buoy.

Each grommet used shall have a minimum break load at least five times the uplift of the buoy and may have a polyester cover to minimise friction and wear damages. Also, the grommets shall be choked under the shackle by using polypropylene rope or shall be chocked on the shackle itself to avoid any entanglements.

7.4 Stopping off

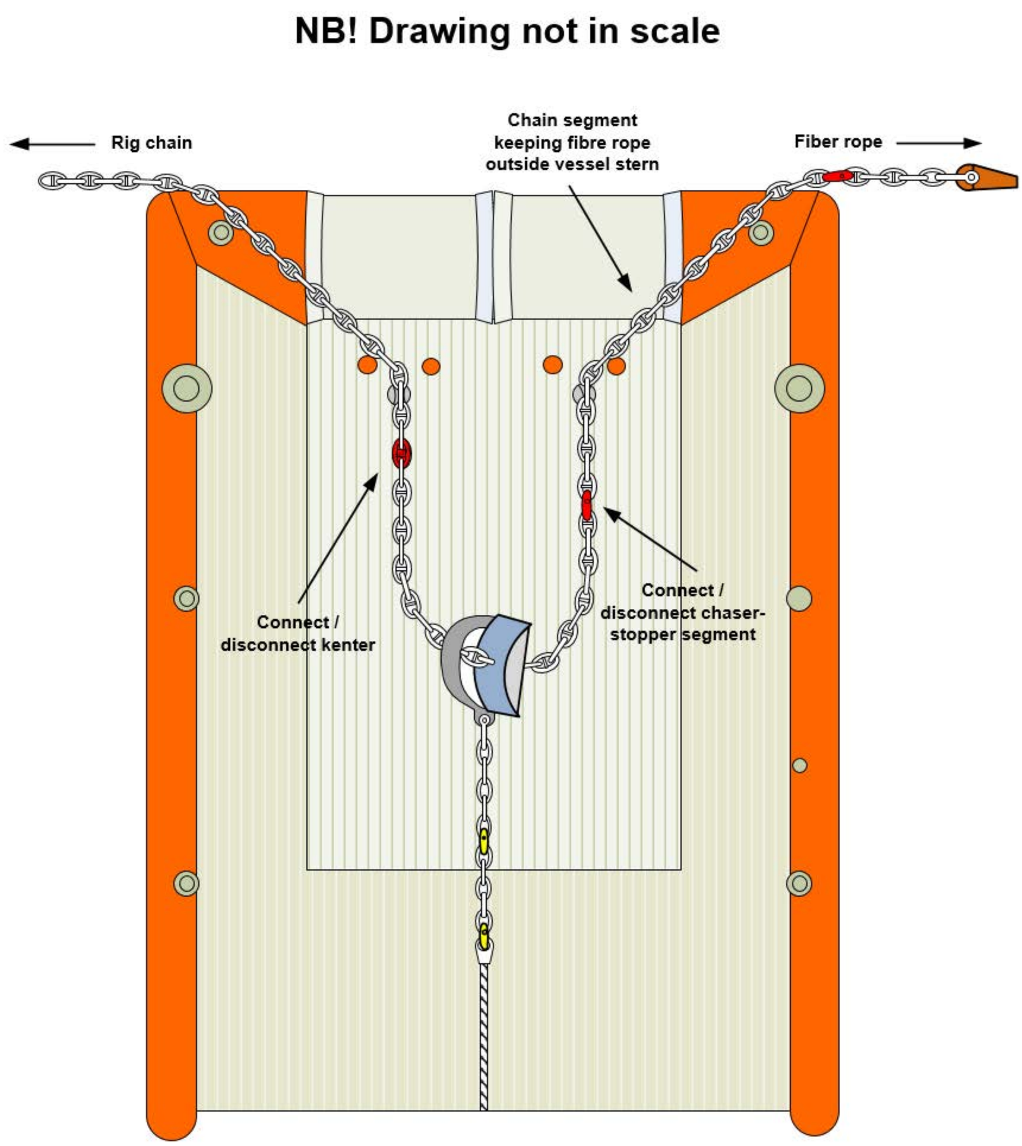
Should there be any need for stopping off the rope during deployment or recovery, consideration shall be given to the tension involved, the dynamic loads and the water depth.

A standard rope has a submerged weight of approximately 5 kg/m.

Dynamic loads should also be taken into consideration when looking into the weights above.

It is generally recommended to use grommets of a diameter greater than 45mm to stop the fibre rope on deck as the smaller rope may cut the jacket.

8 Operation – Fibre in Mooring Lines



Several methods are being used for connecting and disconnecting fibre ropes in mooring lines.

The following method describes where the PCP is hung off from the rig and chaser stopper is between the rig chain and fibre rope.

The following principles are recommended to be used for the different methods.

8.1 Disconnecting MOU with Fibre Insert

- AHV to receive PCP from rig, connect work wire, chase out towards chaser stopper.
- AHV to retrieve chaser stopper while communicating with rig. Rig to pay out chain as required before recovering the chaser stopper to deck and secure.
- AHV to disconnect chaser stopper and connect work wire to chain segment and lower work wire. Chain segment should have sufficient length such that the fibre segment is not coming in contact with the vessel's stern.
- Vessel moves towards rig while rig is recovering chain.
- AHV to connect the 60m PCP to rig chain and deliver PCP to the rig.
- AHV to heave in work wire, recover and disconnect the chain segment and recover fibre and any Sub Surface Buoys.
- AHV to connect swivel and pennant wire to anchor chain and buoy off, using safe release method.

8.2 Connecting Mooring Line with Fibre Insert

- AHV to recover Surface Buoy and pennant wire and secure the chain on deck. Remove any swivel from bottom chain.
- AHV to connect and pay out fibre and any Sub-Surface Buoys, secure adapter on deck and connect chain segment to fibre adapter. Chain segment should be of sufficient length such that the fibre segment is not coming in contact with the vessel's stern.
- AHV to connect work wire to chain segment, move towards the MOU and receive 60m PCP from rig, and secure rig chain on deck.
- Rig to pay out chain while AHV to heave in work wire and secure the chain segment on deck.
- AHV to connect chaser stopper to rig chain and chain segment with a chaser ring installed towards the rig. Connect the 60m PCP to the chaser ring. AHV to report to rig and receive confirmation before lowering connection behind stern roller.
- AHV to lower chaser stopper while rig recovers chain, chase back towards rig and deliver back 60m PCP.

Note: When paying out fibre rope, pay special attention to fibre position on the stern. High tension should not be observed during pay out; the fibre should be on the stern roller and have a straight line towards the anchor or rig in order to avoid high friction which may cause heat damage.

With the fibre rope and rig chain secured in shark jaw and the vessel positioned 90 degrees on the mooring line; allow the vessel to find its own equilibrium with decreasing power to avoid unnecessary use of power and strain to the equipment.

it is recommended to cool down the fibre with water spray to avoid overheating when the fibre is passing the stern roller.

Note: Spooling device should be actively used when spooling off fibre from the drum, in order to avoid contact/snagging with sharp edges on connections on the drum.

9 Handling of Mooring Chain

9.1 Mobilization and Demobilization of Mooring chain

- Onshore handling of mooring chain should be performed in such way that it reduces any risk of damage to the equipment.
- Mooring equipment Owner handling procedure, or base specific procedure should be adhered to.
- AHV shall ensure that the chain is not pulled over edges where the chain may snatch.
- The spooling speed shall be adjusted to ensure a smooth transfer.
- It is good practice to have visual inspection during transfer to and from chain locker.

9.2 Offshore Handling of Mooring Chain

The following shall be considered:

- Use of tension monitoring and collection of data (within winch equipment capabilities) for submission to equipment supplier.
- Load applied to mooring chain on the stern roller shall not exceed 30% MBL (due to fatigue concerns).
- When possible, avoid applying loads greater than 30% MBL to chain secured in jaws or on chain wheel.
- Shark jaws are designed for stoppering / hanging off chain, not for the application of power to a system, e.g., during prelay testing or anchor recovery.
- Use an appropriately sized chain wheel.
- A worn chain wheel will cause the chain to slip, exposing it to shock loading.
- Water cooling at stern roller.
- When possible, remove twists from chain.
- MBL of twisted chain is reduced.
- Twisted chain more likely to disengage from chain wheel.
- Where possible, avoid leading chain around sharp edges.
- Snagging can apply shock loads to the chain.
- When pulling chain directly from chain lockers, consider the bending radius at the chain locker opening.
- High grade chain may require extra handling precautions e.g. electrical isolation – follow job-specific work specification.

Note: When handling high-grade chain, a fibre/polyester rope + connections or similar electric isolating means shall be inserted in the line (in the sea, below stern roller) to isolate the mooring line from the AHV stern roller during tensioning/recovery. Alternatively, the AHV ICCP system shall be switched off minimum 6 hours prior to start of operations and remain off during the entire anchor handling operation.

Table 1 – Chain MBL	Tonnage as a percentage of mooring chain MBL			
	20%	**30%**	**50%**	**65%**
84mm R4 [734Te]	146Te	220Te	367Te	477Te
84mm R5 [858Te]	171Te	257Te	429Te	577Te

9.3 Anchor Retrieval Recommendations

Factors to consider during anchor retrieval operations:

- Testing and recovery of anchors should be done using AHV winch tension control system.
- Be aware of the effect of vessel dynamics on a stiff system, e.g., during anchor recovery. There is no sag in the system to absorb shock loads, so the load peaks must be dissipated via other means.
- Maximum installation / recovery load shall not exceed 50% of the MBL of the weakest component in the line.
- Should the peak loads exceed 65% of MBL during operation, the affected component shall be tagged, returned to base and subject to CVI / NDT prior to further use (applicable when not in contact with AHV stern roller).
- During retrieval operations, vessel dynamics may increase the actual tension (compared with bollard pull reading) by a factor exceeding two.

9.4 Damage Avoidance During Anchor Retrieval

Table 2 - Factors to Consider

Soil characteristics	
1	When applying an uplift, a vacuum will form on the lower side of the anchor.
2	Allow time for water to flow into the newly created void spaces beneath the anchor.
3	This effect is more pronounced in higher density soils.

Timing	
1	**Depending on the circumstances, it can take many hours to break out an anchor.**
2	Confidence and patience required to allow time to break out an anchor without damaging it.
3	Modern AHVs have plenty of power and it is tempting to rush the operation; this risks damaging the equipment.

Direction of pull	
1	**When breaking out an anchor by any method, the AHV must commit to that direction of pull.** Switching the AHV heading by 180° halfway through the operation risks damaging the shank.
2	AHV to remain on anchor BRG line. **Do not apply power outside the fore/aft axis.**

Pay out	
1	When pulling an anchor out in any direction, it is necessary to impart uplift at the anchor.
2	In shallow water, the forces described in Table 3, bullet point number 2, below, are amplified and the working limits threshold is likely to be reached earlier than in deeper water.
3	A line length equal to a greater multiple of the water depth is required in shallow water.
4	Optimum line length is different for anchor rotation and retrieval.
5	Anchor second rotation and retrieval general guidance is 2-5 x WD. This has been specified to tie in with DNV-RU-OU-0300.

Table 3 – Seamanship

Seamanship	
1	Good station keeping is key – gear will be damaged if the AHV drifts off far enough to apply a load.
2	As a vessel moves in a seaway, it can apply forces many times greater than the MBL of the mooring gear. Winch render functions and good line length selection can mitigate for this, but beyond a certain threshold the forces experienced will be too great to dampen with such measures. **AHV crew must be aware of the forces and have the confidence to call a halt to operations when they are judged to become unmanageable for the gear. Experience shows that yaw combined with surge and/or pitch creates the most violent load spikes.** **These forces will be most apparent when close to the anchor position with a short line deployed.**
3	AHVs generally display excellent seakeeping so it may not be immediately obvious that large forces are being exerted on the mooring gear. The bridge team must be aware that the working limits of the mooring gear might be more conservative than the working limits of the AHV.

Tension control	
1	High tensions, especially in the form of load spikes, are common during anchor retrieval. Observed winch tension should be monitored. **Use the winch rendering function and dynamic braking (if available) to prevent excessive tensions.**
2	When operating in shallow water, vessel movement results in large dynamic forces. AHV station keeping and pay out length must be monitored to mitigate for this effect.
3	The recovery load must be applied in a gradual build up and patience must be exercised.

Application of power	
1	It is very important to build power up smoothly and gradually to minimize shock loads.
2	As per *Allow time* , pressure equalization, as the anchor is dislodged, takes time.

Table 4 – Execution

Operational phases			
When pulling an anchor out backwards, the number of phases of the operation is dependent on how deep the anchor is buried.			
Phase 1	Initial dislodgement 15-30 min	1.3–1.5 x WD.	
		Low power	<30% MBL of mooring chain, if it is on the roller.
			100-150Te to allow liquefaction / equalisation beneath fluke.
For an anchor at the mudline, phase 1 successfully executed will often break the anchor out cleanly.			
Phase 2	Second rotation 15-30 min	2-5 x WD.	
		W/wire or chafe chain on roller (higher tensions can be applied).	
		100-150Te to allow liquefaction as anchor rotates.	
Phase 3	Translation	2-5 x WD.	
		W/wire or chafe chain on roller.	
		Higher tension – increase power in 50Te / 5min increments.	

Damage limitation	
The three-phase approach to backwards retrieval is crucial for deeply embedded anchors (especially in dense soils). A shallow-buried anchor may break out at phase 1. However, the cautious approach should still be followed in the interests of damage limitation.	
1	Increasing power to breakout tension immediately will induce the buried anchor to translate (i.e. lift out of the seabed) in its original aspect. The angle of force application, accumulated soil weight and soil friction will result in extremely high tensions.
2	Allowing the soil to liquefy will greatly reduce soil friction.
3	Allowing the anchor to rotate prior to translation will encourage a more favorable aspect and angle of force application.

Figure 1 – Initial Rotation [phase 1]

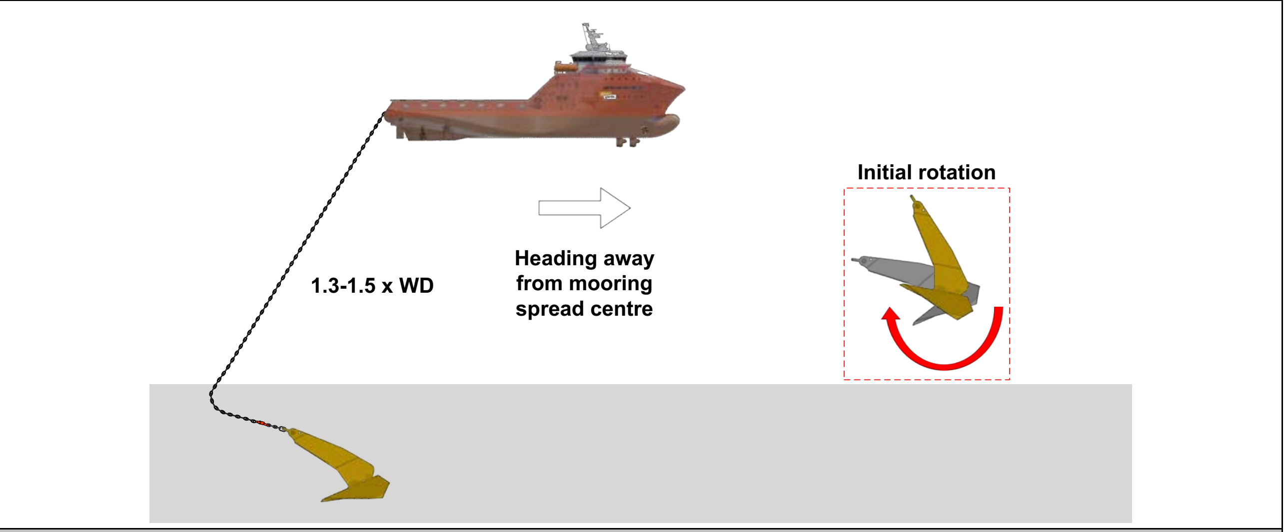


Figure 2 – Second Rotation [phase 2]

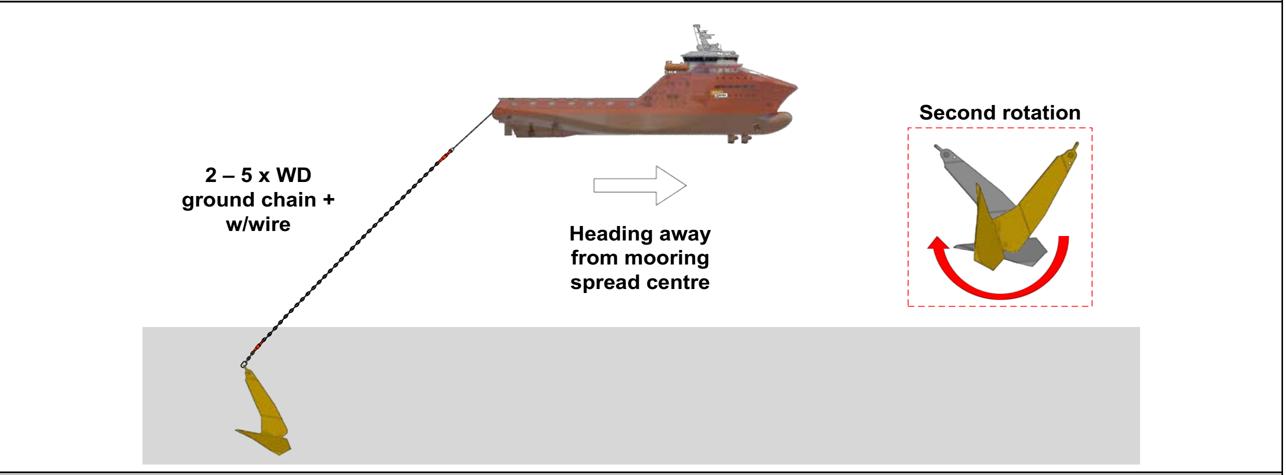


Figure 3 – Translation [phase 3]

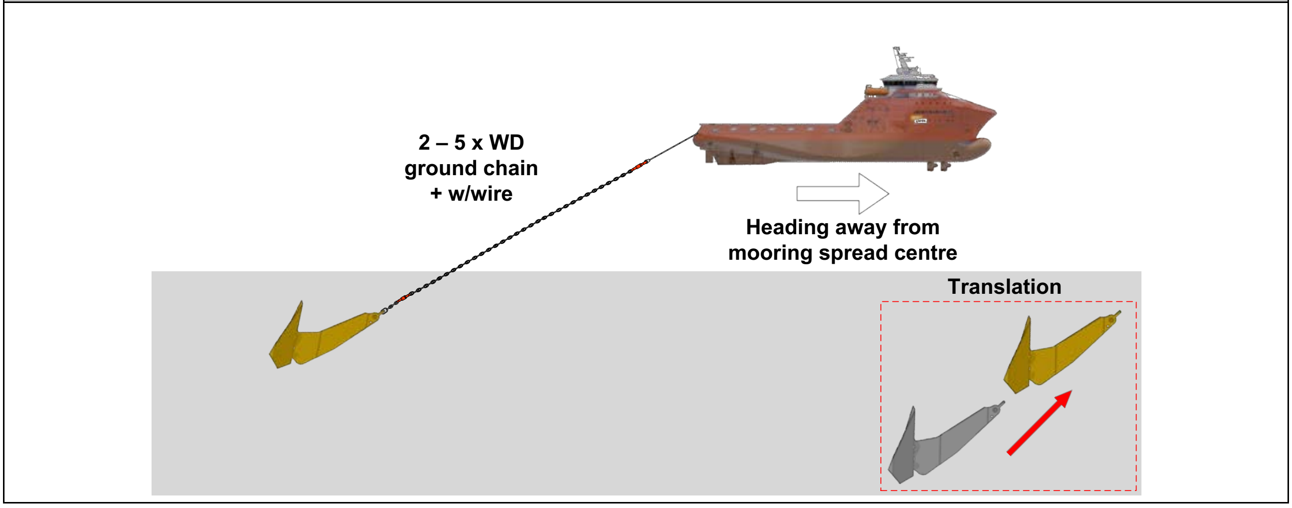
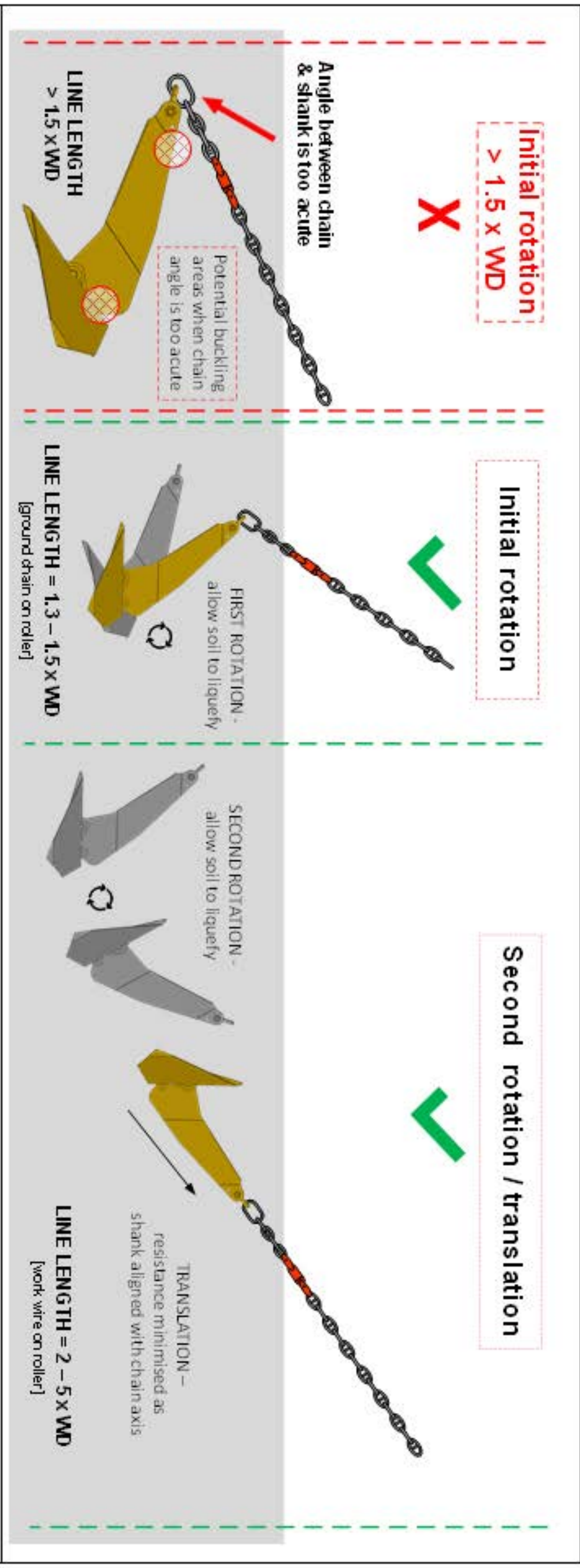


Figure 4 – Effect of Line Length

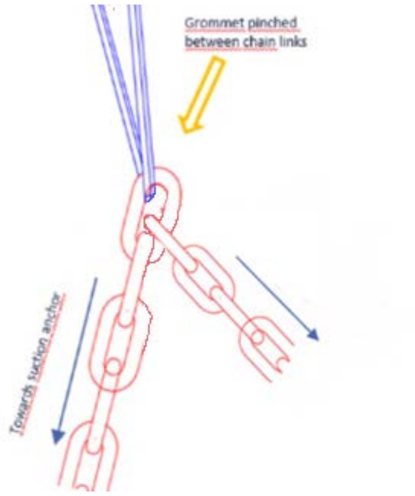


An excessively acute line angle causes high stress on shanks and fluke / shank lugs as the anchor is levered out. **This is more apparent when the anchor is embedded deeply in stiff clay.**

10 Use of grommets

If a wire grommet is to be used in rigging and holdback operations, the below shall be paid attention to:

- Wire grommets are particularly vulnerable when used in connection with equipment that can cause pinching of the wire.
- Avoid the use of a grommet or wire when there is risk of pinching or wedging.
- Should a grommet/wire be used, ensure that it is correctly installed and verify visually in correct position during and after taking of load. See Fig A.
- Plan for and include in the procedures where the red markings identifying the butt and tuck zones should be positioned and ensure understood by all personnel.
- Ensure the skew loading effect is included in the rigging calculation when using a doubled grommet.



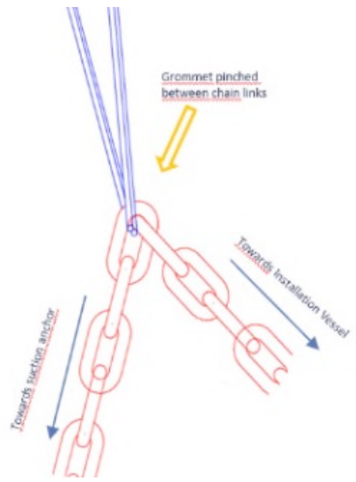


Fig A. Correct position of grommet **Fig. B Incorrect position of grommet**

In Fig. B, the location of the grommet causes it to be pinched and crushed by the chain links. This may rapidly reduce the capacity of the grommet and has led to accidents.

The lifting assembly may be subject to rapid load changes/shock loads during operation – so when a grommet is laid in double, one turn will take all initial shock load in case of sudden movements. A pinched wire will not benefit from a double configuration and hence the capacity to withstand a shock load may be greatly reduced.

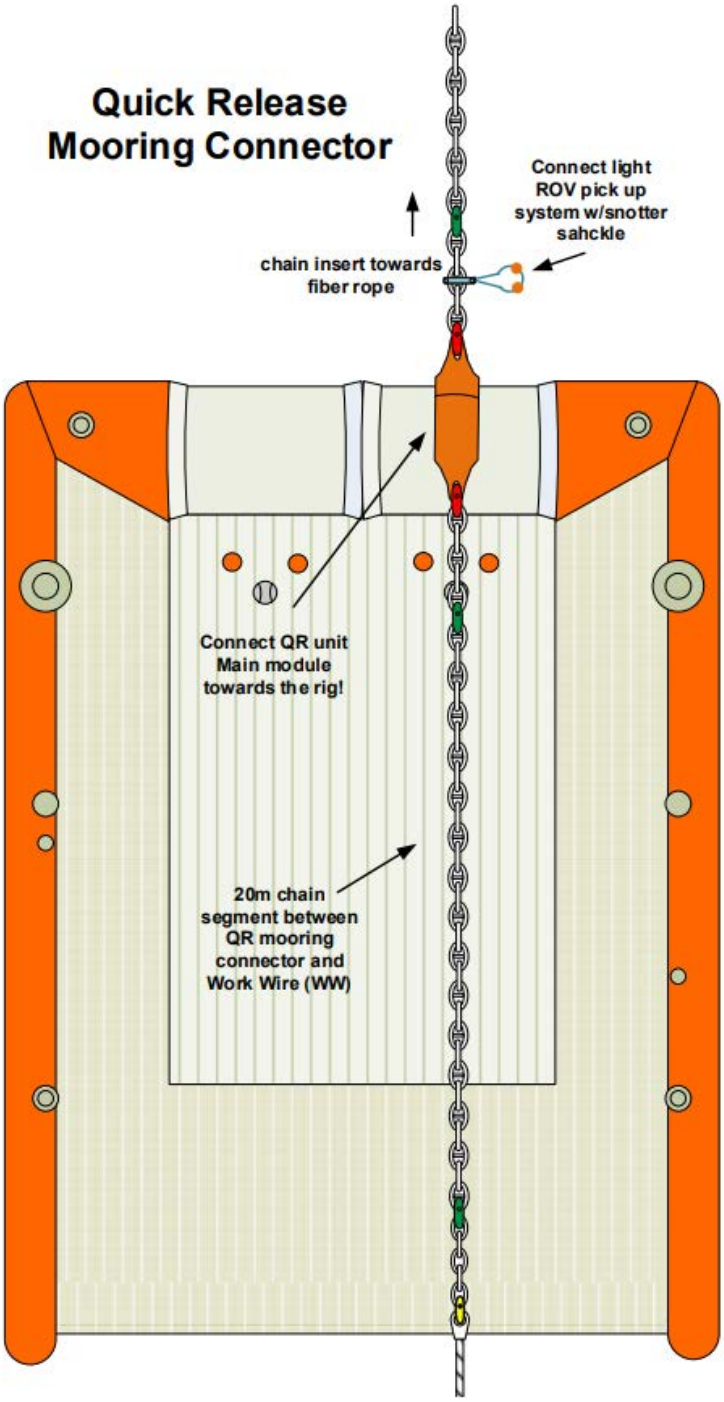
11 Quick Release Mooring Connector

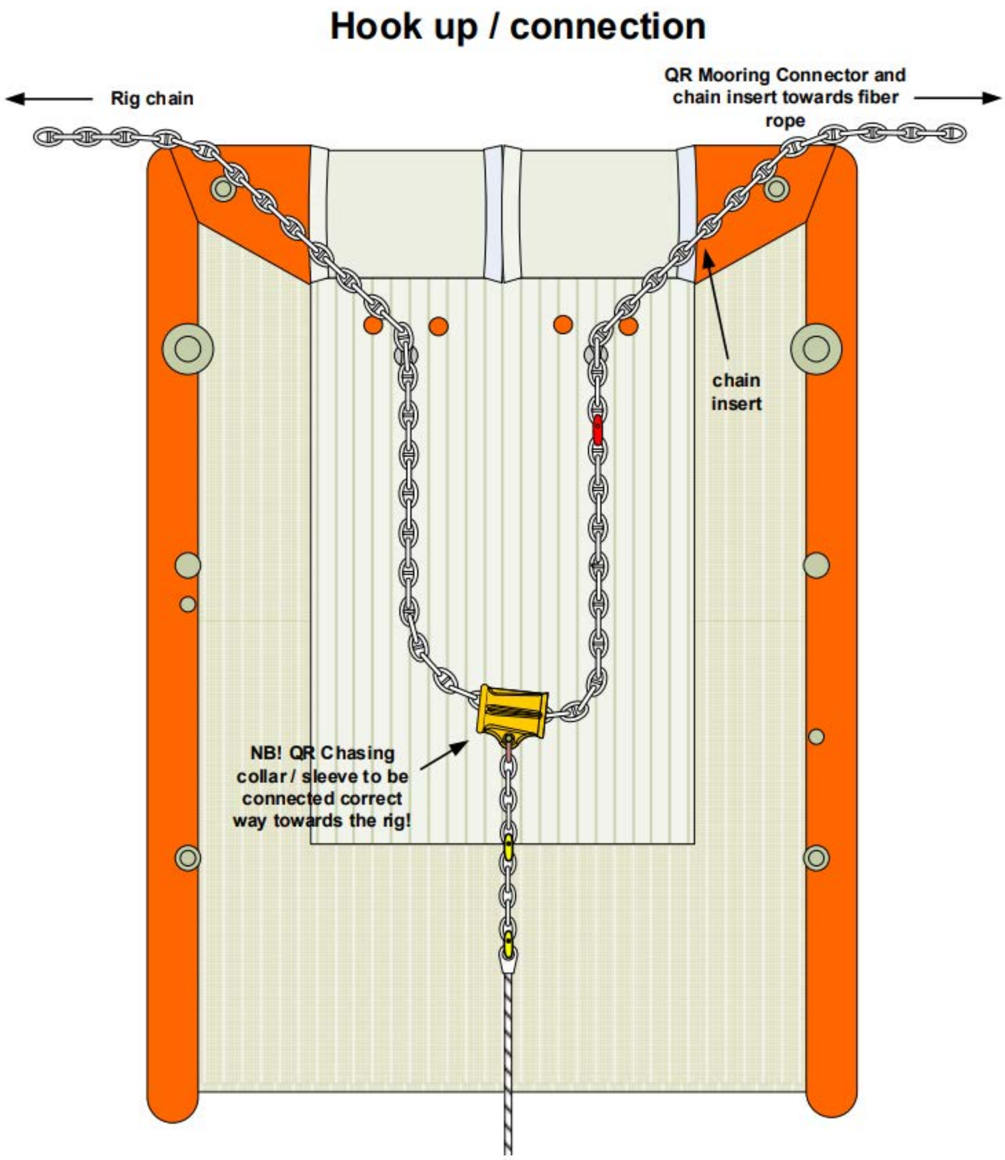
A Quick Release Mooring Connector system is a component that is installed in the mooring line, enabling remote release of the mooring line. This can be done from the rig or a vessel.

Handling of Quick Release Mooring Connector system:

- When the Quick Release unit is assembled, it can be handled on deck the same way as normal chain and accessories. Particular attention should be given when handling the Quick Release mooring connector whilst disassembled.
- When recovering the open Quick Release mooring connector to deck, the internals are exposed vulnerable to damage. Consideration should be given to the vessels position and heading relative to the mooring line when recovering the system over the stern roller.
- For planning and installation, it is recommended to overboard the Quick Release mooring connector before AHV receives the rig chain. Good practice is to use an extra chain segment, e.g. 20m, connected between the Quick Release mooring connector and rig chain, to avoid damage and unwanted release during operation.

Note: Handling and operation of the equipment should be in accordance with the Manufacturers operating procedure.


Quick Release
Mooring Connector
Connect light
ROV pick up
system w/snotter
sahckle
chain insert towards
fiber rope
Connect QR unit
Main module
towards the rig!
20m chain
segment between
QR mooring
connector and
Work Wire (WW)


Hook up / connection
Rig chain
QR Mooring Connector and chain insert towards fiber rope
chain insert
NB! QR Chasing collar / sleeve to be connected correct way towards the rig!

12 Use of swivel during Anchor handling Operation

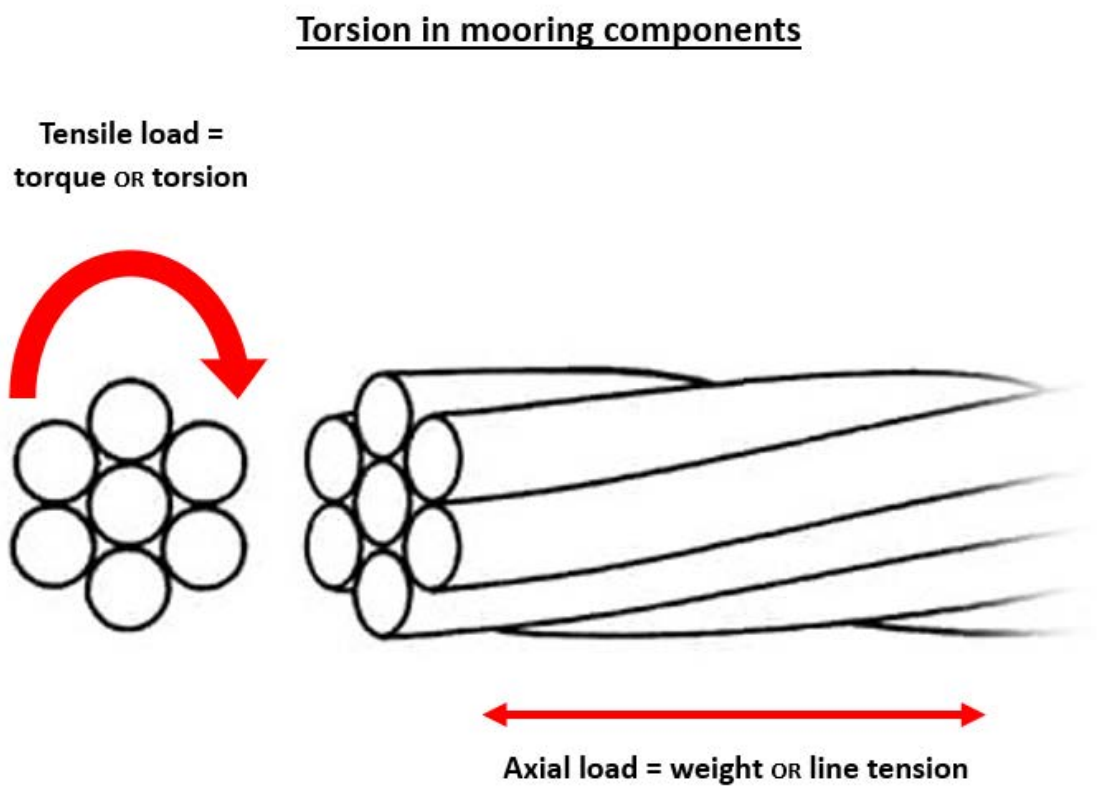
When a midline connection in a line under axial load is jawed off it, becomes a hazard to deck crew.

When a line includes adjacent components with mis-matched torsional properties, torsion will be introduced into the line. When a midline connection is jawed off and the load reduced on the top end component, the torsion can be released by the top (unloaded) component spinning on deck. If there is no swivel in the system, the wire will "pigtail" and the connecting link will become "cocked" by the stored energy in the system.

When torque is stored in a component, it will not necessarily be evenly distributed along its length. Torque will often be stored at one end of long wire or fibres that have been exposed to torsional forces.

Rotation is experienced by a wire as the axial load is reduced, explaining why a wire that has been used for high-tension operation must be de-tensioned before demobilising, in order to ensure crew safety. In deep water, this can be done by hanging the unweighted wire over the stern roller. In shallow waters it can be done by 2 AHVs stern-to-stern.

A swivel connected at the correct point (e.g., AHV work wire to mooring component) will enable the torque to bleed off while the deck is clear. When a line is jawed off and the axial load reduced, the deck should remain clear until the wire has finished rotating.



UNCONTROLLED WHEN PRINTED

Appendix 12-A
Adverse Weather Criteria, Response and Rescue Support

ADVERSE WEATHER CRITERIA, RESPONSE AND RESCUE SUPPORT

ENVIRONMENTAL CONDITIONS					TYPICAL RESPONSE & RESCUE OPERATIONAL LIMITS			
TYPICAL WIND SPEED RANGES Knots (Metres per Second)			TYPICAL WAVE HEIGHTS		SIGNIFICANT WAVE HEIGHTS (H_s)	OPERATIONS INVOLVED		
ACTUAL SPEED at 10 METRES	EQUIVALENT AT ELEVATIONS 50 metres	EQUIVALENT AT ELEVATIONS 100 metres	SIGNIFICANT (RANGE)	MAXIMUM (TYPICAL)		SBV SUPPORT	AVIATION SUPPORT	WORK OUTWITH PERIMETER
0 ~ 30 (0 ~ 15)	0 ~ 33 (0 ~ 16)	0 ~ 34 (0 ~ 17)	0 ~ 3.0	4.0	3.5	Limit for normal FRC deployment & recovery		Suspend work in orderly manner
30 ~ 40 (15 ~ 20)	33 ~ 44 (16 ~ 22)	34 ~ 45 (17 ~ 23)	3.0 ~ 5.5	7.5	5.5	Limit for emergency FRC deployment & recovery	No start-ups above 45 knots (22.5 m/s) at helideck	
40 ~ 50 (20 ~ 25)	44 ~ 55 (22 ~ 27)	45 ~ 57 (23 ~ 28)	5.5 ~ 7.0	10	7.0	Limit for use of mechanical means of recovery		
50 < (25<)	55 < (27<)	57< (28<)	7.0 <	10 <		No longer good prospect of recovery from sea. Vessel's own safety takes precedence.	60< knots (30< m/s) at helideck H_s 7< metres Routine helicopter operations suspended	

Wind Speed in Knots
Wind Speed in (Metres per Second)

NOTES

1. Wind speed is in knots. Wind speed in metres per second in brackets

2. Conversions between knots and metres per second are approximate only.

3. Elevations are above mean sea level.

4. Heights are in metres

5. Increase in wind speed with height calculated using ISO recommendations.

6. Assessment of conditions should include use of calibrated fixed or hand-held anemometers together with consideration of present and forecast weather.

7. Criteria relating to roll, pitch and heave of the helideck on floating facilities should be established by the aircraft operator.

8. The facility manager, in consultation with the ERRV Master, will decide when work outwith the perimeter should be suspended.

9. The facility manager, in consultation with the ERRV Master, HLO and aircraft Commander, will decide when flying operations should be suspended.

10. The facility manager, in consultation with the ERRV Master and / or aircraft Commander as relevant, will decide whether operations should be suspended in any other circumstances involving adverse weather, including reduced visibility, icing, etc.