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
2.1	October 2026	11.2.5 Vessel Master	An additional comment was added to ensure that the results of stability calculations are made available before mobilisation commences.

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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.

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- 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.

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- 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. The result of the stability calculation shall be made available prior to commencement of mobilisation.
- 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].

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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.

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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.

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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), ~~R~~ef. 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

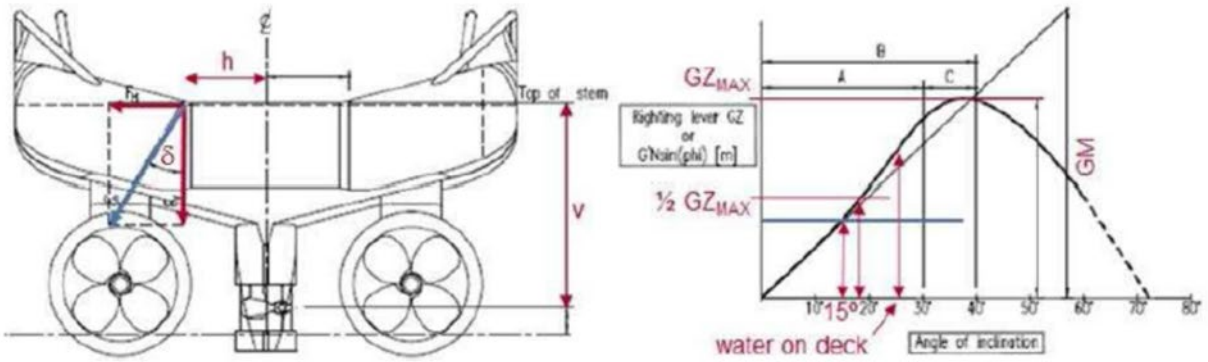
conditions for transverse tension. The vessel's maximum heeling angle is to be limited to one of the following angles, whichever occurs first.

(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.

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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.

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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

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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.

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