



MARINE OFFSHORE LOGISTICS OPERATIONS MANUAL

Guidelines for Marine Vessels and Drilling Rigs Engaged
in Supply and Rig Moving Operations



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FORWARD

Since the inception of Saudi Aramco, Marine Department and Drilling & Workover Department have gained extensive operational knowledge in their relevant fields, and in the process have also learnt valuable lessons in safety enhancement and environmental protection. Marine Department and Drilling & Workover Department have, in their endeavors to achieve the corporate objectives faced many challenges in terms of the exponential growth in the size and number of offshore operating units, environmental protection policies, operational complexities and industry evolution. Marine Vessels and Offshore Drilling Rigs have become significantly more complex, but are able to safely accomplish tasks which even recently would have been considered high risk.

Despite the greater performance ability of the modern day Vessel and Drilling Rig, hazards still remain, both historic and new. One of the main functions of this manual is to ensure that Marine Department and Drilling & Workover Department's relevant personnel who hold influence over the conditions to which workers and assets are exposed are able to contribute to the proper control of these hazards. This is accomplished through the guidance provided by the manual resulting in increased awareness of the operational constraints and hazards that others experience during offshore operations.

I believe that with the information presented in this manual and the teamwork of all those involved, the logistical planning efficiency and the reduction of Health, Safety and Environmental complications in offshore operations will maintain their positive trend, resulting in a safe, environmentally friendly and reliable service.

The Operations Manual has been written with due regard to the Marine Department Loss Prevention Policy and Safety Management System and also incorporates Drilling & Workover Department guidance. With the abundance of relevant operational material herein, I would strongly advise any person involved in offshore operations, either on a Drilling Rig, a Marine Vessel or ashore, to review and become familiar with the contents of this manual.

Bader A. Ghouth

Manager, Marine Department

July 2014.

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DOCUMENT CONTROL SHEET

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Marine Department Loss Prevention Policy Statement

Marine Department is committed to the prevention of accidents, and to work effectively to prevent loss of life or bodily injury to its employees and damage to its physical assets.

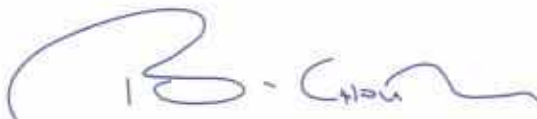
In fulfilling this commitment, which is essential to and equally important as the provision of Marine Services, the Marine Department will take every reasonable measure to provide and maintain the safest and healthiest work environment for its employees and ensure against foreseeable hazards resulting from marine operations.

Loss in productivity and property resulting from accidental occurrences will be minimized through:

- Effectively practicing 'Safety' in the 'Walk the Talk' method, by all Marine Management and all Marine and Contractor Personnel.
- Encouragement of 'behavioral' safety in educating employees to act and think safely without having to be told or monitored.
- Proactive measures such as Near Miss Reporting, Analysis of Accident Trends etc.
- Adopting the 'upstream' methods of safety, such as correcting dangers before they actually occur.
- Marine Management participation in all scheduled Safety Inspections of Onshore Facilities and visits to Offshore Vessels and Barges.

Loss Prevention is one aspect of this process and it is the direct responsibility of the Marine Management.

Marine Management functions will comply with loss prevention requirements applicable to the design, operation, and maintenance of facilities and equipment. When conformity with any of these requirements would not be practicable or cost effective, a grant of variance will be sought. Reviews for compliance with this policy will be performed on a selective basis.



BADER A. GHOUTH, Manager
Marine Department

INTRODUCTION



1 INTRODUCTION

1.1 Objectives

To ensure and improve the safety, efficiency and productivity of offshore operations in Saudi Aramco offshore concession areas and offshore bases/piers. Additionally, to educate all personnel involved in the marine vessel / offshore drilling rig interface to improve their understanding of the difficulties and limitations experienced by the other organizations.

1.2 Scope

- 1.2.1 These Guidelines apply to all interactions between vessels operating with Drilling and Workover and drilling rigs and offshore installations, bases and offshore support vessels operating in Saudi Aramco offshore concession areas.
- 1.2.2 These Guidelines are issued to formalize and guide the marine aspects of offshore operations and are not intended to conflict with the normal duties and responsibilities of a Master with regard to the safety and handling of his vessel, or to conflict with the established standards of good marine practice and seamanship. They are also not intended to conflict with the normal duties and responsibilities of the drilling rig OIM/Barge Master.
- 1.2.3 Nothing in this document shall diminish total responsibility of the OIM/Barge Master for all operations being carried out within the 500m zone around the Installation.

1.3 Disclaimer

- 1.3.1 The information and material contained in this publication has been compiled by the Saudi Aramco Marine Department Logistics Unit for vessels working for the customer Drilling and Workover Department, and is intended to augment safety awareness and operational efficiency. Saudi Aramco shall not in any way be, or become, responsible in law or otherwise for any errors in, or omissions from, this publication of whatsoever nature and howsoever occurring. The information provided in these Guidelines in no way whatsoever supersedes or detracts from information published in that available in Navigation Charts or similar official publications, State Acts or IMO rules or regulations.

1.4 Requirements

- 1.4.1 All personnel employed on vessels working for Drilling and Workover, and for rig personnel who interface with Marine Department vessels must be familiar with the

contents of this document. This document shall be used as a reference manual to ensure that a specific marine activity is being conducted in compliance with an established standard. All personnel shall complete the form included at the front of this document to verify that they have read and understood its contents.

1.5 Ownership

Ownership of these Guidelines belongs to the Marine Department Offshore Logistics Team.

1.6 Document Control, Revisions and Distribution

These Guidelines will be reviewed and issued every two years on the 1st January on even years (i.e. 01/01/2016), and amended as required as a result of changes in operating practices (MIMs), technology and experience.

1.7 Application

- 1.7.1 These Guidelines incorporate industry best practices, procedures from Saudi Aramco General Instructions (GIs), Marine Instruction Manual (MIM) and lessons learned from safety forums. These Guidelines do not supersede flag state and/or other legal requirements.
- 1.7.2 For the purposes of these Guidelines references to Master or OIM/Barge Master include their nominated representatives, where appropriate.

1.8 Applicable Legislation

- 1.8.1 In addition to the Guidelines, organizations involved in operating in the Saudi Aramco offshore concession areas shall adhere to relevant international and national legislation.

1.9 Responsibility of Copyholders

- 1.9.1 It is the responsibility of the copyholder to maintain the accuracy of this document by ensuring that all updates are promptly incorporated.

RESPONSIBILITIES



2 RESPONSIBILITIES

2.1 General Responsibilities

- a) The Master, OIM/Barge Master, and Division Superintendent are to ensure that all relevant staff working for them are aware of the content of these guidelines.
- b) All personnel are responsible for both their own safety and the safety of those they work with. They must always act to prevent accidents.
- c) Personnel must participate in relevant safety and working environment activities.

2.1.1 Workscope Responsibilities. Minimum safety requirements are as follows:

2.1.1.1 Logistics Team (Marine or Drilling):

- a) Clear work specification and scope of service.
- b) Take into account consequences of simultaneous vessel operations (e.g. tank cleaning v deck cargo work).
- c) Identify hazards and acceptance criteria.
- d) Establish and maintain clear lines of communication.

2.1.1.2 Offshore Drilling Rig. For interaction between the drilling rig and vessels:

- a) Establish and communicate clear scope of work.
- b) Conduct Risk Assessment / JSA / Toolbox Talk of interaction between drilling rig and vessels depending upon complexity of operation to be performed.
- c) Identify Technical systems requirements needed to prevent fluid discharges from drilling rig (including cooling water and/or solids) drifting towards vessels working within the safety zone.
- d) Mechanisms and persons responsible for notifying or reporting non-conformances etc.
- e) Communication between ship and the drilling rig.

2.1.1.3 Operating Divisions. Co-ordinated activities between base and vessels:

- a) Clear work specification and scope of service.
- b) Risk assessment of interaction between base and vessels.
- c) Competence requirements of personnel, who plan, coordinate or perform loading or offloading operations.
- d) Mechanism and persons responsible for notifying or reporting for non-conformances etc.
- e) Communication between ship and base.
- f) To ensure the safety of vessels, the crew and Saudi Aramco assets, a vessel with a mechanical failure, or which has experienced a mechanical failure which has not been confirmed as rectified will not be allowed to proceed to any of the Marine Piers until a Risk Assessment Pier Access form has been completed. The completed Pier Access form (Annex F – Pier Access Form) is required for both arrival and departure.

2.2 Individual Responsibilities

2.2.1 Vessel Master

- a) Is the principal authority on a vessel and, as such, is responsible for the safety of the vessel and crew working on and from that vessel. No instruction or procedure contained in this document diminishes the Vessel Master's responsibility for the vessel or from results of the action taken; nor relieves the Master's obligations to comply with the International Rules for the Prevention of Collisions at Sea, Safety of Life at Sea or other relevant marine legislation and, in particular, any action to save life.
- b) Are to ensure that all officers and crew onboard are aware of the contents of these guidelines.
- c) May delegate operational tasks to other competent vessel personnel.
- d) Are at all times responsible for safety of their crews, vessels and cargo and marine environment protection. The Master must stop operations that threaten the safety of the vessel, crew, or any installation's integrity. Other pressures must not interfere with the Master's professional judgment.
- e) Are to report any situation where they are coerced or pressured into performing a maneuver which may compromise the safe maneuvering of the Vessel.

Note: Master and Deck Officers can report directly to the Saudi Aramco Foreman/Coordinator for the Vessel or the Marine Quality Assurance Unit. **(MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 2).**

- f) Approve loading plans before cargo (both bulk and Deck cargo) is loaded on board the vessel.
- g) Review all dangerous goods declarations before any dangerous goods are loaded in port and offshore.
- h) Report incidents and non-conformances.
- i) Approve seafastening of cargo.
- j) Must ensure all applicable field charts and relevant documentation are on board.
- k) Before entering an offshore oil field or a 500m safety zone shall obtain permission from the relevant representative for marine operations.
- l) When alongside an installation, if extended interruption of operations occurs, shall decide whether to move to a safe position pending resumption. The relevant representative must be informed before moving away.
- m) Ensure his vessel is maintained in a seaworthy condition at all times. Any defects or malfunction of equipment shall be reported to the vessel Supervisor immediately, and recorded in a vessel defects file/logbook. If the defects are such as to endanger the vessel or its crew, the vessel or equipment shall not be used until the necessary repairs have been completed. **(MIM 1192.001 Marine Vessel Operating Practices, Section 3)**
- n) Whilst in an Offshore Oilfield, should his vessel suffer a breakdown to any of the propulsion systems or extensive damage which will impact upon the safe navigation of the vessel, the Master will be required to immediately take his vessel out of the Oilfield or Area of Work

and proceed to the nearest Safe Designated Anchorage. (**MIM 1192.001 Marine Vessel Operating Practices, Section 3**).

2.2.2 Drilling Rig OIM/Barge Master

- a) Is responsible for: Installation safety, personnel on board, and any operation within the safety zone affecting installation safety and overviews of simultaneous operations. The OIM/Barge Master may delegate operational tasks to other competent installation personnel.
- b) Preparation of required documentation before loading is initiated for cargo to be shipped ashore by the vessel.
- c) Preparation of documentation for transporting of dangerous goods before loading onto vessel.
- d) Inform the Master of any simultaneous operations being carried out on the rig which may affect the supply vessel.
- e) Before any cargo (bulk or deck) is loaded on board the vessel:
Submit documentation to the vessel Master.
Grant the Master sufficient time to plan loading to ensure that dangerous goods are stowed according to regulatory requirements.
- f) Ensures optimal turn-around time for performance of planned operations when vessels enter the safety zone.
- g) Must ensure drilling rig operations do not present a hazard to vessels alongside.
This is especially critical where overside discharges may contact or fall on a vessel working alongside.
- h) Approves commencement of an operation and has authority to stop any operation.
- i) In case of an incident offshore must inform the relevant Saudi Aramco representative and the Master of the vessel involved as soon as possible.
- j) Must ensure there is a good level of communication between the vessel and the drilling rig.
- k) Must not pressurize Masters to take or execute any decision which, in the Master's professional judgement, compromises the safety of the vessel and/or crew.

2.2.3 Ship Owner (Contractor)

- a) Communicate the contractual requirements to vessel.
- b) Manage vessel operations and manning ensuring that the vessel is appropriately manned and equipped for the intended workscope.
- c) Ensure near-misses and incidents are recorded, assessed and handled in accordance with the Saudi Aramco incident reporting system.
- d) Must ensure an up-to-date copy of these Guidelines is kept on board and ensure they and their crew are familiar with the contents.
- e) Shall ensure their vessels have a structured and documented Safety Management System (SMS) to enable Company personnel to effectively implement the Company safety and environmental policy. All systems should demonstrate that quality management and quality system elements meet the requirements of the IMO regulation on the International Management Code for the Safe Operation of Ships and for Pollution Prevention, more

commonly known as the International Safety Management Code or the ISM code. Owners' SMSs should contain the following key elements of the ISM code:

- General definition, objective and application.
- Safety and environmental protection policy.
- Company responsibility and authority.
- Designated person(s) ashore with access to senior management and resources.
- Master's responsibility authority.
- Resources of personnel.
- Development of plans for shipboard operations.
- Emergency preparedness.
- Report and analysis of non-conformities, accidents and hazardous occurrences.
- Maintenance of the ship and equipment.
- Documentation.
- Company, review, verification and evaluation.
- Certification, verification and control.

2.2.4 Tanajib Supply Base

- a) Load/offload vessels. Before any cargo is loaded they shall:
 - Prepare required documentation for cargo to be shipped.
 - Grant the Master sufficient time to plan the loading operation, to ensure e.g. that dangerous goods are stowed according to regulatory requirements.
 - Issue required cargo documentation to the Master for all cargo before the vessel is loaded.
- b) Conduct inspection of all load carriers to ensure they are in proper working order before being lifted on board vessels.
- c) Are responsible for safety on the base.
- d) Must agree procedures to be used between Vessel Master and the quay personnel.

2.2.5 Logistics Supervisor (Marine or Drilling)

- a) Performs overall supervision of cargo operations at Tanajib Pier.
- b) Defines job performance requirements.
- c) Ensures that everyone performing work on their behalf complies with requirements of the health, safety and environment regulations.
- d) Manages non-conformance resolution.
- e) Must ensure time is allowed to perform health and safety requirements including meetings.
- f) Ensure that Drilling and Workover Department are forwarded an up to date copy of these Guidelines for onward transmittal to offshore drilling rigs.
- g) Must not pressurize Masters to take or execute any decision which, in the Master's professional judgement, compromises the safety of the vessel and/or crew.

2.3 Communications

2.3.1 General

- 2.3.1.1 All Radio communications will be conducted in English. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 2*).
- 2.3.1.2 Appropriate cross-party cooperation and communication throughout the contract is essential to safe and efficient operations.
- 2.3.1.3 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 OIM/Barge Master.
- 2.3.1.4 Master to keep all relevant parties (OIM/Barge Master / Logistics Team / AHTSS Coordinators) informed of any issues, maintenance requirements or breakdowns which may affect the operation of the vessel.
- 2.3.1.5 Ensure radio watches are kept at all times. All vessels working for Saudi Aramco are to monitor VHF channel eleven (11) continuously. If the VHF radio is fitted with dual watch, they should also monitor the DSC emergency frequencies, as per Global Maritime Distress Safety System (GMDSS) requirements. Channel 11 is only to be used as a calling frequency and not for lengthy communications. When contact is established with other stations, VHF channels other than eleven are to be used for communication. Vessels in RT Terminal are required to monitor VHF Channels 11 & 13 and the Trunking Tetra Radio. (**MIM 1185.002** *Reporting Procedures, Documentation and Master's Duties for the Safe Operation of all Vessels, Section 3*).
- 2.3.1.6 Ensure that the vessel's location is known by the Marine Port Controller (e.g. Tanajib, West Pier, Abu Ali, Jeddah etc.) at all times. Additionally, inform the Marine Port Controller at times such as 0600hrs. and 1800hrs. each day. (**MIM 1185.002** *Reporting Procedures, Documentation and Master's Duties for the Safe Operation of all Vessels, Section 3*).

OPERATIONS



3 OPERATIONS

3.1 In Port

3.1.1 Information / Planning

3.1.1.1 The Master should:

- a) Obtain weather restrictions from the relevant Port Control.
- b) Confirm berthing arrangements with the relevant Port Control prior to arrival.

3.1.1.2 Port Control should inform Master prior to arrival all berthing details.

3.1.1.3 The Port Control when requested will provide linesmen to assist with all berth movements. Vessel crew members must not jump between vessel and quay to moor or unmoor the vessel.

3.1.1.4 A safe means of access must be provided:

- a) When alongside. The vessel is to ensure a safe access to the quay even though the Port may supply the gangways.
- b) When alongside another vessel, the outboard vessel is to provide safe access to inboard vessel.

3.1.2 Shipboard Lifting Operations In Port

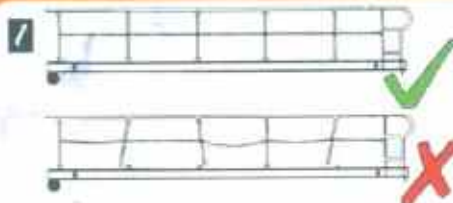
- a) It is the stevedores and the vessel Master's responsibility for ensuring adequate procedures are in place to comply with relevant Saudi Aramco requirements with regard to lifting operations.



Gangways



Safe rigging and use of gangways



Ensure each stanchion is locked into position, ropes are taut and all traffic surfaces and hand rails are clean



Ensure the shipboard end of the gangway is securely located on the gunwale and lashed in the correct manner



Ensure safety net is properly rigged and spread with gangway set to the correct angle



Ensure gangway is adequately illuminated from either ship or shore



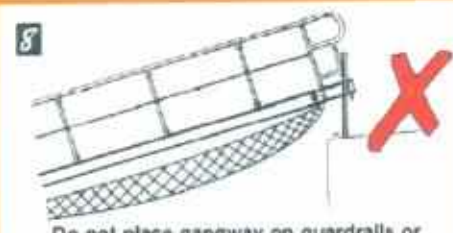
Do not exceed safe working load



Do not use in adverse weather



Do not use on an uneven quayside



Do not place gangway on guardrails or any other unsuitable structure

An ISM Code Safety Poster

Figure 1: Masters are responsible for Safe Access

3.2 Voyage Planning

3.2.1 Vessel Routing and Sailing Preparation

3.2.1.1 The Master should agree the Passage Plan has been prepared and reviewed prior to commencing the voyage. **MIM 1192.001** *Marine Vessel Operating Practices* offers guidance on Passage Plan requirements.

3.2.1.2 A Go/No Go Checklists is required to be completed by all Marine vessels prior to sailing, the contents of which will include:

- Minimum Bridge equipment functioning.
- Minimum machinery operability.
- Minimum personnel onboard.

(**MIM 1192.001** *Marine Vessel Operating Practices, Section 1*).

1	Compliance to MIM 1191.701 'Minimum Safe Manning'. Safe operation of a vessel
2	At least 1 fully operational Radar.
3	Fully operational Gyro Compass OR fully operational Magnetic Compass (with valid Deviation Card)
4	Operational Echo Sounder
5	All Saudi Aramco Charts supplied and corrections up to date
6	Operational VHF Radio and Battery Charger
7	Completed Passage Plan
8	Main Engines and Auxiliary machinery fully operational
9	Fully operational ship's whistle
10	Generators can supply Full Ship's Load/Emergency Generator operational (if applicable)
11	A valid SAG Vessel Work Permit
12	On-Ship fire-fighting pumps operational / Emergency fire pump operational
13	Operational Steering and Emergency steering (if applicable)
14	Main Engine Emergency Shut-down system operational
15	ER ventilation stops, fuel tank valves remote shut-down operational
16	Valid inspection system CO2/Halon ER Flooding system
17	Operational H2S Detector (if applicable)
18	At least one operational Anchor

Table 1: GO/NO GO CHECKLIST

Note: This is the minimum requirement for vessels, and Captains are encouraged to draw up ship specific Go No Go Checklists

- 3.2.1.3 The Master will sign the Passage Plan to validate it; the relevant Bridge Officer(s) will sign the Passage Plan to confirm their understanding of it. (**MIM 1192.001** *Marine Vessel Operating Practices, Appendix 1*).

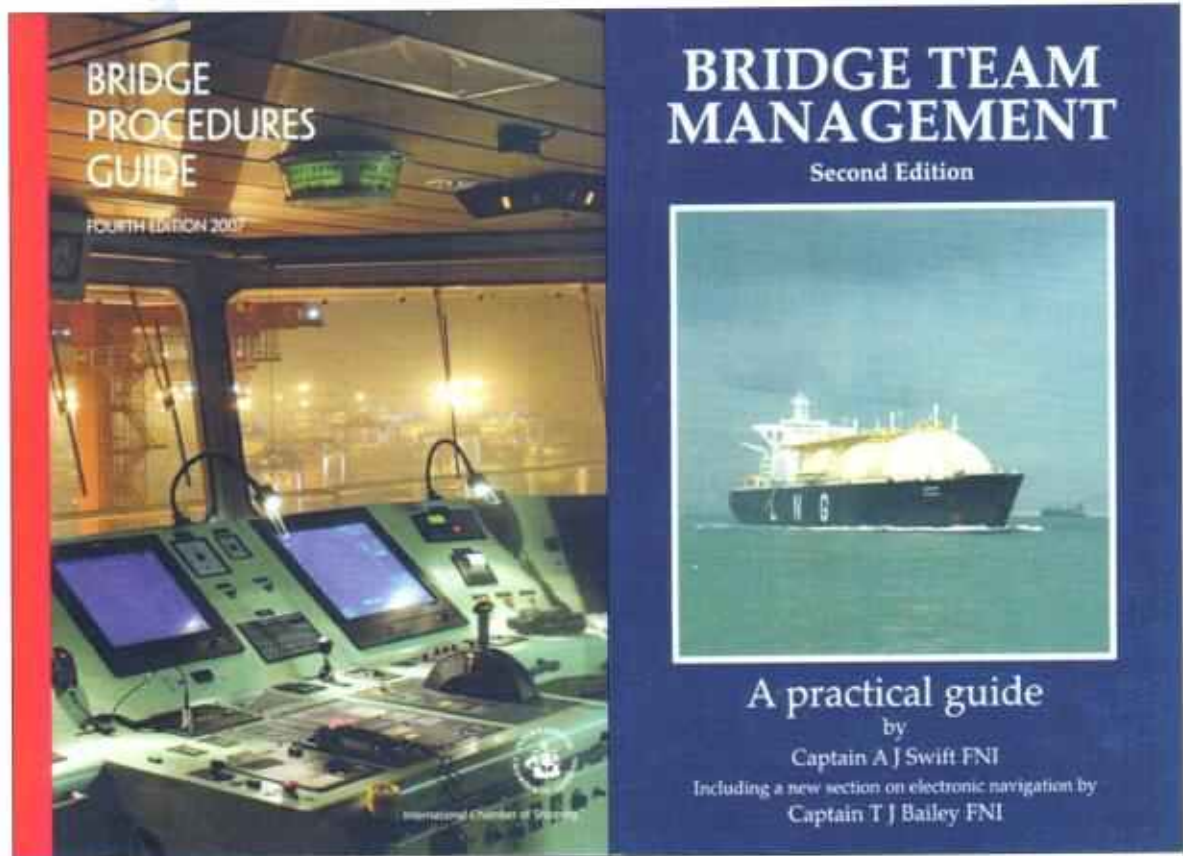


Figure 2: Official Passage Plan Publications

3.2.2 Weather

- 3.2.2.1 The Master shall ensure that the latest weather forecast for intended destinations is onboard prior to sailing.
- 3.2.2.2 In all circumstances, the Master has ultimate responsibility to decide whether to set sail, having discussed the issues with the relevant persons in the operations and logistics.

3.2.3 Outward Cargo Planning

3.2.3.1 General

- a) Logistics Unit shall provide:
 - i. A copy of the vessel load list.
 - ii. A Dangerous Goods list for each drilling rig to be visited.
 - iii. Planned vessel routing and expected Estimated Time of Departure (ETD).
All of the above within sufficient time, prior to loading to allow proper stowage of cargo and preparation of passage plan prior to departure.
- b) The Master is responsible for the safe stowage of cargo.

3.2.3.2 Cargo Plan

- a) A cargo plan will be produced by the Master from the load list.
- b) Consideration must be given to backload space requirements. Vessels should arrive at drilling rigs with 10% of useable deck space, or one bay equivalent, free for backloading. This may be reduced if all parties involved (Master, drilling rig being visited and other installations on planned route) agree cargo can still be worked safely.
- c) Free deck space must be in a single empty block suitable for deck cargo stowage, not made up of walkways or dead spaces.

3.2.4 Deck Cargo Handling & Securing

3.2.4.1 Discharging Deck Cargo

- a) The crew must not release cargo sea fastenings until vessel is alongside, or Master advises it is safe to do so. Check all lifts for loose items before commencing operations.
- b) Vessel's waste cargo carrying units should be checked by vessel's crew prior to discharge to confirm:
 - i. They are correctly covered with appropriate netting or hard cover.
 - ii. There are no loose items on top.

3.2.4.2 Restraining of Cargo

- a) The safe loading, securing and stowage of cargo is the responsibility of the Vessel's Master. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels*, Section 5).



Figure 3: Ensuring cargo is correctly lashed

- b) The Master must ensure cargo is secured in accordance with the vessel's cargo securing manual.
- c) Masters should consider use of pipe stanchions when tubulars are loaded.
- d) Masters on AHTSS vessels should take extra care when cargo is to be loaded onto the steel deck, e.g. the use of bedding ropes and or chains should be considered to restrict cargo movement.
- e) Masters are to report cargo damage caused by shifting of the cargo to the Logistics Unit.



Figure 4: Masters are responsible for cargo whilst onboard, refuse unsecured cargo

3.2.4.3 Cargo loading – Equipment Owner's responsibilities

- Equipment Owner/Shipper must ensure cargo complies with relevant guidelines.
- Containers or portable tanks used for the carriage of dangerous goods must be marked in accordance with the IMDG Code.
- All Cargo will be pre-slung by Drilling & Workover before being loaded onto the Vessel.

Note: No cargo will be accepted on board the Vessel unless it is rigged with:

- The required number of lifting slings.
- The lifting slings are in good condition.
- The lifting slings are in the correct position.
- The lifting slings meet the Safe Working Load of the cargo.
- The cargo must be secure and properly strapped.

(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).

3.2.4.4 Cargo loading – Logistics Coordinators responsibility

- a) The Drilling and Workover (D&WO) Tanajib Drilling Tool House or the Marine Logistics Unit will instruct the Vessel on the type and quantity of Rig/Barge Materials to be loaded. The Dispatcher will also provide a delivery destinations route, and expected time for the Vessel's departure. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels*, Section 5).
- b) The stevedores shall verify weights of cargo during loading operations.
- c) Procedures for packing & handling of cargo should follow relevant guidelines.
- d) All lifting & hoisting gear and chain gear must comply with applicable Saudi Aramco GIs.
- e) Use of safety hooks is mandatory, open hooks should not be used when working vessels unless otherwise agreed with the Master.
- f) Gangways shall be outside forklift operations area.

3.2.4.5 Cargo loading – vessel responsibilities

- a) When loading cargo a Deck Officer must be designated to oversee the condition and safe stowage of cargo units. They should ensure that cargo is properly slung, all doors, lids etc. are properly secured and open skips are fitted with nets or tarpaulins and refuse to load defective lifts.
- b) To ensure that all Dangerous goods are segregated in accordance with IMDG code.
- c) Loading plan must eliminate the need for walking or climbing on cargo units when at the drilling rig.
- d) Areas on deck not to be used for cargo stowage should be clearly marked.
- e) The Master must refuse to load cargoes not meeting required standards of stowage, securing, labelling, documentation and packaging.
- f) Adequate safe access to the deck cargo working area for deck crew should be maintained.
- g) Entering gaps between cargo units can be extremely dangerous as unsecured cargo may move at any time. Extra care must be taken when cargo is stowed on steel decks.
- h) Multiple stacking of units as one unit is not permitted.
- i) Multiple stacking of dump bags (Super Sacks) is not permitted.
- j) Tubular cargoes should be stowed in safe bundles or singles as required by their weight.
- k) Subject to above, generally stow:
 - heavier or larger lifts towards side rails where they can be secured.
 - smaller lifts towards the centre where they are protected and less likely to snag in safe haven access points.

3.2.4.6 Cargo loading – joint responsibilities

- a) Time should be allowed to complete cargo operations, check against manifest and query any discrepancies prior to departure.

3.2.5 Sailing Instructions & Cargo Documentation

3.2.5.1 Sailing Instructions

- a) Sailing instructions are issued by the Logistics Unit.
- b) Sailing instructions and routing should be issued to the Master in sufficient time to enable a passage plan to be completed.
- c) Sailing itinerary is issued to Master in writing before departure and copied to installations. This should include all voyage information including bulks allocated at each location and routing.
- d) Sailing instructions will be issued in writing and signed for by the Master. Unless advised otherwise, vessels shall proceed at operational speed.
- e) Requests to proceed at full or best speed are at the relevant operational unit's discretion.

3.2.5.2 Cargo Documentation

- a) All cargo must be accompanied by cargo manifest SA 7106 (Annex E - Cargo Manifest) providing:
 - Clear identification.
 - Contents.
 - Destination.
 - Weight.
 - CHB/MSDS(where applicable).
 - COSHH (where applicable).
 - IMDG declaration(where applicable).

3.2.6 Procedures To Be Observed When Towing Other Vessels

3.2.6.1 When making up a tow the Master shall assure that:

- a) The vessel/barge to be towed is in a seaworthy condition, equipped with proper lights, and that a spare towline is rigged and available.
- b) All towing equipment onboard has a proper and valid certificate.
- c) In adverse weather the speed of vessel shall be reduced, using prudent seamanship.
- d) When towing an unmanned vessel, the Master of the towing vessel is fully responsible for the safety of the vessel being towed.
- e) The Master must ensure that no one should be on the main deck during the towing operations, unless it is absolutely necessary.

(MIM 1192.001 Marine Vessel Operating Practices, Section 6).

33 On Passage, approaching the Rig and within the 500m Safety Zone

33.1 Pre-Arrival Information & Planning

Safe operating practices can be found in Annex A - Bridge Procedures at Offshore Installations.

3.3.1.1 Pre-arrival procedure

- a) All Vessels in transit will maintain a radio watch with regular updates to the Rig/Barge or Pier and advise of the vessel's present location and ETA, providing at least one hours notice (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 6*).
- b) Vessel must first obtain permission to enter any Offshore Oilfield from the Oilfield Services authorized personnel. This communication proves communications between the Vessel and the Rig have been established. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 7*).
- c) If the drilling rig requires a particular discharge/backload arrangement, Master and the Logistics Team should be advised before loading in port to enable deck loading plan to be arranged to accommodate cargo requirements.

3.3.2 Navigation on Passage

- a) All AHTSS and Supply Vessels will require the Master, a Bridge Watch-keeper and a lookout to be present on the bridge at all times while the Vessel is moving through the Oilfield. (**MIM 1193.006** *Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 6*).
- b) The Passage Plan prepared prior to departure is to be followed.
- c) Saudi Aramco adopted the use of Recommended Routes in, around and through offshore oil fields and sensitive areas. When a vessel is in an area where there is a Recommended Route, this route must be closely adhered too, unless there are exonerating circumstances which prevent this, or permission not to comply has been granted from the Area Control. Masters are reminded that when following these Recommended Routes they are responsible for the safety of their vessels and crew, and nothing relieves them of their duty to adhere to the International Regulations for the Prevention of Collision at Sea.
- d) Vessels when not working with a drilling rig are to remain outside of the drilling rig 500m Safety Zone where ever possible. When this is not possible or feasible, all vessels must proceed at a Safe Speed within the 500m Safety Zone, but must not exceed 3.0 knots. There is no requirement to complete the 500m Checklist when a vessel is passing through a 500m Safety Zone and is not to work with the drilling rig.

Note: If at any time the Master of the vessel determines that the 'Safe Navigation' of his vessel is affected by the specific speed limits he may increase his Vessels speed until the vessel can maintain a 'Safe Navigation' situation. However, the increase in speed must be noted in the vessels Deck Logbook and the drilling rig or Field Services of the Oilfield must be informed. (**MIM 1193.006** *Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7*).

- e) The safe interval for position fixing and recording should never exceed 15 minutes within the boundaries of any offshore oilfield, or 30 minutes in 'clear water' outside of oilfield boundaries. (**MIM 1192.001** *Marine Vessel Operating Practices, Section 2*).

- f) A proper lookout must be kept at all times. A Bridge Watchkeeper and a Lookout must be on the bridge when the vessel is transiting oilfields. Signatures of both should be entered in the official logbook. (**MIM 1185.002** *Reporting Procedures, Documentation and Master's Duties for the Safe Operation of all Vessels, Section 3*).
- g) Avoid the use of the vessel's Autopilot when transiting oil fields. This applies only to vessels that are fitted with a helm that can be steered by a qualified helmsman. (**MIM 1185.002** *Reporting Procedures, Documentation and Master's Duties for the Safe Operation of all Vessels, Section 3*).
- h) Vessels will keep Field Services for that Oilfield aware of any changes in the location or destination of the vessel. (**MIM 1193.006** *Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 6*).
- i) At all times whilst any marine vessel, barge or rig is engaged in crossing over a Pipeline/Pipelines/Sub-sea installations owned by Saudi-Aramco the minimum under keel clearance is to be 5.0 meters or more.

The following are exceptions where under keel clearance may be reduced:

- i. Under Keel Clearance requirements as specified in Sections 6.1.3.1 & 7.4 of the instruction **MIM 1198.001** *O.I.M 1.519 Work Around Offshore Producing Facilities*.
- ii. Any Marine Vessel, Barge or Rig 'given permission by Saudi Aramco' to proceed to any Saudi Aramco asset. Then the minimum keel clearance as specified in section 3.3.2.i) of this instruction will apply.

Note: The term 'given permission by Saudi Aramco' means that the Marine Vessel, Barge or Rig owned by or under contract to Saudi Aramco has been instructed to proceed by either:

- Producing Departments 'Field Services'
- Marine Department Rig-Move Group.
- Ras Tanura Port Control (for movements in Ports of Juaymah and Ras Tanura)

No other authority can grant this permission. (**MIM 1193.005** *Minimum Under Keel Clearance For Marine Vessels, Section 5*).

- j) For all marine vessel, barge or rig movements, other than the crossing over of a Pipeline/Pipelines/Sub-sea installation owned by Saudi-Aramco, the minimum under keel clearance is to be 1.0 meter or more.

The following are exceptions:

- i. All Marine Craft whilst loading alongside any marine Piers and/or Facility, the minimum under keel clearance is permitted to be decreased to 0.3 meters.
- ii. The Regional Oil Spill Coordinator can exempt any vessel from the requirements of the Instruction if Oil Spill Clean-up requires. The exemption must be in writing and specific to vessel or vessels involved.
- iii. Any Marine Department operating division may increase the minimum under keel clearance stated in these guidelines to ensure safer operations.
- iv. Should any vessel owner require that minimum under keel clearance be greater than that which is stated in this instruction, then that vessel's Master and crew should be guided by the owner's requirement.

- v. Where there is a requirement for the minimum under keel clearance to be reduced either at sea or alongside for emergency or operational reasons, signed permission from the relevant Marine Superintendent of the operating division (with agreement of the proponent of the facility/area) must be obtained prior to any reduction in under keel clearance taking place. The signed permission from the relevant Marine Superintendent will also be concurred by:

- The Master of the Vessel.
- Loss Prevention.
- Either a QA Unit or Rig-Move Group representative.

(MIM 1193.005 Minimum Under Keel Clearance For Marine Vessels, Section 5).

- k) All Masters and vessel Officers are to comply with the following:

- i. Never close within 500m Zone of the Saudi Arabian / Iranian sea border (also known as the Geneva Line). The border line is indicated on Saudi Aramco charts by a magenta line consisting of dashes and crosses (- + - + -). Under all circumstances avoid crossing the border into Iranian waters. Only under extenuating circumstances is a vessel to disregard the above e.g. legal requirements for assisting in a distress, safety of own vessel etc.

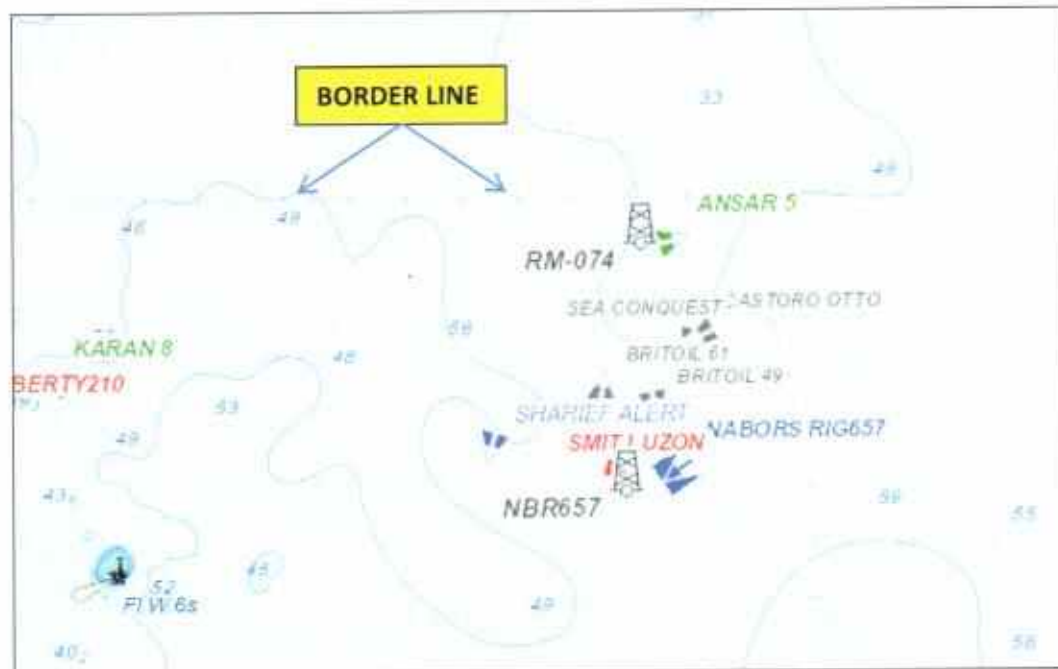


Figure 5: Indicated border line on navigation chart

- ii. Ensure that Passage Plans effectively achieve the above requirement and are followed. When navigating in close proximity to the border line decrease position fixing intervals to 15 minutes or less. Also ensure that a watchman is on the Bridge to assist in the lookout for Iranian Navy vessels so as to take prompt and relevant action.

- iii. In any such incident, the form in Annex H - Security Incident/Threat Offshore Notifications Checklist must be completed in the appropriate sections by the appropriate persons responsible.
- l) No vessel is permitted to anchor in any oilfield without prior permission being obtained from the Rig-Move Group or Rig Move Master on site. All vessels operating in any Saudi Aramco offshore oilfield will only use the designated anchorages clearly marked on the Saudi Aramco Chart for that oilfield. Anchoring 'just outside' the oilfield boundary is not permitted unless it is in a designated anchorage. All Master are required to plot their vessels anchorage position on the chart and record that position and the time of anchoring in the Deck Log-book. Bridge watches must be maintained and the vessels position must be checked at regular intervals. Any anchor adjustments or changes in the vessels position must be recorded in the Deck Log-book.

3.3.3 Arrival at the Installation

- a) Permission must be sought from the drilling rig by vessels wishing to enter the safety zone. Permission cannot be granted until the vessel has completed the checklist in Annex B - 500m Safety Zone Checklist (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 6**).
- b) Fishing is not allowed from vessels within the safety zone at any time.
- c) Smoking on the deck of any vessel within the 500m safety zone of any drilling rig/installation is prohibited.

3.3.4 Communication

3.3.4.1 Radio communication

- a) Maintain listening watch on the nominated VHF/UHF Channel and/or mobile phone. *If vessel-installation radio link suffers failure or major interference the vessel should stand off until communications are restored.*
- b) Confirmation of completion of pre entry checklist and that vessel is ready to enter 500m safety zone must be communicated to the drilling rig and permission to enter received.
- c) During approach, the drilling rig should keep communications with vessels to a minimum.
- d) Before positioning vessel to work cargo, ensure good radio communication between vessel and required installation stations.
- e) Adequate communications should be established between the drilling rig deck, vessel deck crew and/or the bridge to stop operations in the event of a dangerous situation. Personnel may use a headset. If so, any headsets worn on deck must be set at a volume which allows other sounds (waves, sea, cargo movements, warnings, etc.) to be heard.
- f) The crew shall be able to communicate in the English language. Vessel's crew interacting with the pier or drilling rig must be able to communicate effectively.
- g) Vessel MF or HF transmission is banned. If this is necessary, OIM/Barge Master's permission is required. If refused and the requirement is sufficiently urgent, the Master must leave the zone to transmit.
- h) All VHF Radio's should be used on low power.

- i) Within 500m safety zone personal mobile phones should not be used whilst on duty on deck or the bridge.
- j) Masters are to ensure that their vessel's Automatic Information System (AIS) unit on board remains switched on at all times. This requirement is to assist Saudi Aramco in tracking safe navigation, vessel locations, vessel utilization, emergency response and offshore security. Masters should ensure that their vessel's AIS unit is transmitting/displaying the correct name of the vessel and that AIS information is updated as required.



Figure 6: Poor communications will result in incidents

3.3.4.2 Radio Silence

- a) All vessels must have specific procedures for radio silence in place. Masters must ensure these, and any additional requirements drilling rigs may impose, are followed.
- b) All vessels which are able must remain outside the 500m safety zone for the drilling rig, and to maintain listening watch on both VHF channel 16 and other channels designated for working.

- c) Any vessel that for any reason is not able to withdraw adequately from the drilling rig must stop all radio, radar, position reference systems and beacon transmissions, shut down all non-essential rotating electrical equipment and stop any hot work. All portable radio handsets, beepers and mobile phones must be recalled before start of silence and kept non-operational throughout.
- d) Prior to the start of radio silence, the vessel's Master must confirm to OIM/Barge Master that all radio silence procedures are being correctly observed.

3.3.5 Vessel Approach and Maneuvering

3.3.5.1 Approaching the drilling rig

- a) The OIM/Barge Master/Marine Controller and vessel Master shall each have the power of veto over the commencement or continuation of any operation.
- b) The use of 'auto-pilot' is prohibited within the 500meter safety zone. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7).**

On entry into the 500meter safety zone:

- No Vessel can approach an Offshore Structure/Rig/Barge 'Head-on'.
- Approaching an Offshore Structure/Rig/Barge 'Beam on' is permitted.
- Approaching an Offshore Structure/Rig/Barge 'Stern to' is permitted.
(**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section).**
- c) At a 'Safe' distance from the Offshore Structure, no closer than four Vessel lengths, the Master will STOP the Vessel in the water, to ascertain wind and tide effect on the Vessel at that location. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 8).**
- d) When the Master is satisfied vessel can safely be held in required mode and heading, ease towards the operating position. The maximum speed for any Marine Vessel approaching within 100meters of an Offshore Structure or Rig is 0.5 knots. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 8).**
- e) While maneuvering in towards the drilling rig the Master will ensure that a Safe Exit/ Emergency Abort route remains clear. If there is any doubt that the Safe Exit/ Emergency Abort route may be compromised, the Master will safely abort the maneuver until such time that the Vessels Safe Exit/Emergency Abort route is clear. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 8).**
- f) Changing vessel's control mode (e.g. manual to joystick), and maneuvering position (e.g. forward to aft) poses risks. After changeover, check all maneuvering systems function correctly.
- g) Surface current speed and direction may vary around a drilling rig and differ from local current information. The Master must monitor the external effects on his vessel throughout his time alongside a drilling rig.

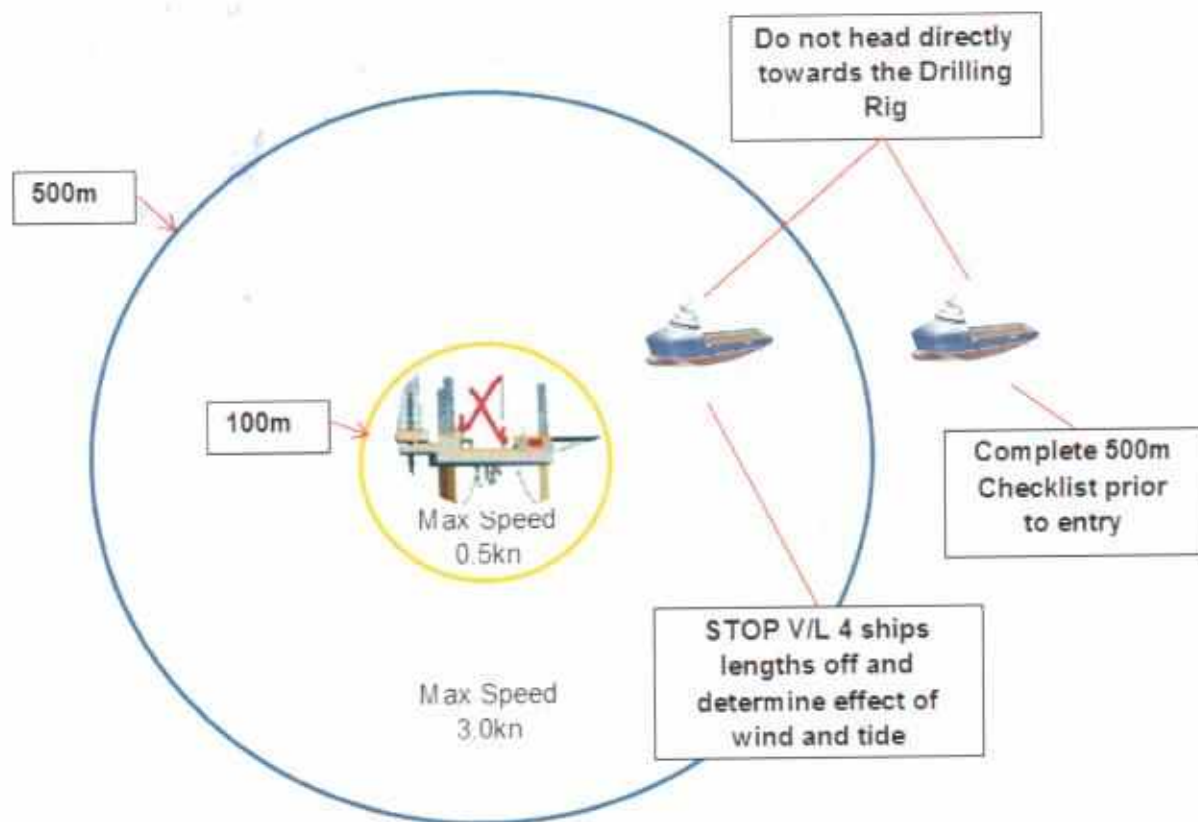


Figure 7: 500M SAFETY ZONE Entry and Approach requirements

- h) It is emphasized that generally the criteria applicable to vessels operating alongside an offshore installation will vary considerably from drilling rig to drilling rig, vessel to vessel, and Master to Master. Thus, no hard and fast rule can be expressed. However, having a good appreciation of the various factors, continuous monitoring of the operation in progress will assist to ensure that it is carried out with the least possible risk to personnel, Installation and vessel.
- i) In a situation where the prevailing weather conditions have deteriorated since the commencement of operations, it shall be the vessel Master's responsibility to give notice to the drilling rig that operations may have to be suspended at short notice. At this time, the drilling rig shall ensure that personnel are immediately available to release the vessel if required.
- j) In marginal weather situations, unless in exceptional circumstances and bearing in mind the potential loss which could result from an accident, it is always better to err on the side of caution should either the Vessel Master or OIM/Barge Master be in any doubt.



Figure 8: Masters are to pull clear before conditions deteriorate

3.3.5.2 Anchoring At Rig/Jack-Up Barge Location for Supply Purposes

- a) The OIM/Barge Master or his delegate must give the supply boat clear instructions on the safe anchoring location as indicated in the rig move meeting. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- b) No anchoring is allowed at any location where there is a subsea pipeline or cable within 400 meters of the rig. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- c) When a rig is on location, all underwater pipelines and/or cables in way of supply boat anchors, loading or discharging at the rig, must be continuously buoyed as indicated in the Rig Move Meeting Minutes. In congested work sites a specific anchor location buoy (Spar Buoy) shall be deployed. It is the responsibility of Rig Foreman to ensure full compliance with the provisions of safe anchoring (i.e. spar buoy and continuous subsea pipelines/cables buoying). **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- d) Where there are any pipelines or power cables in the vicinity of any rig, a notice will be placed on the rig in the control room by the Rig Move Master relocating the rig. The notice shall be also passed to all vessels via the Marine AHTSS foremen at Tanajib to be kept on the bridge, instructing all vessels where anchoring is prohibited and where the safe anchoring position is located. The Drilling Foreman, as the Saudi Aramco Representative on board the rig, will be also given a copy of the notice and will observe its

enforcement. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**

- e) When Anchoring at the Rig/Barge location the drop anchor position shall be cross referenced by all available means and verified by two qualified officers. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- f) The anchor drop position and the checks made thereafter shall be recorded in the vessel Log Book. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- g) Where a Spar Buoy has been deployed at a Rig/Barge location to indicate the safe anchor drop position, the Master of the supply vessel shall use the Spar Buoy purely as an aid to navigation, and shall not use the buoy as an exact required anchor drop position. Masters must consider the buoy to mark the most extreme distance for anchoring from the Rig/Barge, and should anchor between the Spar Buoy and the side of the Rig/Barge, and NEVER on the far side of the buoy. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- h) The Spar Buoy will be deployed by a survey vessel (e.g. Karan 8) to ensure the correct positioning of buoy. The vessel used to position the Spar Buoy will enter the exact position of the Spar Buoy in the Deck Log-book. A survey Work Order must be raised by the Drilling Foreman for the positioning of the Spar Buoy. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- i) The Master of the supply vessel will ascertain whether the Spar Buoy is in the correct/agreed position. If the Master has any doubts about the position of the Spar Buoy, he shall immediately report this to the Rig Foreman and the Rig Move Office. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- j) The Master of the supply vessel shall use all available navigation aids (e.g., Radar Range & Bearing or DGPS) to ascertain anchor drop position. The use of GPS or visual reference of the Spar Buoy is not acceptable as an exact means of ascertaining the correct anchor drop position. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**
- k) Whenever an anchor is to be laid in a mooring system, the below requirements are to be followed:
 - i. When laying an anchor for use in a mooring system to an offshore installation the anchor is to be paid out under tension. This will ensure that at no times are excessive mounds of cable or bights introduced into the system.
 - ii. When laying out an anchor for utilization in mooring to an offshore installation, the Master will, at a safe distance from the rig prove that the vessel's anchor is holding through use of the main engines. This is to be conducted prior to making fast to the rig. The anchor holding test is to be recorded in the Deck Logbook.
 - iii. Upon completion of the mooring operations the vessel's propulsion systems are to remain running for 30 minutes whilst the vessel 'settles' to ensure prompt maneuverability is available if required. The time of engine shut down to be recorded in the Deck Logbook. Prior to the shutdown of the propulsion systems the anchor cable is

to be heaved until stall on the windlass, this maybe slacked after proving to aid relative position.

(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).

- l) All Rig/Barge provided moorings will be inspected periodically by Rig personnel. Any Vessel with noted mooring equipment deficiencies will ensure that they are corrected immediately. Rig/Barge provided moorings with deficiencies will be reported to the Rig/Barge Coordinators and logged in the Deck Log Book. In addition, all Vessel Captains are required to report Rig/Barge mooring deficiencies directly to the Supply Vessels Coordinators. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
 - m) Masters must review mooring arrangements provided by the Rig and refuse ropes which are oversized, non-standard or unsuitable to ensure safe operations and a secure mooring.
 - n) In order to establish and maintain an appropriate level of engine readiness, the following factors shall be implemented:
 - i. Prior to commencing any mooring operation the Master shall take into account:
 - Prevailing weather conditions.
 - Separation distance off the rig.
 - Location of subsea and surface installations in relation to vessels position.
 - Conditions of mooring ropes.
 - Nature of seabed and water depth where the anchor is to be deployed.
 - ii. Main engines shall be activated whenever:
 - Wind or surface current speeds exceed 16 knots or 1.0 knot respectively.
 - Combined sea and swell is in excess of 5ft (1.5 meters).
 - When another supply vessel is going to be secured alongside.
 - Anchoring in poor holding grounds or in shallow water where the under keel clearance (UKC) is less than twice the draft of the vessel.
 - iii. A vessel made fast to an offshore installation will start and leave running all propulsion and maneuvering systems whenever another vessels is working in close proximity to the moored vessel. A vessel Master must always start propulsion and maneuvering systems when the safety of his vessel is in any doubt.
 - iv. Clear instructions to the Officer of the Watch (OOV) as to the actions to be undertake in the event of deteriorating weather conditions and/or the loss of position.
 - v. Handover of the watch shall detail to the oncoming OOV the vessels data, cargo operations, and the prevailing and forecasted environmental conditions.
 - vi. The Master or Officer of the watch shall notify the rig in the event of deteriorating weather conditions so the rig can prepare to release the vessel should the need arise.
- (MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
- o) When letting go from the Rig/Barge and recovering the anchor, the Master will maneuver the bow of the vessel directly back along the anchor lay in such a manner to prevent the anchor being dragged along the seabed. **(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).**

- p) On departure from the Rig/Barge location the Master of the Vessel will immediately report to the Rig and the Marine Department any difficulty in recovering the Anchor, especially if the anchor is fouled.

(MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 9).

3.3.5.3 Maneuvering alongside and Snatching Operations

- a) Snatching of materials is not permitted when sea height exceeds 1.5 meters. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
- b) Masters of AHTSS/Supply Vessels are not, under any circumstances, to place the stern, or any portion of the Vessel between the legs, or under the hull, of a Jack-Up Barge/Rig. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
- c) Vessels will not secure to any Drilling Rig unless an anchor is also utilized to prevent the vessel moving astern and making contact with the rig. In exceptional circumstances, a deviation from this directive can only be authorized via a Risk Assessment produced by TMOD, sanctioned by Rig Move Group and concurred by QA&VI Unit.
- d) Under no circumstances are two vessels to work concurrently on one side of a drilling rig. This applies to vessels made fast to the rig, vessels engaged in snatching operations and vessels operating in DP or any combination of these three operations. e.g. a vessel cannot make fast to another vessel nor can two vessels operate on DP simultaneously on one side of a drilling rig.
- e) Vessels may only remain on Rig/Barge moorings while engaged in supply operations. If operations are suspended or completed, then the Vessel must unmoor and proceed to a location as directed by the Drilling Tool House / Marine Logistics Unit, or to the next supply location. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
- f) Masters are to strictly comply with **MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels Section 8**. If no cargo operations have been conducted for thirty minutes, Masters will consider that supply operations are suspended. Once this is determined moored vessels will unmoor and move to a safe location. DP vessels will move off to a safe distance and position. Masters of vessels which are moored are permitted to throw off the mooring lines if the drilling rig/barge is either slow to respond to requests to take back the ropes, or if the drilling rig/barge refuses to release the vessel. (Marine Manager's Directive **MAR 131/13**)
- g) Whenever more than 45% thruster or main engine power is required to maintain position whilst snatching alongside an offshore installation, then the vessel must pull clear and not return until conditions are safe to resume operation. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 8).**
- h) If required to move away from the drilling rig, the Master must establish the vessel in a position at a safe distance.
- i) Changing from one side of the drilling rig to another must be properly planned, including taking into account the prevailing conditions. Maintain a safe distance. For these position changes move well clear and approach a new work face cleanly including initial setup as per section 3.3.5.1.

- j) Make allowance for visibility of under deck structure and position and volume of overboard discharges and vents when positioning.
- k) In any maneuvering operation where the main propulsion system is malfunctioning and liable to cause damage to the vessel and/or other structures, the Master of that vessel will stop the maneuver and inform all vessels and shore stations in the area that his vessel is no longer fully operational. Then he will decide the safest option to moor the vessel in a safe location (i.e. anchor, assisted berthing, berthing on one engine etc.). (**MIM 1192.001 Marine Vessel Operating Practices, Section 1**).
- l) Vessel must liaise with the drilling rig immediately in event of:
 - Equipment failure.
 - Problem with machinery or control room systems.
 - Contact being made with the installation structure.
- m) If required to leave the safety zone, re-entry is not allowed until the Master and OIM/Barge Master and the Marine Department Quality Assurance and Vessel Inspection Unit are satisfied action has been taken to prevent recurrence, and vessel is fully operational.

3.3.5.4 Vessel Technical Redundancy

- a) Vessels scheduled for cargo transfer operations within safety zones surrounding offshore installations shall have a satisfactory redundancy in position keeping ability. The intention is to prevent a single technical failure resulting in a hazardous situation for the installation.

3.3.5.5 Dynamic Positioning (DP)

- a) Whenever it is decided that Dynamic Positioning will be utilized for a vessel to maintain position alongside a drilling rig then **MIM 1192.506 Safe Operation of Contractor DP1 Vessels** will be followed.
- b) Guidance on the use of DP can also be found in the industry guidance 'International guidelines for the safe operation of DP offshore supply vessels at offshore installations' published by IMCA.
- c) DP vessels are not permitted to operate at the rig when a second vessel is either secured alongside the DP vessel or is engaged in 'Snatching' cargo at the rig. The vessel operating on DP MUST move a safe distance from the rig before the second vessel is given clearance to approach the rig. (**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**).
- d) Close proximity time at the working location should be kept to a minimum. The vessel should only remain in the working location when supply operations are being carried out. During periods of inactivity, the DP OSV should move a safe distance away from the rig. When undertaking hose transfers, sufficient hose length should be given to allow the vessel to increase the separation distance. (**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**)

3.3.5.6 DP system testing

- a) Before entering safety zone, test and prepare DP and backup systems as per vessel's checklist for DP operations and **MIM 1192.506 Safe Operation of Contractor DP1 Vessels**.
- b) The location setup checks and a DP Checklist as per the DP manufacturer's guidelines and/or the vessel owner's SMS should be completed at a safe distance of not less than 100 meters from the rig. They should also be carried out, wherever possible, at a location where, in the event of a loss of thrust, the vessel would drift clear of the rig. (**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**).
- c) The reaction of the vessel to changes in heading and position during the set up should be closely monitored to assess the vessel's power and the load on the engines/generators. Three different headings should be attempted as a minimum. A settling period of about thirty (30) minutes should be allowed to ensure that the DP control system has time to build the optimum weather model. (**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**).

3.3.5.7 DP reference systems

- a. The water depth will influence the choice of DP sensors utilized, in general sub surface references should not be used in water depths of less than 10 meters. In shallow water depths the effect of high engine/thruster power with regard to the vessel handling characteristics and the wash effect on the rig footings must always be kept in mind by the DP Operator. The following factors must always be considered:
 - Minimum water depth as stipulated in the FMEA manual.
 - Wave heights and the heights of the tides.
 - Vessel's motion: pitching and rolling; and
 - The presence of subsea obstructions.(**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**).
- b. When utilizing surface references such as Laser, Fan Beam, etc., the movement of the crane and the operation of rig equipment must be considered when sighting the reference sensors on the rig. Whenever sensors are placed on the rig an accompanying notice in both English and Arabic must be placed adjacent to the sensor stating its purpose and importance. Reflectors may also require periodic cleaning to ensure effectiveness. (**MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 7**).
- c. If a reference system develops problems while the vessel is in DP mode, Masters or DP operators shall ensure the vessel maintains position. They must **stop operations** and then move the vessel out to a safe position to avoid risk arising to personnel, vessel or the drilling rig.

3.3.6 Overboard Discharges

- 3.3.6.1 All non-essential overboard discharges that may hamper safe vessel operations alongside **must be shut down** before commencing cargo operations.

- 3.3.6.2 If Masters feel an overboard discharge may cause distress or risk to personnel or vessel, they should cease operations after notifying OIM/Barge Master, and to stand off until discharge ceases or conditions keep it clear of vessel. Such discharges should be reported to Marine AHTSS Coordinators.
- 3.3.6.3 Offshore facilities should have systems preventing their discharges drifting towards vessels operating within safety zone. If not, they must have established procedures preventing vessel exposure during operations within safety zone.



Figure 9: The result of a cement tank blown whilst vessel alongside a rig

3.3.7 Deck Cargo Operations, Inter-Field Transfers and Cargo Securing

3.3.7.1 Loading and Offloading, General

- Drilling rigs will designate a person responsible for cargo operations.
- PPE requirements apply as per the Saudi Aramco Safety Handbook.

- c. Open stern anchor handling vessels require special care, especially with regards to freeboard. Consideration should be given to the open stern being physically barriered, minimize crew or cargo exposure to elements, particularly when working stern-to-weather.

3.3.7.2 The carriage of waste as deck cargo must comply with the following regulations and requirements:

- Saudi Aramco Hazardous Waste Code.
- GI 430.001 Implementing the Saudi Aramco Hazardous Waste Code.
- MARPOL Annex V.
- Garbage Management Plans (Drilling Rigs own).
- Be correctly packaged, labeled and marked.

3.3.7.3 Masters are to:

- Ensure that all waste skips which are loaded on to their vessels do not contravene the above regulations in 3.3.7.2.
- Return any waste skip to the generator which is believed to contravene the above regulations.
- Report any incidents to their Saudi Aramco Marine Unit Head where waste skips in violation of the above are loaded onto their vessel.
- Ensure they are provided with the correct documentation for all hazardous waste and keep records onboard.

3.3.7.4 The Color Code of lifting equipment will follow the chart below, i.e. for February 2014 the colors may be either orange or blue as this is a transition period.

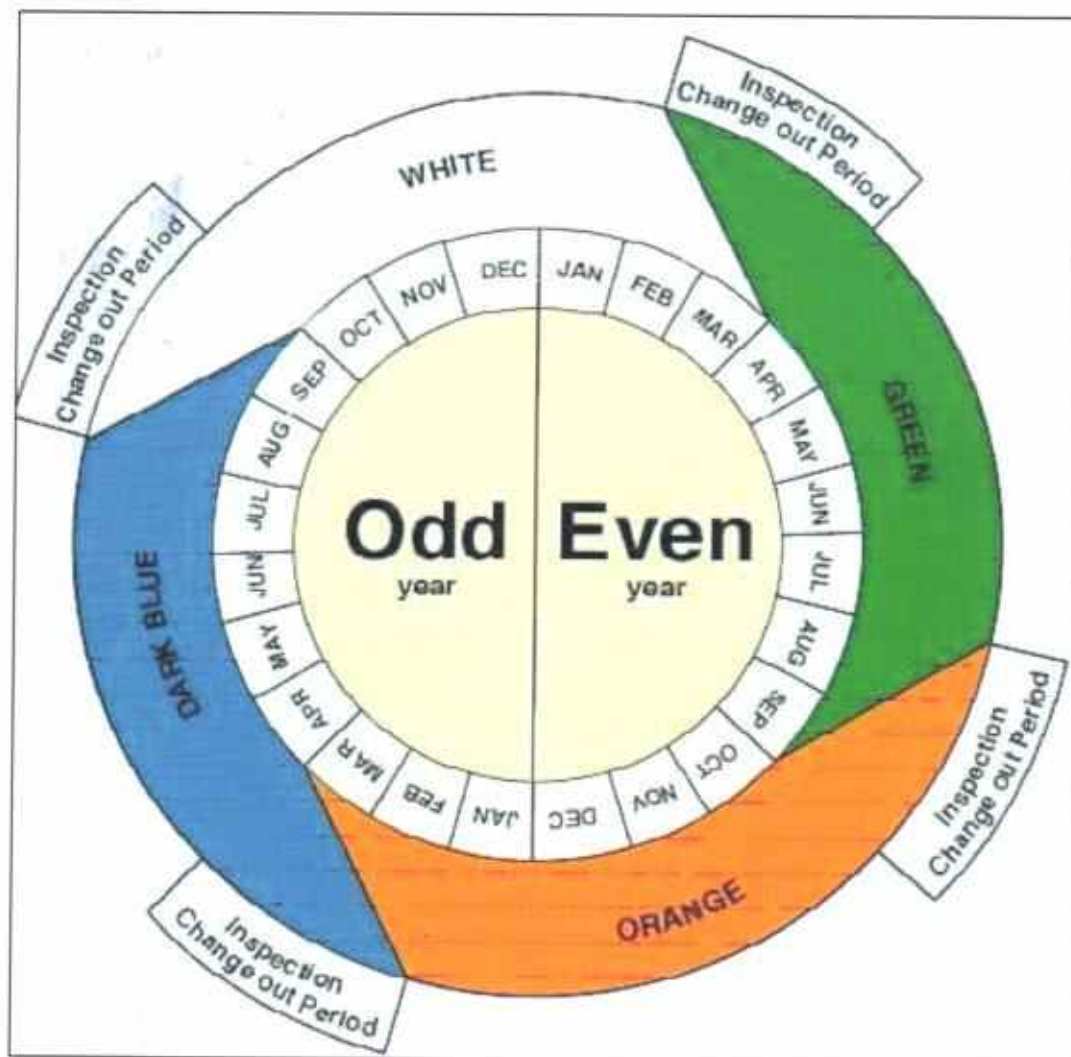


Figure 10: Lifting equipment color code chart

3.3.7.5 Crane operations

- Crane Operators must have adequate radio communication with, the vessel's bridge and deck crew.
- All crane operations are carried out in joint consultation with Masters, OIM/Barge Masters and Crane Operators, any of whom can veto the operation.
- Use of safety hooks is mandatory, open hooks should not be used when working vessels unless otherwise agreed between Master and OIM/Barge Master.
- Crane operators should swing the load away from the vessel deck before lowering or hoisting to reduce risk in event of lift failure.

- e. Crane Operators should have clear view of vessel's deck. Where this is impaired, a Banksman should be provided; however Masters or OIM/Barge Master may then restrict operations. Vessel deck Banksman shall wear distinctive high visibility clothing.
- f. Banking hand signals: A diagram of hand signals for crane operations can be found at Annex C - Hand Signals for Crane Operations.

3.3.7.6 Offloading

- a) Visually check all lifts for loose items (tools, debris, etc.) before commencing discharge or loading. If these are seen during lift, advise the vessel/drilling rig immediately. Note the unit ID number and report the incident.



Figure 11: Check for possible dropped objects prior to lifting

3.3.7.7 Backload – Installation responsibilities

- a. All backloading should be pre-planned to ensure safe operation.
- b. OIM must provide load list and dangerous goods list for all installations or ports the vessel is due to visit in time to permit proper stowage for planned route. For backload the OIM is the shipper.
- c. A competent person on the installation should inspect all cargo for backloading. This includes:
 - Lifting equipment correctly certificated.
 - Lifting frames with diesel equipment have empty drip trays (to avoid pollution risk).
 - Dangerous cargo labels on empty containers are removed.
 - Cargo within open-topped or half-height cargo carrying units is secured.
 - Open topped cargo carrying units (including skips) are covered Do not overload, particularly when carrying scrap metal or shot blasting materials.
 - Lifts are inspected for potential 'dropped objects'.

3.3.7.8 Backload – Vessel responsibilities

- a) Master and the drilling rig should liaise to ensure correct vessel backloading.
- b) Vessel officers in charge of backloading should:
 - Ensure safety of the crew, vessel and cargo, and ensure sufficient area for safety zones and escape routes for those on the cargo deck.

- Ensure no materials are loaded, especially dangerous goods, before the drilling rig provides the necessary documentation.
- Always have full sight of all cargo operations and personnel on deck, crane wire and hook.
- If necessary, refuse open hooks offered to vessels.
- c) On receipt of an improperly secured lift, Masters should immediately inform the drilling rig and request that the lift is returned to the drilling rig for rectification, unless this operation itself presents a safety hazard. In the latter case, cargo shall be returned to shore, the incident recorded in the vessel's log and a report prepared for the Marine Department as soon as possible.
- d) Masters should also notify the drilling rig of any lifting gear deficiencies or cargo carrying unit damage found during backloading.

3.3.7.9 Interfield transfers

- a. Requests by drilling rigs for ad-hoc inter-field cargo transfers should be routed via the Logistics Unit.
- b. Interfield manifests, including Dangerous Goods declaration, should be correctly prepared by the originating installation and key information given directly to the Master and receiving drilling rig.

3.3.7.10 Oil contaminated cargoes

- a. To prevent a pollution incident, whenever an oil contaminated cargo, or a cargo which may be considered to contain oil has been loaded on to the vessel, the relevant tank(s) must:
 - Not be used to carry ballast water.
 - Be inspected after the cargo has been discharged and inform their vessel Coordinator of the condition of the tank.
 - Monitor the atmosphere of the tank(s) for H₂S build up.
 - Be cleaned and oil free prior to loading ballast.
- b. Vessels are to:
 - Ensure that all mud systems onboard their vessels are totally segregated from ballast systems.
 - Ensure that mud systems common with a ballast system have blanks inserted into the piping arrangement to guarantee compliance with the above.

3.3.8 Personnel transfers

If no helicopter transport is available, transport by vessel may be considered. This is voluntary. Personnel Carriers (Billy Pughs) may be used provided:

- Personnel carriers shall be manufactured under the American Bureau of Shipping (ABS) equipment type approval program and within API Specification 2C Fifth Edition, April 3, 1995 3.13 R250OLGS.
- Wire rope used for lifting personnel carriers shall have a design factor of not less than ten.

- Personnel carriers shall be provided with a lifting ring into which a crane hook is attached. They shall have overhead protection, side protection edges, not exceed its safe working load (SWL).
- Personnel carriers shall be used for personnel transfers in accordance with API RP 2D. Requirements shall include:
 - Crane hooks shall have a safety latch.
 - Lifts shall be under power control during both up and down travel.
 - Personnel shall wear approved PFDs.
- Personnel carriers shall be inspected at least monthly by the USER and documented. A pre-use inspection shall be performed by a certified rigger.
- The rated capacity of personnel carriers shall be clearly visible on the personnel carrier and shall not be exceeded.

(3.3.8a from **GI 7.024 Marine and Offshore Crane, Hoist and Rigging Operations, Section 10**)

- a. Additionally, a personnel basket may be used provided it:
 - Is certified for transfer of personnel.
 - Is maintained in good condition.
 - Has a control line attached.
 - Is inspected and load tested at least annually.
 - The crane must be:
 - certified for transfer of personnel
 - fitted with braking mechanism for controlled lowering in case of failure.
- b. Basket use is strictly voluntary. Users must wear appropriate PPE determined by RA/JSA. Transfer maximum is to be basket design criteria.
- c. Masters, OIM/Barge Masters, Crane Operators and passengers shall all agree to the operation.
- d. Basket transfers should only take place in sufficient light preferably in daylight and when Crane Operator can see vessel's deck.
- e. During the transfer, the person in charge, Crane Operator and vessel Master must be in radio contact.
- f. While transferring personnel from drilling rig to vessel, the basket must:
 - be lifted just above installation railing.
 - swung out over the water.
 - lowered alongside the vessel just above the railing.
 - swung over the vessel and lowered onto it.

Transfer of persons from vessel to installation is the reverse sequence.
- g. Appropriate rescue vessel or craft must be prepared for immediate launch before using the personnel basket.
- h. Vessel Masters must pay special attention to weather conditions, sea state, movement and condition of vessel, and available free deck space to ensure transfer takes place in a safe controllable manner.
- i. Vessel Masters must also ensure:

- No passengers are on cargo deck during loading or discharging cargo.
- A competent crew member is in charge on cargo deck during personnel transfer who shall instruct passengers and Crane Operator.

3.3.9 Departure from Installation

- a. The Master should maneuver the vessel to a safe distance from installation before changing over controls.
- b. If proceeding inbound provide the following details to the Logistics Team:
 - ETA.
 - Heavy, non-conforming or wide loads and their position on the vessel.
 - Tank status, contents remaining on board and any backloaded bulks.
 - Dangerous cargo.
- c. If proceeding to another location the Master must contact the drilling rig giving the following information:
 - ETA.
 - Inform the location of heavy or non-conforming lifts.
 - Confirm bulk discharge plan if applicable.

BULK CARGO OPERATIONS



4 BULK CARGO OPERATIONS

4.1 General Requirements

Bulk cargo transfer is potentially hazardous and must be performed in a controlled manner.

Hoses should be of sufficient length and slung in such a way to enable the hose to be landed onto the deck and crane wire should be slackened before the deck crew secures the hose and disconnect the crane wire. Deck crews should not stand under the suspended hose/crane wire.

4.1.1 During bulk cargo operations observe the following:

- Communication between vessel, base, drilling rig or roadside tanker of pressure rating, to avoid overpressure.
- If at any point the vessel Master, Load Master, shipper or OIM/Barge Master have any doubt about the operation it must be terminated.
- INLS Regulation / IBC code requirements shall be followed as applicable. Masters must be given a completed Dangerous Goods Declaration and MSDS prior to loading or backloading of dangerous goods.
- If backloading contaminated bulks a current analysis sheet is mandatory prior to approval of backload. (Annex J - Oil Contaminated Cargoes Analysis).
- The Master or delegated Officer must ensure they can see bulk hose(s) at all times and not be distracted away from these. The Master must pay particular attention during hydrocarbons transfers and therefore give proper consideration to potential hazards when carrying out concurrent cargo operations.
- Industry best practice is for hoses, where ever possible to remain afloat at all times through use of sufficient flotation devices. (Annex E Hoses and Connections).
- During hours of darkness, hose and support vessel must be adequately lit throughout the operation. Consideration should be given to use of retro-reflective material on the hoses.
- Shipper and receiver should confirm quantities discharged and received at regular intervals to ensure there are no leaks.
- Crane driver and deck crew must be readily available and nearby throughout transfer operations.
- Each party shall give sufficient warning prior to changing over tanks.
- Do not close valves against a cargo pump.
- Do not use compressed air to clear fuel lines or lines for low flash point liquid cargoes.
- Do not transfer any other liquids using potable water hoses.
- Prior to commencing discharge flush vessel potable water lines through to ensure clean and clear water is available.
- Pre-use, flush drilling rig potable water lines through to clear any residues (if requested).
- Consider use of self-sealing weak link couplings in the hose string.
- Avoid use of heavy sections of reducers or connections at hose ends.

4.2 Hazard Overview

Bulk materials other than potable water can be extremely hazardous. The most common groups are all types of oil-based muds, water based muds, base oils and brine. MSDS must be provided and consulted prior to loading / backloading.

4.3 Bulk Transfers of Particular Concern

4.3.1 All Drilling fluids (Mud's/Brines) permitted to be carried in bulk are to be included on the vessels INLS certification. These cargoes are to be loaded and discharged in accordance with the ships Procedures and Arrangements (P&A) Manual.

4.3.2 Logistics Unit responsibilities

- Nominate berth.
- Ensure sufficient cooling or drenching water is available.

4.3.3 Vessel Master's responsibilities:

- Should complete a ship to shore safety check with the base.
- Must authorize loading.
- Must ensure vessel's restricted zone is clear, fire hoses are rigged and SMPEP equipment is ready for action before commencing loading.

4.3.4 Logistics or Base responsibilities

- Base staff to be on site throughout to advise on pumping, handling, earthing and discharge of tanks.
- Base to provide appropriate firefighting equipment.

4.3.5 General responsibilities

- Check loading/discharge hose for damage before use.

4.3.6 Vessel responsibilities

- Possess International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (INLS) and P&A manual detailing legal and safety requirements for handling the product.

4.4 Vessel Responsibilities at the Drilling Rig

4.4.1 Before offloading bulk cargo confirm the following with installation:

- Volume and weight of bulk to be offloaded.
- Hoses and connections, color codes and dimensions.
- Rigged hose lengths are adequate.
- Procedures for venting and blowing through hoses.

- Installation is ready to receive cargo; all valves and vents are open and correct tanks lined up.
- Emergency shutdown procedures should be in place and crew familiar with these.

4.4.2 Ensure that:

- All pollution prevention equipment is in place, as per SMPEP.
- All manifold valves are in good condition.
- The person in charge should not be distracted from the operation.
- Installation under-deck lighting is adequate.
- Dry bulk vent line positions are identified.
- Master shall submit to the operating company's logistic office:
- All receipts, including meter-slips, for cargoes received.
- All meter-slips for cargoes discharged.
- Records of tanks contents.

4.5 Installation Responsibilities

Ensure that:

- Hoses are visually inspected, prior to use and replaced as required.
- Slings and lifting points are visually checked and replaced as required.
- Hoses are lifted by a certified wire stop on a certified hook eye fitting.
- Under-deck lighting adequately illuminates hose and vessel.

OIM/Barge Masters are responsible for ensuring installation bulk loading hoses, manifolds and pipelines are fit for purpose and the correct hoses, of adequate length (it is recommended that they are fitted with appropriate flotation collars if required), are sent to the vessel (for details on flotation collars see below and [Annex D - Hoses and Connections](#))



Figure 12: Typical Flotation Collar

4.6 Carriage of Bulk Liquid Mud Cargoes

- 4.6.1 Only vessels certified as suitable for the purpose are to be utilized for carriage of drilling mud. Not all vessel cargo tanks have the ability to circulate or agitate, therefore this requirement must be made known prior to any loading or backloading. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**
- 4.6.2 Prior to loading the vessel must receive the following documents:
- a. Cargo manifest that includes the quantity to be loaded and the total weight of the load (or specific gravity and volume so this can be calculated).
 - b. Material Safety Data Sheet.
 - c. Storage and circulation instructions.
- (MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**
- 4.6.3 If the above three documents are not received prior to loading at the pier, do not load the mud. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**
- 4.6.4 Once loaded from any source, the mud is not to be carried on board for more than seven days. Notification is to be sent to the Drilling Tool House or Marine Logistics Unit when the mud has been on board for five days and every day after that until it is removed from the vessel. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**
- 4.6.5 Any and all drilling mud back loaded from the rig is to be listed on the pre-arrival notice. Back loaded drilling mud is to be discharged from the vessel at the next port call if possible, but must not remain onboard for more than seven, days under any circumstances. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**
- 4.6.6 Any failure to provide proper documentation will be considered a Near Miss and is to be reported accordingly. **(MIM 1198.002 Operating Procedures for Rig Supply and Standby Vessels, Section 5).**

4.7 Fuel

- 4.7.1 Samples are to be taken during loading of Fuel as outlined in MARPOL Annex VI.
- 4.7.2 When discharging Fuel to offshore installations sampling from ships manifolds is not a practical option. It is therefore an acceptable practice for these samples to be taken on the installation.
- 4.7.3 Ships must have procedures covering the loading, discharging and transferring of fuel.

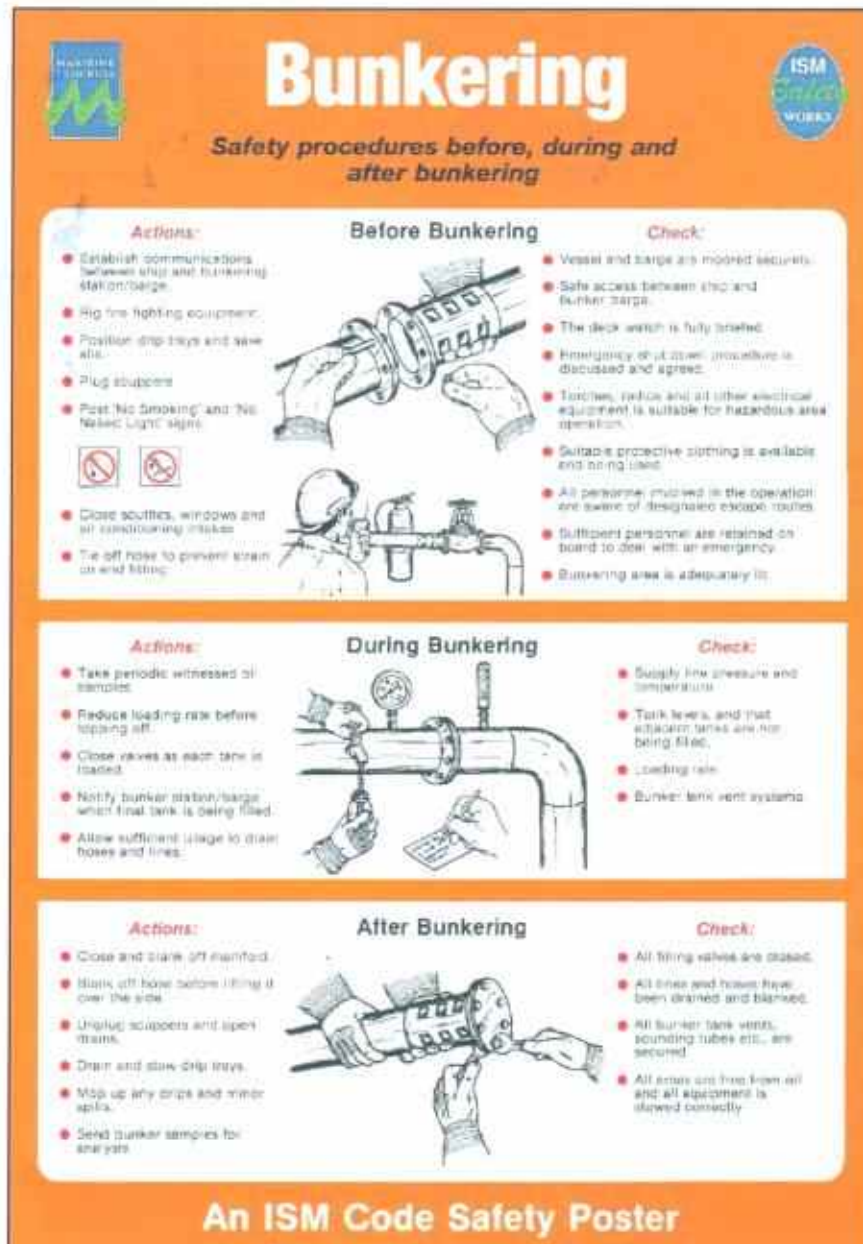


Figure 13: Pollution incidents are taken seriously, ensure correct procedures are followed during bunkering

4.8 Hose Marking and Usage

Hoses and hose terminations should be product-identified via high visibility bands, tape or other means. Color coding, sizes and couplings are detailed in [Annex D - Hoses and Connections](#).

Note: Manufacturers' identification or approval of hoses is often by spiral colored bands. Do not confuse this with product color markings.



Figure 14: Standard vessel manifold color coding

CONTRACTOR MANAGEMENT



5 CONTRACTOR MANAGEMENT

5.1 Tank Entry/Cleaning

Tank cleaning operations are potentially hazardous, mainly due to the frequency of Enclosed Spaces Entry required, and associated hazards within. Careful planning must take place and tank entry/ cleaning operations only carried out when necessary and safe.

An enclosed space is considered to be any area with limited access which is, or can be, isolated from the surrounding atmosphere for any period of time. Enclosed spaces can include but are NOT limited to: cargo tanks, double bottoms, fuel tanks, ballast tanks, coffer dams, void spaces, inter-barrier spaces, chain lockers, and sewage tanks.

5.1.1 Preparation

5.1.1.1 Shipboard Tank Cleaning Operations shall be carried out and controlled by the Master using a single Permit to Work issued by the vessel. The permit shall:

- Be signed by the Master or designated responsible person and tank cleaning contractors' supervisor.
- Be in line with vessel's operating procedures.
- Be accompanied by a Tank Cleaning Checklist and Risk Assessment found in Annex I - Tank Cleaning Checklist.
- Detail pre-entry tank atmospheric readings and record readings throughout tank entry.
- Detail required precautions and risk reduction measures including an assessment of how the safety of personnel in tanks is to be monitored.
- Detail safety equipment and protective clothing.
- Detail machinery/appliance isolation and lock out requirements.
- Detail rescue equipment and suitably trained personnel required in the event of an emergency.

5.1.1.2 The base shall have procedures detailing the method of product recovery, and the contingencies in place should an unplanned event occur such as a hydrocarbon discharge or major spillage

5.1.1.3 Personnel involved in tank cleaning must wear the appropriate PPE as identified in the risk assessment, COSHH or equivalent assessment, Material Safety Data Sheets (MSDS) and in accordance with Tank Cleaning Checklist. (Annex I - Tank Cleaning Checklist).

5.1.1.4 The following must be in place before commencing operations:

- Emergency response procedures and rescue equipment, as per Permit to Work.
- Appropriately trained personnel to assist with rescue if necessary.
- Risk assessments for the planned operation conducted by the tank cleaning contractor in association with vessel personnel.
- MSDS and the analysis sheet as per Annex J - Oil Contaminated Cargoes Analysis for previous cargoes carried since last cleaning operations. This is to be made available to the tank-cleaning contractor by the vessel Master.
- Effective and tested communications system set up between all personnel, vessel tank cleaning, and shore.
- Area around tank entrances is as clear as possible. Unrestricted, safe access to and from entrances is provided.
- Tank entrances open for access are effectively cordoned off with physical barriers to prevent unauthorized access. Appropriate hazard signs are prominently displayed in the immediate vicinity and quayside. Tanks opened for ventilation are fitted with secure open grating.
- For quayside equipment controls to be in place to prevent unauthorized entry.
- Appliances in tanks to be entered are mechanically and/or electrically isolated / locked off by use of tag out system or similar. Status noted on permit to work.
- Where tank access is via engine room, a specific risk assessment should be conducted to take account of the hazards associated with running machinery, ignition sources, and routing of hoses (N.B. Only continuous hoses should be used in machinery spaces) etc. All non-vital machinery should be switched off and isolated. The outcome of the risk assessment and the actions required to mitigate the risks should be covered on the Permit to Work and highlighted at the Toolbox Talk.
- All actual/potential worksite ignition sources are isolated, particularly in the vicinity of tanks and hoses containing recovered product.
- Tanks to be cleaned are isolated from any tanks that still contain bulk liquids.
- Tank atmosphere is tested for oxygen content and free from toxic and/or explosive gases by competent tank cleaning contractor personnel or chemist with properly calibrated equipment. The result of the atmosphere test should be recorded on the permit or other agreed document.
- Tanks are adequately illuminated by intrinsically safe lighting.

5.1.1.5 A Toolbox Talk must be conducted in association with all relevant parties. As a minimum the Toolbox Talk must:

- Highlight conditions of Permit to Work.
- Review the control measures and requirements of the Tank Cleaning Checklist.
- Highlight actions required to minimize risks identified on Risk Assessment.
- Identify all applicable hazards.

- Highlight any other permits in place that could impact on operation i.e. conflicting activities.
- Identify ongoing quayside and shipboard operations.
- Identify location of permit to work on board vessel.
- Designate duties of all personnel.
- Be recorded and signed by all parties present.
- Promote 'Stop the Job'/'halting unsafe operations' culture.
- Highlight all emergency actions and exits routes on the vessel.



Enclosed Space Entry

Safety procedures for entering enclosed spaces



<p>1 Enclosed Spaces Are Dangerous</p> <p>Due to the HAZARDS involved, only TRAINED and CORRECTLY BRIEFED personnel should undertake an enclosed space entry.</p> 	<p>2 Prepare Space For Entry</p> <p> CLEAN cargo tanks and lines to remove as much oil sediment and sludge as possible.</p> <p> VENTILATE thoroughly and CONTINUOUSLY before and during operation. Purge first with I.G. if necessary.</p> <p> TEST ATMOSPHERE before and during operation at various levels and locations. Oxygen to be 20.9%, toxic and flammable gas concentrations as per company regulations.</p>
<p>3 Prepare Equipment</p> <p> TOOLS assembled at entrance and correct for job. Recheck tools on completion of the task.</p> <p> ILLUMINATION adequate and certified for hazardous area.</p> <p> ACCESS adequate. Ladders and safety rails must be in good condition.</p>	<p>4 Prepare Safety Equipment</p> <p> COMMUNICATIONS tested and in good order between person at entrance and those entering. Rescue procedure planned and understood.</p> <p> SAFETY EQUIPMENT must be worn. Hard hat, boots, gloves, overalls and personal gas monitor must be of approved type and in satisfactory condition.</p> <p> RESCUE EQUIPMENT at entrance and tested: breathing apparatus, recovery gear and resuscitators. Personnel must be trained in equipment's use.</p>
<p>5 Communications And Procedures</p> <p> COMPETENT PERSON at entrance responsible for all operations.</p> <p> CHECK LIST and entry permit completed and signed by the Master (or a Senior Officer).</p> <p> VALIDITY PERIOD must not be exceeded. Another entry permit must be issued.</p>	<p>6 Avoid Additional Hazards</p> <p>Constant safety checks are essential while space is opened or occupied.</p> <p> ADJACENT SPACES may be a hazard and link into the operation area. Ensure all such spaces are rendered safe throughout the operation.</p> <p> NO HOT WORK. The above procedure is not satisfactory for hot work. Company regulations must be strictly adhered to at all times whenever work is to be conducted in any space that has at any time contained a hazardous substance or atmosphere.</p>

An ISM Code Safety Poster

Figure 15: Follow enclosed space entry safety precautions

- 5.1.1.6 Under MARPOL, some substances mentioned on a vessel's Noxious Liquid Substances certificate require approved surveyors in attendance during tank cleaning, e.g. zinc bromide, methanol.

5.1.2 Tank Cleaning Operations

- 5.1.2.1 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 Master. The operation should be continuously monitored by a designated responsible vessel person who should stop any operation that he considers unsafe.
- 5.1.2.2 The tank-cleaning contractor must station a standby person at each tank as per assessment in 5.1.1 the stand by person should be competent and trained to take the necessary action in the event of an emergency. Communication system between all personnel within tank and at access must be agreed and tested.
- 5.1.2.3 Personnel working in the tank shall wear the appropriate PPE as identified in the risk assessment, COSHH or equivalent assessment and MSDS.
- 5.1.2.4 Regular tank atmosphere testing by competent personnel from both the vessel and tank-cleaning contractor must be conducted throughout the tank entry at the frequency identified at toolbox talk and/or Risk Assessment. The results of the atmosphere testing should be recorded on the permit or other agreed document.
- 5.1.2.5 Effective means of ship/ship and ship/shore communication shall be established and maintained throughout the tank cleaning operation.
- 5.1.2.6 Where simultaneous tank cleaning and other operations i.e. cargo operations, are undertaken then 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.
- 5.1.2.7 Hand over between shifts of vessel's and tank-cleaning personnel must be carefully controlled to ensure continuity. Consideration must be given to holding a further tool box talk.

5.1.3 Completion of Tank Cleaning

- 5.1.3.1 On completion of tank cleaning operation the Master must carry out an inspection together with the tank cleaning contractor supervisor to ensure that the tanks have

been properly cleaned and lines and pumps are thoroughly flushed. If these parties disagree an independent surveyor will carry out an inspection.

- 5.1.3.2 The tank inspection should confirm that the tanks have been cleaned to the following appropriate standard:

Brine Standard

Cargo lines and pumps are flushed through with clean water and lines 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.

Water Based Mud Standard

Cargo lines and pumps are flushed through with clean water and lines 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.

Oil Based Mud Standard

Tank bottoms and internal structure (stringers, frames, etc.) are clear of mud solids and semi-solids. Cargo lines are flushed through with clean water and lines drained. Pump suctions are checked and clean. Tank must be empty and clear of all water / mud mixtures.

Pump out Standard

Pump out residues from tank and wipe tank floor using rubber mops or equivalent. Check suction pipes to ensure they are clear. No requirement for washing.



Figure 16: Mud tank cleaned to OBM standard

Dry Bulk Tanks

Tanks to be brushed down and residues removed by vacuum tanker, eductor system or equivalent. Slides to be checked for dryness and condition and 'elephant foot' suction checked to be clear.

5.1.4 On successful completion of the tank inspection, the Master should:

- Ensure that a Clean Tank Certificate has been issued by Contractor/Independent surveyor when hazardous material has been cleaned.
- Visually check the integrity of tank coating.
- Record tank status in the deck log book.
- Confirm the tank hatch covers are replaced and secured.
- Ensure the work area has been left in a safe and tidy condition.
- Close Permit to Work/Tank Entry Permit.

JACK-UP RIG MOVING



6 JACK-UP RIG MOVING

6.1 Operational Overview

- 6.1.1 Rig Moving / Towing operations are very complex and hazardous. They involve extremely costly and complex equipment operated by an eclectic mix of personnel from a variety of backgrounds / cultures with varying degrees of professional qualifications and experience. All personnel involved should appreciate the operational limitations of equipment and personnel, including size, power and performance of MOUs / vessels, experience of personnel, prevailing and forecast environmental conditions. Fatigue of both personnel and equipment should also be taken into account.
- 6.1.2 The Saudi Aramco Operational concession spans the length of the Saudi Arabian eastern coastline in the Arabian Gulf and to a lesser extent exploration locations in the Northern coastal areas of the Red Sea.
- 6.1.3 Saudi Aramco marine operations involve a multitude of marine vessels and plant belonging / contracted to various departments conducting a variety of tasks within the scope of the production of oil and gas. The Marine Departments Rig Move Group is tasked with, in association the other relevant parties, the role of planning, coordination and executing the moving of drilling / work-over / exploration rigs and other self-elevating barges within the Saudi Aramco concession areas.
- 6.1.4 Rigs / barges are moved from platform to platform, to / from open locations, to / from anchorages and in the case of maintenance barges to / from GOSPs and SPM locations. The move is usually conducted by utilizing two or three AHTSS vessels as the motive power which are connected to the rig / barge by tow wires. For some maintenance barge operations the units mooring system may also be utilized in combination with the AHTSS vessels to achieve the desired location.
- 6.1.5 Platforms that the rigs / barges are located at are within the boundaries of the established oil / gas fields of the Saudi Aramco Concession. The open locations may be located both within and without an established oil / gas field and are utilized for exploration, testing and development. The anchorages around the various fields are utilized when rigs are arriving in or leaving the Kingdom, or the rig is conducting maintenance / survey operations. The self-elevating maintenance barges are positioned at the GOSPs and SPM to facilitate the various maintenance operations that require to be performed for the upkeep of the offshore facilities.
- 6.1.6 Safety of all personnel is paramount.
- 6.1.7 The guidance in this section applies equally to all types of MOUs and associated vessels and detailed personnel / organizations.

6.2 Responsibilities

6.2.1 Marine Department / Rig Move Office

Saudi Aramco Marine Department / Rig Move Office is responsible for:

- Specifying minimum horizontal and vertical distances to infrastructure and pipelines on the seabed for anchors and anchor lines as per **MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities** and Field Producing approval.
- Ensuring adequate planning, including contingencies, and for generating operational procedures (Rig Move Meeting Minutes) for the entire operation.
- Conducting a Risk Assessment for special locations where other than normal risk is present.
- Providing weather and tidal data.
- Determining suitable vessels to mobilize and their incorporation in the plan accordingly.
- Attending the rig move meeting. Written procedures for MOU move should be agreed upon with all relevant parties. These should identify key roles and responsibilities.
- Issuance of the Rig Move Meeting Minutes (Procedures) including proposed routing plan to relevant parties following the Rig Move Meeting.
- Allocating move to a suitably experienced and qualified Rig Move Master and ensure he is aware of the scheduling for transport and move operations.
- Liaise with the Rig Foreman reference the status of the operation at all times.
- If the rig is located in shallow water areas, the Rig Move Office shall, during the planning stage, identify a safe route to the rig for the supply vessels. This shall be highlighted during the Rig Move Meeting and incorporated in the Rig Move Meeting Minutes.

6.2.2 Rig Move Master

The Rig Move Master is responsible for:

- Drawing up a defined Passage Plan to fit current scheduling and conditions.
- Briefing tow vessel Masters on the plan and routing for the rig move.
- Inspecting the AHTSS prior to the rig move and record findings in the rig move report.
- Inspecting the rig towing arrangements, platform/rig interface etc. and record findings in the rig move report. Any deficiencies should be reported to the Rig Foreman and OIM for rectification.
- Conducting pre-move meeting with senior rig personnel and record in the rig move report.
- Completing Work Permit and requesting from relevant Field Services for issuance.
- If entering a new field, obtaining a new Work Permit for the particular field.
- Overseeing the rigmove until completion of preload tests at the new location. The Rig Move Master is not responsible for overseeing the actual preload operations conducted.
- Ensuring the rig move is completed in compliance with **MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities** and in accordance with agreed procedures.

- Providing the OIM, Barge Master & Aramco Foreman with written instructions with reference to AHTSS anchoring during cargo operations alongside the rig and inform HSU in writing the vessel mooring criteria for the rig request the issuance of a Notice to Mariners detailing the restrictions.
- In the case of shallow water locations, provide the Rig Foreman with the supply vessel routing to / from the rig as detailed in the Rig Move Meeting Minutes for posting in the radio room and transmittal to supply vessels.
- Where new Masters on the AHTSS vessels are to be utilized for the move

6.2.3 Drilling Department (Rig Foreman)

The Drilling Department (Rig Foreman) is responsible for:

- Arranging between the relevant parties the scheduling and location of the Rig Move Meeting. This shall include the 14 day notice period required prior to the move.
- Obtaining the information needed to anchor or position an MOU in a field.
- Obtain an overview of infrastructure on the seabed, sea bottom conditions and any obstructions from HSU or UI&RU.
- Provide the supplied sea bed data to relevant parties.
- Rig Foreman arranges for the supply of the AHTSS vessels, Dive Service order (DSO), transportation arrangements for the Rig Move Master and all other requirements.
- Will keep the Rig Move Office updated on the rig move commencement giving 72hr, 48hr and 24hr notice.
- Obtaining the Sign Off (Platform Release) permit from relevant Producing Department Field Service.
- Ensuring relevant up to date corrected navigation charts are onboard for the rig move.
- Ensuring six dedicated hand held rig move radios with spare batteries are onboard the rig are fully charged and in working condition.
- Providing soil data to rig owners for location approval.
- The reconnection of all communications after the move and any arrangements for technicians.
- Communicating in a timely manner any changes of the work specification to all the parties involved.
- Being the sole point of contact through which all rig move notifications and exterior communications will pass. Ensures that all relevant authorities are kept informed of the rig move status as required.
- When required, arrange for HSU equipment and personnel to on board the rig and set up in time for the move.
- Attend the pre-rig move meeting on board the rig.

NB - In the case of moves for the SA Maintenance Barges ARB 1 or ARB 3, the above are the responsibilities of the Saudi Aramco Barge Foreman.

6.2.4 MOU Owner

The owner of the MOU is responsible for:

- Attending the Rig Move Meeting, sign off approved minutes and deliver these minutes to the rig.
- Obtaining soil data from Saudi Aramco for Location Approval.
- Ensuring the rig is ready, fully certified and approved to move.
- Ensuring location approvals by warranty are in place and a Warranty Surveyor is aboard in a timely manner if required.
- Ensuring that the Rig Move Plan has been reviewed by key personnel on the rig that will participate in the operation.
- Ensuring that satisfactory location approval have been prepared in compliance with national /industry requirements where relevant.
- Ensuring all towing equipment and other relevant equipment to be used is certified.
- Ensuring MOU is adequately manned by competent personnel taking into account hours of rest requirements and the scope of work. Obtain extra personnel as required to cover 24/7 operation.
- Identifying potential backload prior to MOU move in conjunction with the Rig Foreman.
- Obtaining all Security Passes, transportation etc. for third party personnel required to attend the rig move.

6.2.5 OIM/Barge Master

The OIM/Barge Master has overall responsibility for the safety of the installation and personnel at all times as per statutory requirements and MOU owners' policy. However the Rig Move Master is the dedicated person as a servant of the vessel responsible for conducting the rig move operation and will consult with vessel Masters in the process.

The OIM/Barge Master is responsible for:

- Deciding when it is safe and practicable to commence operations within the limitations of the MOU operating manual, having consulted with the Rig Move Master and Warranty Surveyor.
- Ensuring that a pre move operational meeting is held with all relevant personnel on board prior to the rig move. Said meeting shall be recorded and an appropriate entry in the rigs operations log book.
- Providing status of the operation and weather reports.
- Ensuring fully functional communication between all involved parties.
- Liaising and communicating with the Rig Move Master on all matters concerned with the rig move operation and any deviation from the proposed rig move procedures.

- Ensuring that fully functional navigation equipment, including a table for navigation, is available.
- Monitoring and organizing rig personnel in execution of responsibilities.
- Ensuring Supplement 6 of **MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities** is signed off.
- Ensuring that the rig is ready to move including but not limited to the following
 - Jacking system checked and operational.
 - Drill floor and cantilever secured
 - Seafastening above and below decks completed.
 - Stability calculated and rig within operational limitations.
 - Cranes housed.
 - Mooring lines, hoses, flare booms recovered and secure.

6.2.6 Ship Owner

Ship owners are responsible for:

- Ensuring vessels and equipment used in all operations are in operational order and complies with relevant legislation.
- Vessels are adequately manned by competent personnel taking into account hours of rest requirements and scope of work including possibility of 24/7 working.
- Ensuring that up to dated stability information is available to enable the Master to adequately calculate the vessels stability for each phase of the operation.

6.2.7 AHTSS Master

The Masters of the AHTSS vessels are responsible for:

- Ensuring that the manning on board is sufficient based on working hour provisions, anchoring description and that the crew is rested.
- Ensuring that all towing equipment is in good condition and certificated and meets the work specification.
- Immediately reporting any defects or non-conformities to the anchor/mooring equipment found prior to or during the operation to the Rig Move Master.
- Ensuring that a Risk Assessment has been performed in accordance with the specific work scope and the vessel's SMS.
- Ensuring that details of the rig move are communicated to all crew members involved in operation.
- Ensuring that Toolbox Talks are held at relevant stages of the rig move.
- Calculating the stability of the vessel for each step in the work scope including expected dynamic loads.

- Safety of crew and equipment on board the towing vessel at all times. The Master shall stop operations that may put vessel or crew at risk.
- Ensuring the Towing Data Sheet is accurately prepared and passed to the Rig Move Master.
- Ensuring sufficient bunkers, water and provisions are available for the planned operation.
- Ensuring that the vessel is at a suitable or the required draft for the rig move.
- Ensuring that the relevant Field Services, Tanajib Port Control and/or Abu Ali Pier are informed when the move starts and again when the rig is in position.
- Lead towing vessel Master is responsible for the safe navigation during the tow as per the Rig Move Master's Passage Plan and instructions. He shall issue appropriate navigational warnings at regular intervals and ensure other towing vessels follow the stipulated plans.

6.3 Rig Move Meeting

The Rig Foreman in liaison with the relevant Superintendent and the Rig Move Office should arrange a rig move meeting, preferably a minimum of two weeks before the operation starts. The signed and agreed Rig Move Minutes should be distributed to participants following the meeting.

6.3.1 The minimum attendance for a Rig/Barge Move Meeting is:

- | | |
|--------------|---|
| • Producing | Superintendent or Designated Representative. |
| • Marine | Rigmove Master/Coordinator. |
| • Drilling | Superintendent or designated representative. |
| • Contractor | Rig Manager. |
| • Diving | Marine Diving Unit Representative (only if required). |
| • HSU | Hydrographic Survey Unit Rep (only if required). |

6.3.2 The Rig Move Meeting may include, but not limited to, the following agenda:

- Weather limitations and definition of operational criteria.
- Charts and routing.
- Seabed inspection requirements and routine survey.
- Vessel requirements and minimum technical specifications.
- Drawings and sketches of locations.
- Schedules and drilling operation.
- Contingency plans.
- Sea bottom conditions.
- Communication lines (VHF channels, telephone nos.).
- Supply Vessel Anchoring restrictions.
- Items detailed in Supplement 2, 3 & 4 of OIM 1.519 where relevant.

- 6.3.3 Where anchoring restrictions are required, these shall be highlighted during the Rig Move Meeting and detailed in the Rig Move Meeting Minutes. It is the responsibility of the Rig Move Master to issue a warning notice on the rig prior to his departure, which shall be displayed in the Radio Room and rig Foreman's office. Additionally the Rig Move Master shall inform the Saudi Aramco Hydrographic Unit (HSU) requesting a Notice To Mariners (NTM) be issued detailing the restrictions.
- 6.3.4 Where the possibility of punch through/rapid leg penetration is considered possible, either from technical analysis or location history, these issues will be discussed with the relevant parties and precautions agreed.
- 6.3.5 Where the possibility of 'Scouring' from tidal or supply vessel operations at the Rig / Barge location is considered to exist, it will be discussed and recommendations to monitor and prevent this will be entered in the Rig Move Plan. A copy of the Rig Move Plan will be provided to the Rig Foreman and a note in the Rig's Radio Room will be posted prior to the departure of the Rig Move Master once the Rig is on location.

Note: When delivering or receiving materials to/from a Rig/Barge in shallow water, depth of 10 meters or less provision for cargo operations will be devised as part of Rig Move Plan, a copy of which is presented to the Rig so as to provide clear instructions for the visiting AHTSS/Supply. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 8*).

6.4 Rig Move Minutes

- 6.4.1 A work specification (Rig Move Meeting Minutes) shall be prepared that provides the necessary background information on the rig move operation and describes the operation at the required level of detail. The purpose of the work specification is as follows:
- Ensure a safe operation for personnel and the environment.
 - Provide common guidelines for standardizing the relocation of the MOU e.g. moving from and transiting between locations.
 - Identify and set trigger points which determine operation start and stop.
 - Must outline framework conditions, use images and diagrams where possible.
 - Establishment of protocol in common language. (English)
 - Detail contingencies to enhance the safety of the operation.
- 6.4.2 The responsible Producing Superintendent and the RT Marine Operations Division Superintendent should be contacted if there are any changes in the schedule or procedure after the Rig/Barge Move Meeting. (**MIM 1198.001** *OIM 1.519 Work Around Offshore Producing Facilities, Section 3*).

- 6.4.3 During the rig / barge move, if any problem arises due to changes in circumstances and/or conditions that contradict the approved Rig Move Minutes and, if due to circumstances, a follow-up rig move meeting cannot be immediately arranged, the Rig Move Master shall have the authority to exercise his discretion to safely complete the rig move or abort the operation, in consultation with Rig Move Office. (**MIM 1198.001 OIM 1.519 Work Around Offshore Producing Facilities, Section 3**).
- 6.4.4 A management of change process should be agreed with all parties involved. Any deviation from the work specification shall only be permitted in accordance with this agreed management of change.

6.5 Equipment

General: To maintain vessel's and MOU's safe working environment the following should be in place:

- All equipment operation and maintenance should be according to manufacturer's instructions.
- A maintenance system for towing equipment retained on board.
- Cutting gear available on the AHTSS vessels, capable of reaching the stern roller.
- A safe and effective method of stoppering wire pennants, recognizing likely loads on the wire.
Note: Soft eye pennants wear more quickly than hard eye pennants and require frequent inspection.
- Monitoring, with regular inspection and maintenance of roller fairleads on vessel's deck or crash barrier to ensure that uplift by e.g. a tugger wire will not dislodge them.
- Suitable lifesaving appliances must be available and immediately accessible.
- Secure all towing equipment until required; see Deck Cargo Handling [3.2.4.2](#).
- Care must be taken when opening wire coils, in particular pendant wires. Turntables should be used (if available) as coils springing open following release of securing bands may cause injury.

6.6 The Rig Moving Operation

- 6.6.1 Must be conducted according to the Rig Move Minutes and **MIM 1198.001 OIM 1.519 Work around Offshore Producing Facilities**.
- 6.6.2 Prior to the commencement of the rig move the Rig Move Master must conduct a safety and operational meeting onboard the rig at which he highlights all critical stages of the move and if pipeline(s) and/or subsea cable(s) exist in the vicinity of the rig at the arrival location. After the move is completed, the Rig Move Master shall communicate clear instructions, as per the Rig Move Meeting additional remarks, to the rig operator (i.e. Rig

Engineer or OIM/Barge Master.) and the Rig Foreman any anchoring / supply vessel operating restrictions. A notice prominently displayed in the Control Room shall indicate such restrictions including the safe position of anchor drop point / safe anchoring sector and other criteria (i.e. spar buoy and continuous subsea pipelines/cables buoying) (**MIM 1198.001** OIM 1.519 Work Around Offshore Producing Facilities, Section 7).

- 6.6.3 If an operation has changed from the original plan for which a Risk Assessment was performed, personnel must review the new hazards and risks of the changed operation as part of the management of change process. This requires a time-out and review with personnel involved, performed at the workplace.
- 6.6.4 Bollard Pull: Maximum Bollard pull utilized should not exceed 50% of the Minimum Breaking Load (MBL) of the MOU's weakest part of the towing assembly. Use the vessel's tension gauge to monitor or employ a ratio of vessels bollard pull / tow assembly MBL to the maximum power output the vessel may utilize during the tow.
- 6.6.5 Copies of Certification of the Tow Assembly shall be made available onboard the MODU for the Rig Move Master's inspection.

6.7 Towing Operation Planning

- 6.7.1 The passage plan must be carefully developed by the Rig Move Master with regard to water depth, other offshore and subsea installations, and emergency / standby position.
- 6.7.2 Close attention should be paid to the length and catenary of the tow wire and its relation to the water depth and weather conditions.
- 6.7.3 Route must keep safe distance from any other installations. Pass on the side that best assures tow will drift away from the installation in case of black-out or towline failure.
- 6.7.4 The passage plan shall not use installations as way points. A minimum of 5m clearance over pipelines and cables must be maintained unless otherwise an approved deviation is detailed in the Rig Move Minutes. Vessels apparently on collision course may result in installation crew having to go to muster stations.
- 6.7.5 Ensure MOU personnel are aware of the time that may be required and details of rigging spare towing wire or connecting additional tow vessels to spare connection points utilizing vessels only equipment.

6.8 Towing Operation Execution

- 6.8.1 Obtain regular weather reports.
- 6.8.2 Specify communication lines, including back-up protocols, between the Rig Move Master, senior on duty rig personnel and the tow vessels, ensuring they are operational at all times.
- 6.8.3 Three vessels are to remain attached to the rig at all times whilst the rig is in transit through oilfields and two must remain attached during transits between fields.
- 6.8.4 Pay close attention to the following:
 - Towline, particularly prevention of any chafing or friction. Either use chaffing protection, or regularly adjust wire length. Consideration should be given to greasing crash rails, stern rollers for long rig moves.
 - Towing speed and heading. Make changes very slowly and in a controlled way.
 - Heaving in or paying out towline. When doing so, reduce engine thrust correspondingly to avoid damage to towline / winch.
- 6.8.5 Towing vessels should issue regular navigational warnings as required by the Rig Move Master.
- 6.8.6 During towing, no other deck work is allowed.
- 6.8.7 The Master is to ensure a gog wire/chain is used to control the towline.
- 6.8.8 Towing in adverse weather, dynamic forces are significant. Exercise great caution, particularly when waves come in astern.
- 6.8.9 Correct day and night navigation signals are to be displayed throughout the rig move.

MARINE DEPARTMENT RISK MANAGEMENT



7 MARINE DEPARTMENT RISK MANAGEMENT

7.1 Overview

- 7.1.1 Good risk management is a key component to successful safety management. All parties involved in an operation have a duty to ensure it is carried out properly. The key components are: risk assessment, job safety analysis and Permit to Work (PTW).

If the risks or hazards cannot be controlled the job should not be carried out.

- 7.1.2 Management of change is an important tool in preventing incidents and near misses. In the event an operation changes whilst it is ongoing consideration must be given to stopping it and reviewing the appropriateness of the RA or JSA.

7.2 Risk Assessment & Job Safety Analysis (RA & JSA)

- 7.2.1 The objective of RA and JSA is to eliminate or minimize to a controllable level hazards and risks.

- 7.2.2 In some sectors of the industry the RA for a limited operation is known as a JSA. A JSA may replace a comprehensive RA where, for instance, there are no existing procedures that describe how the task is to be handled with defined safety precautions, or if someone on board has uncovered a hazard or potential hazard during the operation, or where there is no procedure describing how to tackle a task with defined safety precautions.

- 7.2.3 OIM/Barge Masters are responsible for ensuring that RAs are carried out for operations onboard their installation and liaising with vessels over RAs involving vessels. Masters are responsible for ensuring that RAs are carried out for operations onboard their vessel and liaising with drilling rigs and bases over RAs involving drilling rigs and bases. Division Superintendents are responsible for ensuring that RAs are carried out for operations on their bases and liaising with vessels over RAs involving vessels.

- 7.2.4 The relevance of a PTW must be considered during the RA or JSA process.

7.3 Permit to Work (PTW)

- 7.3.1 PTWs are required in the Saudi Aramco concession areas for the base in accordance with their safety management systems and for vessels and drilling rigs, also in accordance with the ISM code.

Permits should be used for; (but not limited to), these tasks:

- Enclosed space entry.
- Working aloft or overside.
- Electrical isolation.
- Hot work.

7.3.2 In port, the base operator will need to authorize in advance work taking place on board that requires a PTW under the vessel or base safety management system and will ensure that a permit to work is issued and closed out when necessary.

The Master must ensure that the base operator is advised once the PTW is completed.

7.3.3 The Master must also ensure that:

- A toolbox talk is held, attended by appropriate personnel, prior to any work being carried out on board requiring a PTW and recorded.
- All conditions applicable to an issued PTW are monitored and adhered to. All enclosed entry work must be carried out under permit.

All Hot Work must be carried out under a PTW. Due to the hazardous nature of Hot work, particular care must be taken. If relevant, base regulations are to be taken into account.

7.4 Toolbox Talks

7.4.1 Prior to the task being carried out crew members should carry out a toolbox talk. This should include (but not limited to):

- Individual roles.
- Tools, methods and procedures to be used.
- Review of RA or JSA and PTW.

7.5 Personal Protective Equipment (PPE)

7.5.1 Ensure all personnel on board wear the required PPE suitable for the work and location in which they are employed. Saudi Aramco policy makes it mandatory for all personnel working offshore to wear personal protective equipment when required. Masters must ensure that all personnel on board are knowledgeable in the wearing and use of the particular type of lifejacket existing on board the vessel. (**MIM 1185.002 Reporting Procedures, Documentation and Master's Duties for the Safe Operation of all Vessels, Section 3**). PPE may include:

- Hi Vis Boiler suits.

- Certified hard hats.
- Eye protection.
- Hearing Protection.
- Safety gloves (Hand Protection).
- Safety boots.
- Hi Vis Rainwear as needed.

7.5.2 It is the individual's responsibility to:

- Use PPE according to manufacturer's guidelines.
- Look after PPE properly.
- Have PPE checked, maintained or replaced as appropriate.

7.5.3 Where personnel's duties change, e.g. Handling Chemicals their PPE requirements must be reviewed and PPE updated as necessary.

Personal Protective Equipment

WHAT IS PPE?

PPE is defined in the Health Regulations 1992 as "all equipment (including clothing affording protection against weather) which is intended to be worn or held by a person at work and which protects him against one or more risks to his health or safety, and any addition or accessory designed to meet that objective."

WHAT DO THE REGULATIONS REQUIRE?

- PPE must be supplied and used at work whenever there are risks to health and safety that cannot be adequately controlled in other way.
- PPE is maintenance and stored properly.
- PPE is provided with instructions/training on how to use it safely.
- PPE is used correctly by employees.
- Employers must ensure that suitable PPE is provided FREE of charge to the employees including self-employed workers.
- Employees must make sure workers know why PPE must be worn and what types PPE protects them from.



PPE SIGNAGE

- PPE Signage MUST be provided and monitored by employers.
- PPE Signage MUST be respected by employees, visitors and the general public.
- Others recognisable visual guidance and instruction to employees, visitors and the general public.
- Warns about the specific risk to use or wear items of personal protection equipment.
- Should be located close to the area of risk.








ALL PPE SIGNAGE SHOULD BE BLUE AND WHITE FOR EASY IDENTIFICATION

THE RISKS AND TYPES OF PPE

Eye protection

Risks: chemicals in mist/spray, dust, gas and vapour, radiation.

Options: safety spectacles, safety goggles, face shields, eye shields.

Head protection

Risks: impact from falling or flying objects, fire or heat-burning, fire entanglement.

Options: a range of helmets, bump caps, cap-cum-hats.

Breathing protection

Risks: dust, vapour, gas, oxygen-deficient atmospheres.

Options: Respirators (filtering face piece) or equivalent. Full or full-face respirators or full-face, breathing apparatus.

Hearing protection

Risks: noise levels are higher than 85dB.

Options: earplugs/earmuffs, soundproof enclosures.

Hands and arms

Risks: abrasion, temperature extremes, cuts and punctures, impact, chemical, electric shocks, skin infection, diseases or contamination.

Options: gloves, gauntlets, mitts, suits, suits, gloves.

Body protection

Risks: temperature extremes, adverse weather, chemicals or mist/splash, burns from pressure, falls or slip, gas, impact or penetration, contamination, dust.

Options: contamination or hazardous materials, flame-resistant protective clothing, high-visibility clothing.

Feet and legs

Risks: wet, abrasion, burn-up, impact, cuts and punctures, falling objects, metal and chemical splash.

Options: safety boots and shoes with appropriate toe caps and penetration-resistant in-soles, gaiters, leggings, suit.



ASSESSING SUITABLE PPE

- Is it suitable for the risks involved and the conditions at the workplace?
- Does it prevent or adequately control the risks involved without increasing the overall level of risk?
- Can it be adjusted to fit the wearer correctly and be comfortable?
- Has the state of health of those who will be wearing it been taken into consideration?
- If more than one item of personal protection equipment is being worn, are they compatible?



EMPLOYERS, EMPLOYEES & EQUIPMENT

Employers MUST

- Provide suitable protective equipment free of charge.
- Maintain PPE in working order and good condition.
- Provide training in the use of PPE.
- Consult employees on suitability of PPE.

Employees MUST

- Use the PPE provided.
- Report any defects or damage of PPE.
- Store PPE correctly when not in use.

Equipment MUST

- Be relevant for the work undertaken.
- Protect effectively against the risks involved in the workplace.
- Comply with relevant standards.
- Protective equipment must carry a CE mark to show that it complies with European Safety Standards.
- Fit properly and comfortably.
- Not hinder the performance of any task.
- Not add to the risks involved.



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Figure 17: Relevant PPE to always be worn

7.6 Vessel Operational Limits

- 7.6.1 The Marine Department must be informed of any vessel operational limitations.
- 7.6.2 The Master is responsible for continuously evaluating safety of any ongoing operation. The Master shall at all times operate the vessel within safe operational limits and if necessary stop the operation in good time (see 2.2.1) advising the OIM/Barge Master immediately.

Additional precautions should be taken during adverse weather conditions.

COLLISION RISK AVOIDANCE



8 COLLISION RISK AVOIDANCE

8.1 Collision Risk Avoidance Overview

- 8.1.1 98% of collisions with installations involve visiting vessels. This section addresses safe conduct of vessel operation in the vicinity of installations.
- 8.1.2 To reduce the risk whenever vessel is alongside or near installation:
- Minimize number and duration of visits.
 - Avoid working weather side where possible.
 - Do not undertake any operation without a risk assessment.
- 8.1.3 Vessel Master or officers must never be pressured to carry out operations where safety of vessel, installation or personnel is prejudiced.
- 8.1.4 Vessels should have adequate contingency plans for potential problems near offshore installations, particularly various mechanical or control systems failure modes. These should be regularly exercised.
- 8.1.5 Key points for consideration in voyage planning are:
- Obtain confirmation of installation readiness for operations prior to vessel approach and set-up to minimize time alongside.
 - Communicate with installation and confirm agreement to commence operations. Vessel Master or OIM/Barge Master or Crane Operator have the right of veto during operations.
 - Vessel Master, Crane Operator and OIM/Barge Master shall continually review conditions and actual operation as an ongoing risk assessment.

8.2 Adverse Weather Working Parameters

- 8.2.1 If the Master of the Vessel determines that a 'Safe Operation' cannot be conducted at the location because of weather conditions or Vessel performance, he will inform the Rig/Barge Foreman. The Master of the Vessel will wait until weather conditions abate and safe operations can commence, or proceed to another location where weather conditions permit operations to be conducted safely. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7).**
- 8.2.2 If weather requires change of position or heading, promptly inform installation. If it becomes difficult to maintain position or see installation, inform installation and move vessel away.

- 8.2.3 Consider vessel motion in deteriorating weather. Safety of crew on deck is paramount; prevention of damage to cargo and vessel is important. Consider also the risk of lifts becoming snagged under the cargo rail.
- 8.2.4 If necessary, advise Crane Operator of safe cargo landing position. Should conditions become unsafe for operations, inform the drilling rig and move away and wait until the sea state and vessel motion improves.
- 8.2.5 Weather criteria must be discussed and agreed before starting heavy lift operations, and may cause other operations to be suspended.
- 8.2.6 OIM/Barge Masters and Masters must allow time for vessels to seek shelter in event of adverse forecast. Masters must inform the Logistics Unit whenever the vessel is to seek shelter.



Figure 18: Seek shelter when necessary

8.3 Weather Side Working – Risk Assessment

- 8.3.1 It is preferable for an OSV to work on the lee side (opposite side to the weather side) of any installation when working cargo.
- 8.3.2 Weather side should be considered as that side at which the net environmental forces will cause the vessel to move toward the installation.

- 8.3.3 When planning weather-side operations the vessel must analyze impact of failure in propulsion, maneuvering or positioning systems within the safety zone. Situations that may lead to vessel starting to drift shall be identified and operational limitations defined in the operations manual. The Ship Owner shall inform operating /Logistics Company of such limitations.
- 8.3.4 When working weather side, Masters must use their judgement, experience and knowledge of the vessel, plus any specific weather policy of the drilling rig to set their own weather limits.
- 8.3.5 Risk assessment should include:
 - Master's and relevant officers' experience.
 - Weather and sea state.
 - Adverse weather-induced fatigue.
 - Anticipated tidal effect.
 - Forecast weather and impact on wind speed, direction or sea state.
 - Vessel's power management configuration, and station keeping ability in event of loss of one main propulsion unit.
 - Peak loads on position-keeping power generation capacity.
 - Impact on vessel of deck cargo layout and cargo to be discharged and associated hazards to deck crew.
 - Free surface effect of slack tanks.
 - Position or reach of installation crane(s), hose lengths, platform lighting.
 - Time vessel is expected to remain alongside.
 - Continuous hours worked previously by Master and crew.

8.4 Weather Side Working – Practice

- 8.4.1 All requirements of 3.3.5.3 apply. If vessel power requirement to maintain station exceeds 45 % of main propulsion or any thrusters, including shaft alternator power, the Master must cease operations. This critical limit also applies to diesel electric propelled vessels.

TRAINING, COMPETENCY AND MANNING



9 TRAINING, COMPETENCY AND MANNING

9.1 Training and Competency

When considering standards of training and competency, it should be recognized that appropriate simulator training is a valuable tool in attaining and maintaining relevant competencies.

Recommended competencies for all roles are detailed below.

9.1.1 Trainee Personnel

Trainee personnel should always be accompanied by suitably experienced qualified personnel.

9.1.2 Rig Move

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

9.1.2.1 Masters

Require relevant expertise and be experienced on the vessel class or design he is aboard. Masters with no previous A/H experience should perform a suitable combination of rig moves and/or simulator training, before they may command an A/H assignment.

Masters having previous A/H experience as Master, but where this is more than 1 year ago, should have an overlap period of at least 14 days with an A/H experienced Master. At least one A/H operation must be performed during this period.

9.1.2.2 Tow Masters

Actively participated in the execution of rig move operations under the guidance of a Senior Rig Mover until proven competent.
Extensive knowledge of all relevant rules and regulations.
Extensive knowledge of the Rig move plan.
English language capabilities.

9.1.2.3 Officers

Officers require relevant expertise. They shall be familiar with A/H operational guidelines on safety, and with safe use and limitations of equipment.

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

Officers working on the bridge during A/H and have tasks that may affect the safety of those working on deck shall be familiar with A/H deck work operations and the associated hazards and risks.

9.1.2.4 Winch operators

Must be competent in the winch operation and safety systems, functions and limitations. Vessel and MOU Owners shall be able to demonstrate necessary training has been given to Winch Operators. A certificate should be issued.

9.1.2.5 Vessel Deck crew

Personnel assigned independent work on deck during A/H operations shall be familiar with guidelines and procedures for this, and A/H safety. They should also be familiar with the use of UHF/VHF radio. Able-bodied seamen with no previous A/H experience must be trained in guidelines, procedures and safe equipment use before assignment to independent A/H work on deck. Document training.

9.1.2.6 Any Additional Personnel, such as those listed below, should have relevant experience in role:

- Positioning quality controller /Survey Rep.
- Positioning Engineer.
- Mooring Engineer.
- Marine Equipment Supplier Rep.

9.1.2.7 Crane operators should have:

- Industry and Saudi Aramco certification.
- English language capabilities.
- Knowledge of the Rig move plan for the operation.

9.1.3 DP competence requirements:

9.1.3.1 If DP operations are to be carried out within the safety zone, Masters and Officers on board DP vessels shall possess necessary competence, experience and certificates for the vessel's certified equipment class, as specified by its class notation.

9.1.3.2 Prior to serving as DP Officer on board any DP Vessel, all DP Officers will:

- Have a valid STCW95 Certificate of Competency for a Master or Navigating Officer.
- Undergo training at centers approved by the NI and adhering to MSC/Circ. 738 Guidelines for DP System Operator Training.
- Complete training in the DP Induction/Basic Course.
- Complete the Sea-going DP Familiarization for 30 days on a DP-Capable Vessel.
- Complete DP Simulator/Advanced Operators Course.
- A minimum of six months as watch keeper on a DP vessel, followed by a statement of suitability by a DP vessel master.
- A valid Limited DP certificate as a minimum.

(MIM 1192.506 Safe Operation of Contractor DP1 Vessels, Section 5).

- 9.1.3.3 At all times at least one DP operator on the bridge shall have deck officer certificate of competence.
- 9.1.3.4 If a non-DP-certificated person is to operate the DP system they should be supervised by a competent DP operator. They should have completed the basic introduction course in system functions and DP system use at an approved training centre.
- 9.1.3.5 Records of training should be maintained.

9.2 Manning

9.2.1 General

- 9.2.1.1 Manning will be in accordance with Contractual requirements.
- 9.2.1.2 Crew size must meet flag state's safety manning regulations. Ship Owner shall also ensure manning levels comply with the requirements of the sovereign state of the continental shelf (coastal state) for rest and working hours throughout the assignment.
- 9.2.1.3 Vessels must be manned sufficiently to meet manning and rest requirements to ensure 24 hour operation, where necessary.
- 9.2.1.4 Engine room to be manned at all times when vessel is operating inside 500m safety zone.
- 9.2.1.5 Possession and use of alcohol and drugs on board OSVs is strictly prohibited.

EMERGENCIES, INCIDENTS REPORTING AND RELEVANT ASSISTANCE



10 EMERGENCIES, INCIDENTS REPORTING AND RELEVANT ASSISTANCE

10.1 Drilling Rig Emergency

- 10.1.1 Any emergency will be handled in accordance with **GI 1851.001** *Drilling & Workover Operations Offshore Contingency Plan*.
- 10.1.2 When installation emergency alarms sound OIM will issue instructions to all vessels.
- 10.1.3 On hearing the alarm the Master shall contact the installation and await instructions. If connected by hoses, cease pumping and await instructions.

10.2 Port Emergency

- 10.2.1 Ship owner and vessel Masters 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 base company in this respect.
- 10.2.2 Shore facility fires and fire drills, and fires on vessels when they are berthed alongside, will be under the command of a Fire Department representative, with Marine personnel and available vessels providing assistance as required. (**MIM 1192.001** *Marine Vessel Operating Practices, Section 7*).

10.3 Search & Rescue

- 10.3.1 All Marine Department vessels, including vessels under Saudi Aramco full charter or RPO contracts, will maintain a 24-hour listening radio watch on channels 11 and 16 be prepared to respond to any distress calls.
- 10.3.2 When Search and Rescue is to be carried out, the Emergency Control Commander, Incident Commanders and Vessel Masters should refer to the IMO Publication IAMSAR Manual and **MIM 1193.504** *Emergency Response Plan*.

10.4 Incident Reporting

- 10.4.1 Any Marine Incident involving Marine Owned or Contracted Vessels must be reported immediately. Procedures detailing requirements for reporting are contained in:
 - **MIM 1187.001** *Collision and Damage by or to Marine Equipment or Craft*.
 - **GI 6.001** *Notification requirements for Incidents (Including Fires)* provides guidance on Saudi Aramco procedures for reporting incidents.

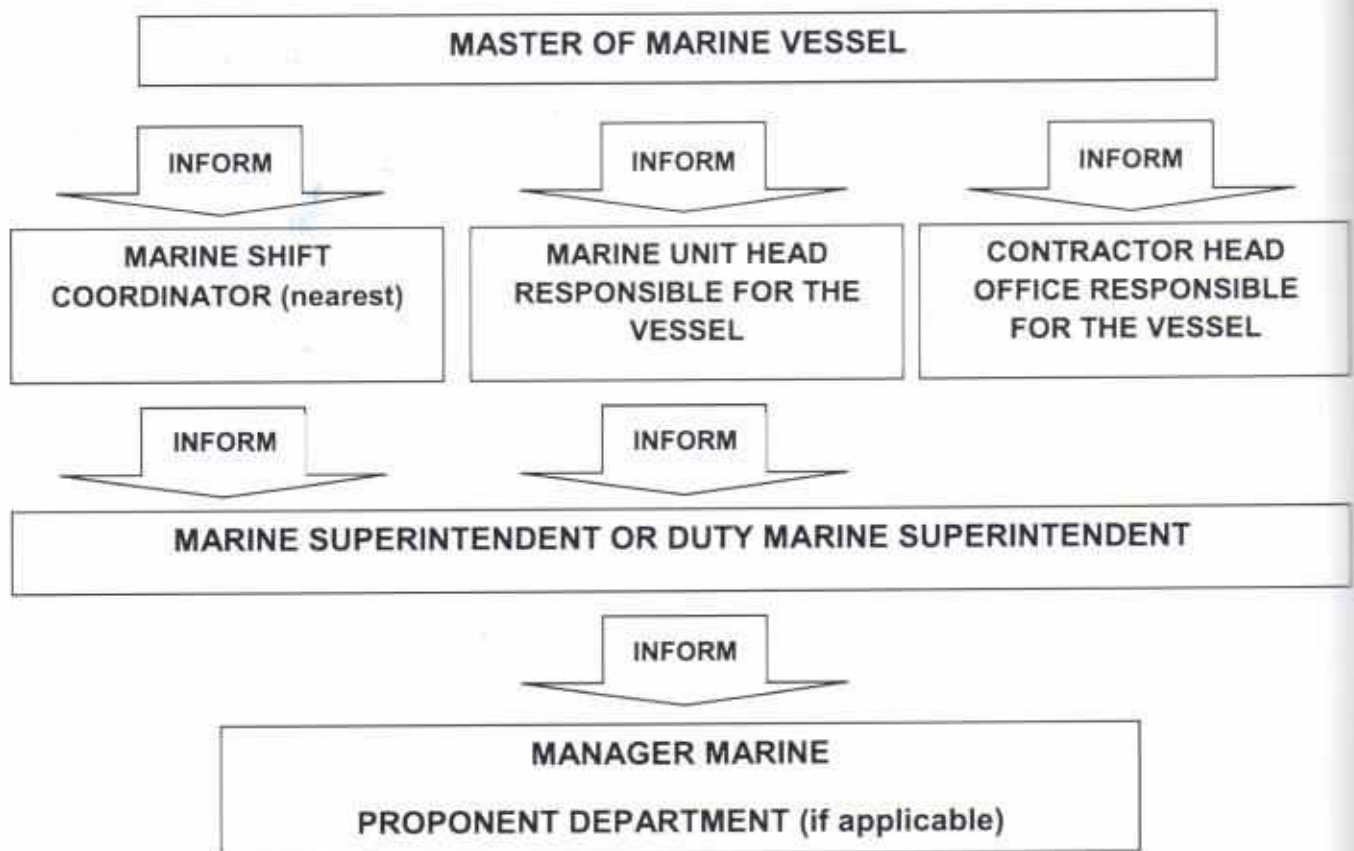


Table 2: Chart of the initial procedure for reporting a marine incident

All fires, regardless of size, occurring onboard vessels shall be reported immediately to the nearest Port Control and vessel Supervisor. (*MIM 1192.001 Marine Vessel Operating Practices, Section 7*).

10.5 Pollution Reporting

10.5.1 All Vessels will comply with **GI 2.104 Offshore Oil Spill Reporting Procedures Section 5.1** and report all leaks and spills immediately, regardless of size or potential impact, to the Port Control in their area of operation.

10.5.2 Pollution Prevention

- Discharge overboard of liquid hydrocarbons in any form is prohibited.
- Discharge overboard of non-biodegradable waste material of any kind is prohibited.
- Vessels and offshore drilling rigs will comply with MARPOL 73/78.

10.5.3 Pollution Reporting Procedures

- All leaks and/or spills shall be immediately reported regardless of size or potential impact.

- Persons observing a LEAK or SPILL shall Report it by the most rapid means available to the Saudi Aramco Marine Shift Coordinators at Ras Tanura or Jeddah on the 24-hour telephones:
 - Ras Tanura and Abu Ali 013-673-6666
 - Tanajib 013-378-6666
 - Western Region 012-427-6666
- The persons reporting the spill should provide as much of the following information as possible:
 - Name of person reporting and /or observing the spill.
 - Badge number.
 - Contact number.
 - Date and time.
 - Location of spill.
 - Size (length and width), colors (i.e. silver sheen, rainbow, brown, black) and area covered.
 - Source and cause of spill.
 - Weather conditions: wind speed and direction, visibility and sea conditions.
 - Action being taken.

GI 2.104 Offshore Oil Field reporting Procedures

10.6 Assistance In Salvage Operations

- 10.6.1 All vessels shall render assistance when required, and as directed by a Marine Superintendent, on-duty Marine Superintendent or Port Control.
- 10.6.2 Assistance to all vessels shall be rendered when the possibility of loss of life is involved, without requiring authorization.
- 10.6.3 Towing or rendering assistance to other than Company equipment shall only be completed upon authorization and direction of the Marine Superintendent or designate, except in cases as outlined in Paragraph 10.6.2.
- 10.6.4 The Manager Marine Department or his designate is solely responsible for the appointment of a designated Salvage Master.
- 10.6.5 All vessels, when working on salvage operations, shall be under the direction of a designated Salvage Master.

(MIM 1192.001 Marine Vessel Operating Practices, Section 8).

10.7 Assistance To Dhows or Lightly Constructed Vessels

- 10.7.1 All vessels will render immediate assistance to dhows or small lightly constructed coastal vessels in cases involving possible loss of life.
- 10.7.2 Except as stated in Paragraph 10.7.1, assistance shall not be rendered unless authorized by the respective Marine Superintendent or designate.

Note: All vessels will keep well clear of vessels engaged in fishing, as per the International Regulations for Preventing Collisions at Sea. All vessel Masters

must be aware of drifting fishing nets and their potential hazard in causing damage or delay to the vessel.

(MIM 1192.001 Marine Vessel Operating Practices, Section 9)

10.8 Reporting Hazards to Navigation

10.8.1 A hazard to navigation is defined as an object or obstruction, sometimes underwater that presents sufficient danger to navigation so as to require a positive action such as to remove, redefine or highlight the hazard.

10.8.2 Below are common hazards to navigation, though the list is not exhaustive:

- Unlit structures, beacons or navigation markers.
- Actual depths significantly less than charted.
- Unidentified Floating Objects.
- Floating debris such as abandoned vessels, tree trunks, fishing nets etc.

10.8.3 The following information must be reported to the relevant Port Control in a navigation hazard report:

- Type of hazard.
- Position of hazard.
- Physical characteristics of hazard.
- If the hazard is floating, how much is above/below the water line.
- If hazard is mobile, present speed and direction of travel.
- Location of hazard in relation to other objects in the area.
- Whether the hazard may increase or decrease.

10.9 Handling of Floating Objects

10.9.1 Vessels sighting floating objects which are, or may be, a Hazard to Navigation or to Saudi Aramco facilities will:

- Report the sighting to the relevant Port Control.
- Keep well clear of the object at all times.
- Give the position of the object and its likely course.
- Specify the size of the object and the material it is made from, if possible.
- Standby in the location, keeping well-clear of the object and monitor its movement.
- Await further instruction.

(MIM 1193.001 Marine Port Information and Regulations)

10.10 Reporting of Unidentifiable Vessels

10.10.1 In order to assist in eliminating the danger of unidentifiable vessels entering into Saudi Aramco oilfields and coming into close proximity to offshore installations, all Masters are to immediately report these unknown vessels to the relevant Port Control on the appropriate working channel.

10.10.2 An unidentifiable vessel is defined as:

- A vessel which does not show an AIS signal and/or
- Is obviously not an Offshore Vessel.
- Does not respond to communications.

10.10.3 The following information is to be reported:

- Name of Own Vessel and Name of Person reporting, including Badge No. if relevant.
- Position of own vessel.
- Description of vessel being reported to include:
 - Name, if known.
 - Nationality (flag), if known.
 - Type of vessel.
 - Position.
 - Course and speed.
 - Physical characteristics e.g. color, size etc.
 - Number of persons visible.
 - Any other pertinent information.

SAFETY STANDBY VESSEL RESPONSIBILITIES



11 SAFETY STANDBY VESSEL RESPONSIBILITIES

11.1 Application

- 11.1.1 This section contains instructions and guidelines which shall relate to all Standby Vessels (SBV) operations in Saudi Aramco concession areas.
- 11.1.2 When operating in a field development area the relevant safety roles of the OIM/Barge Master and standby vessel are defined within **GI 82.001** *Emergency Response Roles and Responsibilities in Offshore Oilfields* and **GI 1851.001** *Drilling & Workover Operations Offshore Contingency Plan*.

11.2 Main Functions

- 11.2.1 The fundamental requirements of standby vessels are to:
- Rescue people from the water and provide them with medical aid.
 - Recover and provide aid to people.
 - Act as a 'place of safety'.
 - Provide 'on-scene' command as required in accordance with **MIM 1193.504** *Emergency Response Plan*.
 - Monitor and warn off shipping which presents a risk to Installations (or associated structures or vessels)
- 11.2.2 When assigned as SBV for a Rig/Barge, the Master will position the Vessel in a nearby location and maintain a state of readiness to respond and be at the Rig/Barge location within 30 minutes. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels*, Section 9).
- 11.2.3 In normal circumstances, and weather permitting, the standby vessel will remain outside the 500m zone and in the best possible position to provide a speedy response to any incident onboard the Installation or attending vessels.
- 11.2.4 When required for 'Close Standby', the SBV shall complete the 500m Safety Zone Checklist prior to being granted permission to enter the 500m zone.
- 11.2.5 Whilst maneuvering on location, the SBV shall steer an offset course which avoids sailing directly at the drilling rig and prevents unauthorized entry in the safety zone.

11.3 Preparation of Contingency Plans

- 11.3.1 The Owner and the Master of the vessel should prepare written directions covering the response of the SBV in the event of an incident.

The plans must include:

- The responsibility of the Master of the standby vessel for Saudi Aramco and control of the search for and rescue of survivors in the sea or adrift in boats or rafts, particularly with other vessels converging on the area to provide assistance.
- Clear guidelines as to the responsibility of the Master of the standby vessel and the transfer of responsibility from the OIM/Barge Master and the circumstances in which the Master shall adopt the role of Incident Commander (IC).
- Any guardship roles for an SBV.

11.3.2 There are four main events where persons may have to be rescued or recovered from the sea:

- Persons falling overboard from the drilling rig.
- Helicopter ditching near to the drilling rig.
- Escape from the drilling rig in the event of a major accident.
- Recovery of persons following evacuation by Totally Enclosed Motor Propelled Survival Craft (TEMPSC).

11.3.3 The SBV Master will ensure that both he and his crew are fully familiar with the IMO Publication IAMSAR Manual and **MIM 1193.504** *Emergency Response Plan*.

11.4 Role of Incident Commander

11.4.1 General

- The Master should be capable of performing the role of IC.
- The Master should be capable of implementing the Search and Rescue (SAR) Plan.
- The Master should be capable of modifying the SAR Plan as required to reflect local demands.
- The Master and officers should be capable of monitoring and reporting weather conditions to the Emergency Control Centre (ECC).
- The Master and officers should be capable of making clear Situation Reports (SITREPs) to the ECC.
- The Master and officers should be capable of advising the ECC on the release of SAR units.
- Proper records must be kept.

11.4.2 Installation Abandonment

If the situation reaches a stage where the OIM/Barge Master has no other recourse but to abandon the drilling rig, then he, or his deputy, shall carry out the following:

- Inform the Master of the standby vessel of the abandonment decision and request that he now takes over as IC. If possible, indicate the method of evacuation and whether or not he is going to be contactable once he has left.

- Make all contacts as per MODU emergency procedures for abandonment.
- Cover all actions required for rig abandonment.

11.4.3 Role of Standby Vessel

On receipt of contact:

- Close up to the Installation, muster all crew as required, ensure that all vital equipment is made ready as per Paragraph 11.5.
- Monitor the situation, providing assistance when requested.

On receipt of decision to abandon:

- Take over as IC and inform the ECC immediately.
- Monitor the situation, provide assistance where possible and attempt to contact rig OIM/Barge Master if applicable.
- Relay, if necessary, any distress messages.
- Keep the ECC fully updated through clear situation reports.
- If available, apply Fi-Fi cooling to the Installation, where required.
- Maintain proper records.
- Carry out all other IC functions as necessary, giving priority to the saving of life, until relieved.

11.4.4 Catastrophic Incident

In the event of a catastrophic incident, when the drilling rig OIM/Barge Master is out of contact, the Standby Vessel Master will immediately assume the role of IC, relaying the distress message and establishing a link with the relevant Port Control. Port Control will dial 110 and report the incident.

11.5 Offshore Installation Abandonment SBV Procedures

- 11.5.1 In an abandonment situation, the OIM/Barge Master will request the standby vessel to take up position, to support abandonment of the Installation. This position may be down weather of the Installation but not directly so, having due regard to the possibility of escaping flammable gas or oil, and the possibility of a major explosion.
- 11.5.2 The order to abandon the offshore Installation will be given verbally by the OIM/Barge Master.
- 11.5.3 The actions of the standby vessel will be to:
- Come to close standby and be prepared to provide support to personnel embarked in TEMPSC.
 - Prepare to launch Fast Rescue Craft (FRC) as required.

- Prepare rescue equipment, including recovery systems.
- Be prepared to act as a reserve radio station.
- Be prepared to act as Coordinator Surface Search (CSS) and/or IC should the emergency situation require it.
- Prepare to embark survivors.
- Maintain sharp lookout for survivors in the water.
- Maintain an accurate 'tally' of embarked survivors.
- Provide first-aid and hypothermia treatment to survivors.
- Be prepared to embark survivors from lifeboats/liferafts.
- Be prepared to make for the nearest safe port with survivors.

Note: In an emergency abandonment, SBV Masters shall be alert to the possibility of flammable gases or oil being on or near the sea surface and of the possibility of a major explosion occurring on the offshore Installation. In such cases it may be prudent to position the vessel a safe distance upwind or up weather of the Installation.



Figure 19: FRC launching and handling are dangerous operations, ensure relevant training is undertaken and safety systems are utilized

11.6 Collision Risk Monitoring

11.6.1 General

11.6.1.1 The standby vessel is responsible for monitoring all passing traffic and for ensuring that the risk of ship/ drilling rig collision is minimized at all times.

11.6.1.2 The standby vessel shall maintain an effective radar and visual watch at all times. It is recommended that surveillance is carried out with radars set on different ranges.

- 11.6.1.3 Where a vessel is identified as passing within 2 miles of the drilling rig it shall be tracked and its progress monitored until such time as it has passed the nearest approach to the drilling rig.
- 11.6.1.4 If the target vessel's course is such that it would close unnecessarily close to the drilling rig the OIM/Barge Master must be informed. Immediate action must be taken to contact the vessel and divert it clear from the drilling rig. In the event that the target vessel does not respond to attempts to communicate by conventional means, the SBV shall alert the OIM/Barge Master. The SBV will continue to update the OIM/Barge Master as the distance between the vessel and the drilling rig decreases.
- 11.6.1.5 All other means to attract the vessel's attention shall be used. These include searchlights, whistle and foghorn. If weather conditions are suitable and depending upon the anticipated size of the target vessel, the SBV may use its FRC.
- 11.6.2 Drifting Vessels
- 11.6.2.1 When the SBV detects a vessel which is drifting due to mechanical breakdown, it shall plot the direction and rate of drift of the vessel. In plotting the rate and direction of drift the SBV shall assess the danger presented by the drifting vessel both to the drilling rig for which the SBV is responsible for and for other Installations which may be in the vicinity.
- 11.6.2.2 In the event that the drifting vessel presents a danger to the SBV's drilling rig the SBV shall inform the OIM/Barge Master and establish communications with the drifting vessel.
- 11.6.2.3 The SBV should also consider any support which it may be able to provide in order to slow or arrest the drift and prevent collision with the Installation, e.g. passing of a tow line to another vessel. Any action must not comprise the prime safety role of the SBV. If the circumstances so dictate, as a last resort, the drifting vessel may be requested to arrest its drift by anchoring. Such a request shall only be made with the consent of the Installation's OIM/Barge Master.
- 11.6.2.4 In the event that the drifting vessel, while passing clear of the Installation(s) for which the SBV provides safety cover, is drifting towards other Installations, the SBV shall inform the OIM/Barge Master of the drilling rig for which the vessel provides safety cover. The SBV's Master shall also contact the SBVs for the drilling rig at risk, informing them of the drifting vessel. The OIM/Barge Master of the Installation shall contact the other drilling rigs at risk, informing them of the danger.

11.6.3 Collision Monitoring Whilst on Close Standby

- 11.6.3.1 When on close standby the drilling rig structure may create a shadow zone in the SBV's radar coverage. In such circumstances the SBV shall, at regular intervals, while still maintaining safety cover, maneuver itself from out of the shadow of the drilling rig to observe the vessel movements in the shadow sector.

11.7 Additional Functions

11.7.1 General

- 11.7.1.1 SBVs may be capable of carrying out multipurpose roles such as supply, firefighting, towing and oil clearance. In such cases it must be emphasized that the main role of the SBV, takes precedence over any other function, and the OIM/Barge Master shall ensure that these functions do not interfere with, or detract in any way from the capability of the vessel to respond to an emergency. The SBV role must never be compromised and, when on standby duty, personnel must be fully vigilant at all times.

11.7.2 Cargo Operations

- 11.7.2.1 Prior to any cargo operation alongside an drilling rig, the vessel will complete the pre-entry to the 500m zone checklist for that particular Installation.
- 11.7.2.2 Careful consideration shall be given to the carriage of dangerous cargoes on standby vessels.
- 11.7.2.3 Interfield cargo shall not be loaded until it is confirmed that the receiving Installation can accept the shipment.
- 11.7.2.4 Prior to loading dangerous goods in port, the shore base shall confirm with the drilling rig that it is able to offload the vessel on its arrival in the field. If this is not possible, the Installation is then required to refer to the International Maritime Dangerous Goods (IMDG) Code in order to establish the properties of the proposed cargo and whether the safety of the SBV is liable to be jeopardized in an emergency situation on the Installation, e.g. fire. A decision shall then be made whether or not to load the cargo on the vessel. Forthcoming weather shall also be taken into consideration when making this decision.

Note: At no time are SBVs to be used to store materials or items which are classed as dangerous goods.

- 11.7.2.5 To achieve the above requirements, SBVs engaged in cargo operations, either acting as floating storage or conducting inter-platform transfers, will observe the following:

- Deck area in the way of the rescue zones to be kept clear at all times across the width of the ship.
- Helicopter winching area to be kept clear at all times.
- Master and crew to be fully fit and competent to carry out the requirements of the standby role at all times, with particular consideration being given to the problems of fatigue.
- Close standby duties will not be performed whilst hose operations take place.

11.7.2.6 Additionally, the following guidelines will be observed during cargo operations:

- The Master will always have the final say as to when supply operations commence and are suspended.
- Hours of working in the supply mode will be limited to:
 - Hours of daylight for routine requirements.
 - No more than 12 hours in any 24-hour period, with 6 hours rest to be made available and taken at the Master's discretion after 6 hours engaged in loading or discharging operations.

11.7.2.7 When the vessel is being used for the purposes of floating storage, the Master has the responsibility for ensuring that the cargo is stowed correctly, adequately sea-fastened at all times and in such a manner to prevent movement on the vessel's deck.

11.7.2.8 The Master will monitor weather forecasts and early warning of any inclement weather that may be expected over the forecast period.

11.7.2.9 Prior to lifting any containers, the Master has the responsibility for ensuring that the crew are satisfied with the condition of the lifting arrangements.

11.7.2.10 The crew will wear the appropriate protective safety equipment at all times during these operations. A crew member, experienced in cargo handling operations, will be nominated and will ensure that an effective communication system exists between the vessel, crane driver and Banksman.

11.7.2.11 It must be borne in mind that the unexpected can always happen, and crews shall be fully vigilant and ready to perform their primary function of safety support at all times and during all phases of cargo operations.

11.8 Helicopter Ditching

11.8.1 The SBV Master shall be given advance warning about all helicopter flights. The helicopter frequency/channel shall be monitored for at least the last 15 minutes of the inbound flight until such time as the helicopter has been clear of the offshore installation for 15 minutes. The SBV shall not communicate on the helicopter frequency unless specifically requested to do so, or an emergency situation occurs.

11.8.2 When advised of an impending flight, the SBV shall monitor the flight path to the offshore Installation. The FRC and crew shall be brought to a state of readiness.

11.8.3 The Master shall position the vessel so that it is best able to effect a rescue, but must not place the vessel in the flight path or at a position where an overshoot may occur, for example:

- The SBV may take up a position to leeward of the Installation and to one side of the anticipated 'head-to-wind' flight path of an incoming flight.
- The SBV will take up a position to windward of the Installation and to one side of the anticipated 'head-to-wind' flight path of an outgoing flight.

Note: Where an SBV is assigned to stand by more than one Installation, the Master shall position the vessel so that it is in the best position to effect a rescue at either Installation.

11.9 Close Standby and Close Approach

11.9.1 Cover

11.9.1.1 No overside activities shall take place unless there is a standby vessel on close standby, or alternative arrangements are in place.

11.9.1.2 To provide close standby cover, the SBV will be required to enter the 500m safety zone of the Installation. Prior to being granted permission to enter the 500m zone, the Master of the SBV will be required to complete the 500m Safety Zone Checklist to confirm that all power generation, distribution and control system onboard the vessel are online and fully operational. Any defects occurring after the initial report must be immediately reported to the drilling rig, and continued operation will be subject to a risk assessment performed by the Installation OIM/Barge Master and the SBV Master.

11.9.1.3 Prior to any person working overside, communications shall be established between the standby vessel and the person with responsibility for those engaged in the overside work.

11.9.1.4 The OIM/Barge Master shall ensure that the SBV is stood down from close standby duties as soon as the operation requiring close standby is completed or the operation suspended as appropriate.

11.9.1.5 Extreme caution must be exercised when on close standby. Vessel Masters shall give themselves plenty of sea room when maneuvering close to the Installation and shall make themselves aware of tides and weather which may set them towards the Installation. They shall be familiar with the position of any exposed oil/gas risers. As

a general guideline SBVs on close standby duty shall not approach an offshore installation closer than 50m. SBVs Masters shall, whenever practicable, station their vessel down-weather of the drilling rig.

- 11.9.1.6 The SBV Master and the OIM/Barge Master/Marine Controller shall make a deliberate assessment of the prevailing weather conditions before commencing routine overside work that may require a rescue service.
- 11.9.1.7 When on close standby, the SBV shall be in a position where it may best observe the overside activities, while paying due attention to the prevailing environmental forces to avoid being taken onto the Installation's structure.
- 11.9.1.8 The SBV Master shall be responsible for keeping the drilling rig informed about deteriorating weather conditions. In particular advising the drilling rig when weather conditions are nearing the limitations of the rescue facility, so that the overside work in-hand may be safely concluded.
- 11.9.1.9 All Vessels will maintain all of their FRC in an immediate state of operational readiness. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 10*).
- 11.9.2 Withdrawal of Cover
 - 11.9.2.1 When, for whatever reason, an SBV has to withdraw close cover, it will immediately inform the person responsible for the personnel engaged in overside work and the drilling rig's control room, and the reason for withdrawal.
 - 11.9.2.2 Except where the SBV has suffered a total loss of motive power or has an onboard emergency, it will maintain close cover until such times as the drilling rig informs that the personnel have been withdrawn or alternative arrangements are in place.
 - 11.9.2.3 When clear of the drilling rig, the SBV Master must report the vessel's position to the drilling rig.
 - 11.9.2.4 The SBV and the drilling rig will record in their logs all communications made regarding close cover.
 - 11.9.2.5 An SBV on close standby duties must remain dedicated to that activity and shall not be requested to conduct another routine multi-role activity such as cargo operations.

- 11.9.2.6 The SBV Master shall be aware that the crew may be required to rescue personnel that have fallen into the water from visiting supply or anchor handling vessels working at or near the Installation.

Note: OIM/Barge Masters and SBV Masters shall appreciate that the weather limitations referred to above also include poor visibility which may preclude a safe or satisfactory search/rescue operation taking place.

11.9.3 Fire-Fighting

- 11.9.3.1 All Vessels will maintain an immediate state of operational readiness for all Off-Ship Fire Fighting facilities fitted to their particular Vessel. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 10*).



Figure 20: FIFI to be ready for immediate deployment

11.10 Routine Standby Vessel Duties

11.10.1 Radio Watch

- 11.10.1.1 All Vessels assigned as a SBV will maintain a full 24-hour Radio Watch. The assigned Vessel will call the Rig/Barge at regular intervals (not more than 4 hours) to ensure radio contact is maintained. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 9*).

- 11.10.1.2 The SBV shall also maintain an efficient 24-hour radio listening watch for aviation 'traffic' addressed to the vessel or drilling rig.

Visual Watch

- 11.10.1.3 The SBV shall maintain an efficient visual watch for any unusual occurrences such as emergency flares, oil slicks, etc. and report any sightings to the OIM/Barge Master/Marine Controller.
- 11.10.1.4 During the hours of darkness the SBV shall check the operation of the drilling rig navigation lights and advise the offshore drilling rig of any defects.
- 11.10.1.5 During periods of restricted visibility the SBV shall advise the drilling rig to activate foghorns, and keep the Installation advised on the visibility.

11.10.2 Moored Buoys

- 11.10.2.1 The SBV shall visually check, twice a day, the position of: mooring or location buoys within the proximity of the offshore Installation and confirm the position and condition of each buoy to the OIM/Barge Master/Marine Controller. The OIM/Barge Master shall record such checks in the official logbook.

11.11 Training/Exercise Drills

- 11.11.1 The OIM/Barge Master shall arrange to exercise the SBV Master and crew in man overboard drill. The first drill shall take place as soon as is practicable after the vessel arriving on location, and at regular intervals thereafter.
- 11.11.2 All drills shall be conducted without prior warning and in weather conditions that will not endanger the safety of the FRC crew. The OIM/Barge Master/Marine Controller shall ensure, that there is a sense of realism in such training exercises, e.g. the use of heavy but buoyant dummies and the involvement of other Installation staff. Safety helmets shall be worn whenever the crew are required to work or remain on-station within 500m of the drilling rig.
- 11.11.3 Vessel FiFi and FRC Drills are to be carried out on a weekly basis and be correctly logged on the SBV Weekly Drill Log Sheet contained in Annex G – SBV Weekly Drill Log Sheet. Prior authorization should be sought by the vessel from the respective users in order conduct the drill within the required interval. (**MIM 1193.510 Off-ship Firefighting and Fast Rescue Craft Drills, Section 3**).
- 11.11.4 Minimum drill duration should be one (1) hour which includes tests of off-ship firefighting system and firefighting team coordination. The FRC exercise is included within this 1 hour period. (**MIM 1193.510 Off-ship Firefighting and Fast Rescue Craft Drills, Section 3**).

- 11.11.5 Additional drills and exercises covering other shipboard emergencies will be conducted in compliance with **MIM 1193.507 Safety Drills on Board Marine Vessels**. (**MIM 1193.510 Off-ship Firefighting and Fast Rescue Craft Drills, Section 3**).
- 11.11.6 The OIM/Barge Master/Marine Controller shall ensure that the SBV is actively involved with all drilling rig emergency and abandonment drills.
- 11.11.7 Specialist SBVs which are fitted with firefighting monitors may be requested to demonstrate the operation of such equipment, in conjunction with offshore installation drills.
- 11.11.8 SBV Masters shall exercise their crews in search and rescue techniques.
- 11.11.9 The FiFi vessel Master shall conduct weekly off-ship firefighting exercises that conform to the following:
- Off-ship FiFi water pumps, FiFi water monitors and protective spray systems are placed in full operational mode for a minimum of 30 minutes.
 - Station keeping is practiced in both manual and DP mode (if applicable). A stationary target is to be selected for the purpose of the exercise.
 - If the FiFi classed vessel is equipped with stern monitors these monitors are to be operated in combination with the vessel's protective spray system, for a minimum of 15 minutes after the 30 minute operation of the main FiFi water monitors.
 - Remote control system is to be tested to the limits designed ranges in both vertical and horizontal axis.
 - FiFi water monitors are operated in straight stream and spray patterns.
- (**MIM 1193.510 Off-ship Firefighting and Fast Rescue Craft Drills, Section 4**).

11.12 Pollution Control Equipment

- 11.12.1 Pollution spray equipment where carried is to be tested with water on a monthly basis and recorded in the vessel's deck log.
- 11.12.2 Standby Vessel Masters shall never use oil dispersant for exercise or anti-pollution purposes unless expressly instructed to do so by the Marine Department Global Oil Spill Response Division (GOSRD).
- 11.12.3 Should oil dispersant be used for whatever reason, the amount used and the total remaining onboard shall be reported to GOSRD.

11.13 Equipment Defects, Personnel Injuries and Sickness

- 11.13.1 The Standby Vessel Master shall report all personnel injuries, sickness and equipment defects to the OIM/Barge Master and Port Control immediately.
- 11.13.2 Should the SBV Master fail to report the above details, the Marine Department will instigate a formal investigation.

11.14 Standby Vessel Change Outs

- 11.14.1 SBV Masters shall keep the drilling rig advised of an impending change out.
- 11.14.2 The SBV Master shall not handover to the relief vessel until:
 - 11.14.2.1 The relief vessel is on location, able to take over standby duties and the Master has confirmed to the OIM/Barge Master/Marine Controller that all equipment is operational and the crew are medically fit.
 - 11.14.2.2 The relief vessel has been advised of all marine information appropriate to the drilling rig, e.g. marine and aviation radio frequencies/channels, position of mooring buoys, local marine and aviation traffic in or near the area.

11.15 Standby Vessel – Personnel Recovery Equipment

- 11.15.1 Facilities and procedures for the safe operation of fast rescue craft, mechanical recovery equipment, rescue baskets, etc. shall be available onboard and fully understood.
- 11.15.2 Suitable protective clothing and equipment shall be supplied to SBV crews.
- 11.15.3 Fast rescue craft main hoist wires shall be regularly inspected, and changed at least annually.

11.16 Offshore Installation Operations

- 11.16.1 The OIM/Barge Master shall ensure that the SBV is kept informed about any operation which may affect its role.

Such operations may include:

- Flaring of gas or oil including cold flaring and gas venting.
- Activation of overboard discharges or vents.
- Planned movement of marine or helicopter traffic.

- Planned diving or ROV operations.

11.17 Anchoring

- 11.17.1 Standby vessels shall not anchor unless there is a vessel emergency and granted permission by the OIM/Barge Master.

SECURITY



12 SECURITY

12.1 In Port

- 12.1.1 The vessel is to be manned, and watches set, with sufficient staff able to cope with all likely situations. Unless specific permission has been granted, the Master should ensure that his vessel is kept in a state of readiness to be able to sail within one hour of notification or as required by Port Control.
- 12.1.2 ISPS compliance to be maintained at all times.

12.2 At the Installation

- 12.2.1 The owner and vessel's Master are responsible for internal procedures with regard to the safety of their own vessel and crew, as well operating in accordance with current ISPS code requirements if required by installation, vessel or state. Saudi Aramco and the OIM/Barge Master on offshore installations are responsible for providing any common area procedure for operations within safety zone.

12.3 Ship – Ship Interface

- 12.3.1 The Ship owner and vessel's Master are responsible for adequate procedures to ensure compliance with ISPS code requirements, flag or coastal state interpretations and any Saudi Aramco requirements in this respect.

12.4 Security Incident Checklist

- 12.4.1 As in all incidents, the requirement of immediate reporting of any incident to the appropriate authority is paramount. Further, that any incident that has been reported must be fully documented in the appropriate log-book.
- 12.4.2 Examples of a Security Incident or Threat can be, but not limited to:
- Handling unidentified floating objects.
 - Interface with Fishing Boats and crews (i.e. Boarding the Vessel).
 - Any interaction with a Naval or Coast Guard vessel (Saudi Arabian or foreign).
 - Incidents where Offshore Security are the main contact.
- 12.4.3 In any such incident, the form in Annex I - Security Incident/Threat Offshore Notifications Checklist must be completed in the appropriate sections by the appropriate persons responsible.

TANAJIB PORT



13 TANAJIB PORT

13.1 Tanajib Port Information

13.1.1 Port Limits

The Tanajib Port Limits are from the East Tanajib Outer Beacon and from the North Beacon 22, both through the approach channel and including the harbor area.

13.1.2 Charts and Publications

Relevant charts for Tanajib and approaches are: SUR 10968 - Tanajib Harbor and Approach Channel, SUR 1815 - 'Manifa to Safaniya', SUR 1839 - Fasht Al-Kash to Fasht Buldani, SUR 9697 - Tanajib Harbor and Approach Channel.

13.1.3 Approaches



Figure 21 TANAJIB APPROACHES AND HARBOR

- 13.1.3.1 Vessels approaching Tanajib Port will normally do so from the East, utilizing the Tanajib East Channel, which transits Saudi Aramco's Manifa Field and is located to the North-East and South-East of the Port.
- 13.1.3.2 Vessels are only permitted to cross pipelines between the beacons listed in 13.1.3.4 below. Failure to abide by this requirement will be considered a violation and the strongest disciplinary action will be taken.

13.1.3.3 Alternatively, vessels south-bound out of Safaniya may approach Tanajib via the Tanajib North Channel. In either case Masters should be aware of the numerous shoal areas in the vicinity and exercise caution during their approach.

13.1.3.4 There are three (3) trenched pipelines that traverse the approach channels to Tanajib Port these are:

- a) Pipeline crossing on a NE/SW axis between beacons TE 6 and TE 8. This pipeline is 'Trenched' in the channel with a clearance depth over the top of the pipeline of 8.3m at LAT.

Note: this pipeline is NOT 'Trenched' outside the limits of the channel.

- b) Pipeline crossing on a NW/SE axis between beacons TE 4 and TE 6. This pipeline is 'Trenched' in the channel with a clearance depth over the top of the pipeline of 8.8m at LAT.

Note: this pipeline is NOT 'Trenched' outside the limits of the channel.

- c) Pipeline crossing on a E/W axis between beacons TN21 and TN22. This pipeline is 'Trenched' in the channel with a clearance depth over the top of the pipeline of 8.0m at LAT.

Note: this pipeline is NOT 'Trenched' outside the limits of the channel.

13.1.3.5 Tanajib Harbor Inner Channel is dredged to a depth of 8.0 meters. Port Hand/Starboard Hand Beacons are 200m apart. Consecutive beacons on each side are approximately 100m apart. A minimum depth of 8.0 meters is dredged for the inner harbor and basin.

13.1.3.6 'Two Way' traffic for all power driven vessels is permitted during normal operational and weather conditions except as in 13.2.9.

13.1.3.7 During 'Two Way' traffic situations, vessels utilizing the Tanajib Inner Channel will follow the International Regulations for the Preventing Collisions at Sea and proceed on their starboard side of the channel, i.e. north of the centerline when entering Tanajib and south of the centerline when departing Tanajib.

13.1.3.8 Vessels arriving at the Inner Channel Entrance will not impede vessels departing the Inner Channel.

13.1.3.9 The Inner Channel is restricted to 'One Way' traffic for:

- a) Wind speeds exceeding 20 knots.
- b) Restricted visibility (less than 1.0nm)
- c) All movements of Self-propelled barges (e.g. Arabiyah class).
- d) All towed cargo barges, which in addition must have a tail-tug in attendance.
- e) All Saudi Aramco fuel barges.

f) Hours of darkness.

13.1.3.10 The Port of Tanajib is to be closed to traffic and all vessel movement when wind speeds exceed 35 knots or visibility is less than 0.5nm.



Figure 22: Satellite picture of Tanajib harbor.

13.1.4 Tides

13.1.4.1 The depths quoted, as well as those shown on the referenced charts, are in meters based on Lowest Astronomical Tide (LAT) datum. Local diurnal tidal rise is approximately 1.5m (5 feet) in springs and 1.0m (3.3 feet) in neaps.

13.1.5 Winds and Seas

13.1.5.1 Winds in the areas are predominately North-Westerly (32.6% on an annual basis). Winds from the North-East may generate considerable short choppy seas within the harbor.

13.2 TANAJIB PORT REGULATIONS

In addition to the applicable Saudi Arab Government regulations, the following rules and protocols shall be adhered to by vessels operating with the Port.

13.2.1 Speed Limits

13.2.1.1 The maximum speed limit in the channel between Marker T1 and T8 is eight (8) knots. Within the harbor, the maximum speed limit is five (5) knots.

13.2.2 Arrival Protocol

- 13.2.2.1 All vessels bound for Tanajib will give their ETA to Tanajib Port Radar on VHF Channel 11, one (1) hour before arrival at the Tanajib Outer Beacon.
- 13.2.2.2 In addition to ETA, all vessels will advise Tanajib Port Radar of their length, draft and requirements, i.e., diesel, water, repairs, etc. as a part of the ETA notification.

13.2.3 Entrance

- 13.2.3.1 No vessel will enter the channel unless directed by Tanajib Port Control. If berths are not immediately available, vessels will stand clear of the channel entrance, and may anchor within the designated anchorage outside the Port Limits.
- 13.2.3.2 Vessels receiving a berth assignment and proceeding inward will be under surveillance from Tanajib Port Radar and will, within the practice of safe navigation and good seamanship, be guided by instruction given by Port Radar. Outbound vessels will, within the aforementioned limits, be guided by the instructions of Port Radar, until clear of the Tanajib Outer Beacon.
- 13.2.3.3 Vessels with mechanical deficiencies or personnel shortfall are to remain at Manifa anchorage until a Risk Assessment has been completed and the vessel is permitted to enter by Port Control.

13.2.4 Vessel Movement Within the Port

- 13.2.4.1 Surveillance and guidance by Port Control shall continue throughout all vessel movements within the Port. The Master remains solely responsible for the safe navigation of his vessel, and shall abide by International Navigation Rules and Conventions.
- 13.2.4.2 Self-propelled jack-up barges, rigs and barges will have the right of way when using the channel. No other vessel movements will be permitted while the above are traversing the channel between T1 and T8.
- 13.2.4.3 Vessels will move from one berth to another only as instructed by Port Control.

13.2.5 Communications

- 13.2.5.1 Vessels berthed alongside wishing to communicate with shipping agents, contractors or shift coordinators may do so by using the telephone installed at berth utility stations.

- 13.2.5.2 All vessels will maintain a 24/hour per day listening watch on VHF Channel 11 for emergency calls. However, Channel 11 is to be used solely by Tanajib Port Control for traffic control only.

13.2.6 Safety

- 13.2.6.1 All vessels will observe all Saudi Aramco Marine Department Instructions regarding safety practices. It is a requirement for any vessel to report any outbreak of fire immediately and to take action to control/contain such fire until further assistance arrives.
- 13.2.6.2 After using a utility station, vessels will ensure that the station is left in a clean, safe and tidy condition. Hoses are to be properly coiled and stowed in the racks provided and all valves firmly closed.
- 13.2.6.3 Tanajib Port gangways are available for embarking and disembarking personnel. Gangways shall be attended at all times. It is always the Masters responsibility to provide safe access to his vessel, irrespective of who provides the gangway.
- 13.2.6.4 Ship's crews working on deck will wear safety hats and safety shoes in addition to any other personal protective equipment required by the activity in which they are engaged. Crew working over water will wear approved life vests and life lines. A safety man will stand by observing all men working over the side.
- 13.2.6.5 All vessels within Port limits must adhere to the Work Permit system as per **MIM 1193.501 Work Permits**.
- 13.2.6.6 No swimming or fishing is allowed anywhere within the Port limits.

13.2.7 Saudi Arabian Government Regulations

- 13.2.7.1 The Saudi national flag shall be flown at all times, and positioned above all other flags. The flag shall be in good condition.
- 13.2.7.2 Attention is drawn to the severe penalties, which will be imposed by the Saudi Arabian Government authorities on any vessel polluting the harbor. No garbage, oil or other visible discharge is permitted.

13.2.8 Crossing Trenched Pipelines

- 13.2.8.1 When crossing the three (3) trenched pipelines as listed in 13.1.3.4 the following maximum speeds are to be observed:

- Maximum draft up to, and including 5.0m – 10 knots
- Maximum draft up to, and including 5.5m – 7 knots
- Maximum draft up to, and including 6.0m – 5 knots

13.2.8.2 Vessels with drafts in excess of 6.0m, but less than 7.0m are to request permanent written dispensation from the Rig Move Group 48 hours prior to crossing these pipelines for the first time. One (1) hour prior to crossing any of the three specified pipelines the vessel is to contact Tanajib Port Control outlining the excessive draft and the dispensation letter number. Pipelines are to be crossed with tide LAT + 1m and maximum speed 5.0 knots. All vessels with draft in excess of 6.0m are to transit between the channel beacons at mid-point to maximize the depth of water available.

13.2.8.3 The time and under keel clearance when passing over these pipelines is to be recorded in the Deck/Bridge Logbook.

13.2.8.4 Vessels of drafts in excess of 7.0m are not permitted to cross the specified pipelines until the Rig Move Group have assessed the situation on a case by case basis. At least 48 hours' notice is required prior to the vessels arrival at the pipelines.

13.2.9 Handling of Floating Objects

13.2.9.1 Vessels sighting floating objects which are, or may be, a danger to Navigation or to Saudi Aramco facilities will:

- Report the sighting to Tanajib Port Control.
- Keep well clear of the object at all times.
- Give the position of the object and its likely course.
- Specify the size of the object and the material it is made from, if possible.
- Standby in the location, keeping well-clear of the object and monitor its movement.
- Await further instruction.

13.2.9.2 Tanajib Port Control will:

- Communicate the information given from the vessel, to Offshore Security.
- Liaise between the vessel and Offshore Security and assist as required.

13.2.9.3 Objects should not be loaded onboard a vessel, or taken in tow, without specific instruction from the Duty Superintendent.

- 13.2.9.4 Vessels with unidentified objects on board, or in tow, will anchor outside Tanajib Port limits until Tanajib Port Control gives specific instructions to enter the Port limits.
- 13.2.9.5 Vessels with unidentified objects on board, or in tow, will only proceed to Tanajib Pier after direct instruction from the Tanajib Marine Operations Division Superintendent.
- 13.2.10 Repair to Vessels or Entering of Vessel's Tanks
 - 13.2.10.1 Repairs to vessels, while alongside the pier, are not allowed without obtaining permission from Tanajib Port Control. Saudi Aramco Work Permit Procedures will be followed.
 - 13.2.10.2 Before entering any tank, Saudi Aramco Work Permit Procedures will be followed.

ANNEX



ANNEX A

Offshore Support Vessel Bridge Procedures at Offshore Installations

Introduction and Purpose

Safe operations alongside offshore installations are critical. Vessels and installations, the staff onboard both and the environment are potentially at risk. Individuals at all levels must recognize this and act accordingly. The impact of failures can be serious.

The purpose of this Annex is to ensure the safety of the vessel, installation, those onboard both and the environment during operations within the safety zone of the installation. It applies primarily to offshore support vessels intending to perform cargo transfer at drilling rigs.

This procedure deals primarily with the shiphandling aspects of the operation. Cargo and anchor handling operations are dealt with elsewhere within these guidelines.

Drilling rig staff will not apply pressure on shiphandlers to come alongside or carry out operations which the shiphandler considers to be unsafe.

Prior to safety zone entry

See Annex B – 500m Safety Zone Checklist

Prior to entry within the safety zone:

- The vessel will have assessed the appropriateness of the weather, tidal and sea conditions for the intended operations over the anticipated period alongside.
- Contact will have been established with the installation and the following items discussed: the above assessment, the intended operations, concurrent operations (e.g. helicopter flights) and other relevant items.
- Request by the vessel to enter the safety zone, if appropriate, following the above communication of information.
- Functional test by the vessel of propulsion units and controls thereof.
- Completion of the attached checklist.
- 100% satisfactory completion of the '500m Safety Zone Checklist' will be entered in the Deck Log Book if appropriate. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7**).
- The time and position of the Vessel on entry into the Oilfield will be logged in the Deck Log Book. (**MIM 1193.006 Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 6**).
- The role of the shiphandler and assistant will be agreed prior to coming alongside.

In the event the vessel is required to wait outside of the safety zone, the vessel should do so down-weather of the installation. Waiting time can be used to test the operation of joystick and if possible DP. If appropriate, training of trainee shiphandlers should also be considered.

Entry into the safety zone and installation approach

A safe and proper approach to an installation can be a complex task. It is amongst the most critical of the tasks demanded of the vessels. To minimize the risk of an incident it must be carefully planned.

During the planning stages and during the approach all non-essential tasks should be stopped, delegated etc. Other crew members should be reminded not to interfere during the planning or the approach unless it is essential.

Planning of Installation Approach

Good planning will assist greatly during the approach and during cargo operations. At least the following factors that should be taken into account:

- Machinery tests.
- Type of installation: jack-up rig, semi-submersible, etc.
- Direction of approach to the drilling rig.
- Position of other vessels or installations in the vicinity i.e. standby or dive vessels, rigs.
- Changeover from forward to aft console position.
- Location of crane(s) on installation.
- Direction of and prevailing weather conditions.
- Tidal conditions.
- Orientation of installation.
- Catenaries of anchor wires if applicable.
- Planned cargo operations - i.e. deck or hose operations. *Anticipated changes in weather conditions should be taken into account and cargo operations planned accordingly.*
- Location of cargo on deck.
- Location of bulk discharges.
- A contingency plan in the event the approach does not happen as planned.

Approaches are to be planned such that:

- The vessel does not approach a rig/barge head-on. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 7*).
- The vessel does not have to turn in towards the installation.
- If the changeover from forward to aft control does not occur as anticipated there is space for the shiphandler to regain control of the vessel without risk of the vessel contacting the drilling rig.

Check the plan prior to executing it.

The approach

1. Two persons should be on the bridge during the approach.
2. The maximum speed for any Marine Vessel approaching within 100meters of an Offshore Structure or Rig is 0.5 knots. (**MIM 1193.006** *Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7*).
3. The use of 'auto-pilot' is prohibited within the 500meter safety zone. (**MIM 1198.002** *Operating Procedures for Rig Supply and Standby Vessels, Section 7*).
4. Changeover of control from forward to aft console is to occur at a safe position. Main engines are to be brought to idle all thrusters are to be brought to idle, rudders and propulsion units are to be brought to midships position.
5. At a 'Safe' distance from the drilling rig, no closer than four vessel lengths, the Master will stop the vessel in the water, to ascertain wind and tide effect on the vessel at that location
6. The vessel is to be backed up to and brought beam on to the installation at a safe speed into the 'set-up position', at least 50M from the installation.
7. Vessel to be settled in the 'set-up position' to allow the vessel Master to further ascertain and become attuned to the weather, tidal and sea conditions.
8. Once the Master is satisfied that the intended operations can be carried out safely the vessel should approach the installation.
9. While maneuvering in towards the drilling rig the Master will ensure that a Safe Exit/ Emergency Abort route remains clear. If there is any doubt that the Safe Exit/ Emergency Abort route may be compromised, the Master will safely abort the maneuver until such time that the vessels Safe Exit/Emergency Abort route is clear.

Operations Alongside

Once alongside the shiphandler and his assistant should continue to monitor:

1. The weather, tidal and sea conditions
2. Visually, the position of the vessel in relation to the installation.

If the Master of the Vessel determines that a 'Safe Supply Operation' cannot be conducted at the drilling rig location because of weather conditions or vessel performance, he will inform the drilling rig and the Logistics Team. The Master of the vessel will wait until weather conditions abate and safe operations can commence, or proceed to another drilling rig location where weather conditions permit supply operations to be conducted safely. (**MIM 1193.006** *Marine Vessel Requirements for Maneuvers within the 500m Safety Zone of all Offshore Structures and Rigs, Section 7*).

The shiphandler must be ready at all times to change modes of operation e.g. from DP to joystick, joystick to manual in the event of an equipment failure.

The assistant should be ready to take over the shiphandling of the vessel in the event of the shiphandler having to be relieved (comfort breaks, illness etc.).

The assistant will normally: co-ordinate communications with the drilling rig and vessel deck, note load or discharge of deck cargo, documentation.

Handover between the shiphandler and assistant should be carefully coordinated.

In the event of an emergency the senior shiphandler should take over control of the vessel. Termination of operations must be considered and the installation advised.

At watch changeover times the oncoming watch must allow themselves time to become accustomed with the operations in hand and the weather, tidal and sea conditions.

Moving from one position to another at the installation

The vessel may be required to move from one position to another at the installation for a number of different reasons: location of cargo on deck, location of where cargo is to be placed on installation, location of hoses on installation, changes in weather, tidal and sea conditions, etc.

When moving from one position to another, particularly if changing the aspect of the vessel to the installation or the weather, tidal and sea conditions, shiphandlers need to repeat the initial setup and consider, at least, the following:

- The intended route and potential hazards (anchor wires, installation propulsion units, etc.)
- Whether to transfer from DP/joystick into manual and back again and the hazards associated with this operation.
- The tidal, weather and sea conditions at the new intended location and the affects this will have on the vessel.

ANNEX B

Check-list for all Marine Vessels Prior to Entry into the 500m Safety Zone

CHECKS TO BE CARRIED OUT BEFORE ENTERING 500M SAFETY ZONE		Status Yes / No		Comments
1	Clear communication channel(s) established between all parties			
2	One hours notice given prior to arrival at location to confirm cargo requirement and location peculiarities.			
3	Updated Large-scale Navigational chart is in use.			
4	Sea/weather/current conditions are acceptable for a safe operation.			
5	Limitations due to sea/weather/current conditions established.			
6	Safe direction of approach toward offshore structure.			
7	Bridge and Engine room manned in accordance with requirements.			
8	Auto Pilot off & Manual steering tested on both forward and aft consoles.			
9	All manoeuvring and steering gear systems tested including changeover between control positions and manoeuvring modes.			
10	Emergency manoeuvring systems tested.			
11	Working side confirmed with installation.			
12	Subsea installations (pipelines and cables) and proximity of hazards locations confirmed			
13	Loading/Discharging Cargo operations confirmed.			
14	Manoeuvring mode during the operation to be agreed.			
15	On-going and/or planned activities within 500 m zone confirmed between the rig/field services and Vessel.			
16	Permission granted to enter the 500m zone.			
17	Final approaching heading designated with an identified Escape Route should a failure/emergency arises during final approach.			
18	Final approaching speed over the ground within 100m is Safe Speed.			
19	Mooring ropes confirmed in satisfactory condition by deck Crew.			
20	Once safely moored, Radar (S-band), MF & HF transmissions ceased.			
21	No hot work/smoking on deck within 500 m zone.			
22	Deck Crew Supervision established, crew aware of operation.			
CHECKS TO BE CARRIED OUT BEFORE DEPARTING LOCATION				
1	All propulsion and steering gear systems including control change over methods to be tested prior to letting go.			
2	Current/Wind/Wave Conditions confirmed; effects on safe unmooring and anchor aweigh confirmed.			
3	Vessel to be maneuvered well clear of Installation before changing mode.			
4	All controls set to neutral position before changing mode.			
5	Voyage Plan completed.			

ANNEX C

Hand Signals for Crane Operations



Start operations



Stop



Emergency stop



Hoist



Inch the load



Lower



Lower slowly



Jib down



Jib up

ANNEX C (Continued)
Hand Signals for Crane Operations



Extend jib



Retract jib



Slew left



Slew right



Travel left



Travel right



Travel to me



travel from me



Cease operations

ANNEX D

Hoses and Connections

These notes are intended to provide a quick reference guide to the supply, storage and use of Bulk Loading Hoses. They reflect the latest equipment specifications and, with 'best practice' input from various offshore areas which should be considered the minimum standard for offshore bulk loading hoses.

GUIDELINES

Drilling rigs are recommended to order 'Type Approved Bulk Loading Hoses to UKOOA Color Coding'. This will assure use of a quality product to the recognized standard and color coding.

Hose Use

Hoses are supplied for the bulk transfer of the following fluids:

Potable Water	Diesel	Brine
Oil Based Mud	Base oil	Barite
Drill Water	Cement	Specialist Chemicals

Hose sizes

The majority of hoses are supplied in 4" diameter, with the exception of the cement and barite hoses that tend to be supplied in 5" diameter.

Hose construction and length

The standard hoses are of softwall construction, however hardwall and heavy duty hardwall hoses are also available for a number of fluids hoses. The hose assemblies are normally supplied in 18.3m lengths but can be manufactured to other lengths as required.

Color coding

A color chart giving details is shown at the end of this Annex.

Hose quality and identification

All hose assemblies should be supplied 'Type Approved'. Each individual hose assembly should have a unique identifier number stamped on the end connection, giving the following information: manufacturer's logo, hose type, month and year of assembly, working pressure in bar and unique serial number.

Hose lifters

Hose Lifters are supplied as items of certified lifting equipment. There are various types on the market, however the lightest and easiest to handle are recommended.

Unions

Hammer lug unions are generally used to join hose sections together. It is important that the union size and pressure rating is suitable for the hose service.

Flotation

Flotation Collars can be of the 'lace-on-jacket-type' or made from polystyrene moulded section. The latter are banded onto the hose and all collars have a highly visible color. The minimum number of floats per 18.3m hose section are given below:

Hose Service	Hose Size	Floats per Hose Section
Diesel	3in	4
	4in	4
Potable/drill water	3in	4
	4in	4
Oil-based mud	3in	10
	4in	9

Lace-on collars should be secured using manila rope rather than manmade fibre to avoid slippage. The rope should be secured to the hose, threaded through the jacket eyelets and finally tied off on the hose at the other end. Self-floating hoses do not require to be fitted with floatation collars.

Weak Link

Weak Link, Self-Sealing Couplings (Breakaway Couplings) are also available for 4" hoses. The function of these items is to avoid over-tensioning or even breaking the hose and therefore having to discard the complete length of hose string. Spills from this type of assembly are avoided by the self-sealing action of the coupling.

Hose Testing and Dispatch

All hose sections should be hydro-tested to at least 1.5 x Working Pressure on assembly, to ensure that hose assembly is tight and does not leak.

New and Unused Hose Storage

On delivery, hoses are rolled up tightly with one end connection in the middle, then shrink wrapped and laid flat. Wherever possible, hoses should be stored flat, out of direct sunlight and minimizing any contact with water. Ultra violet radiation and kinking during storage will shorten the projected life of a hose considerably.

Hose String Assembly

New hose assemblies should be made up on deck rather than by hanging from a crane and should be made up as per manufacturers procedures/guidelines. When a section of hose is to be replaced, it should be inserted and couplings secured whilst free from tension. After couplings are fully tightened the assembly should be leak tested. If satisfactory, the couplings should then be marked with a paint line to indicate any subsequent movement during a visual inspection.

Bulk Operations

Any bulk transfer operations should only take place after all personnel involved are clear on their roles and responsibilities, in particular those persons monitoring tank levels and setting lines. In any event, Bulk transfer operations should follow written procedures and a dedicated checklist. A sample checklist is contained in Appendix K.

In Service Inspection

During operations, inspection of hoses is primarily by 'close visual inspection' of the entire hose length, paying particular attention to the end terminations.

Close visual inspection means a visual check of the entire external area of the flexible hose assembly paying particular attention to blisters, deep lacerations or abrasions exposing inner core or fabric, unravelling of the outer cover, surface cracking and misalignment of coupling paint marks. Flotation collars should be secure and in the correct position (see 13.10).

In Service Leak Testing

Leak testing should be carried out whenever a component of the assembly is changed to confirm the integrity of the connections. Potable water should be used to carry out leak tests wherever possible. Leak testing should be conducted on the complete hose assembly wherever possible and should consist of:

- Hose assembly hung off or laid on deck.
- Blank end cap fitted at one end.
- Hose filled with water.
- Pressurize to circa five (5) bar sufficient to indicate a leak.
- Hold for five minutes and visually inspect complete length.
- If all okay, drain assembly to oily drains system.
- Repair or replace as needed, re-test and return to service.

The use of compressed gas such as air or nitrogen for any form of leak or pressure test is not permissible because:

- Large volumes of pressurized gases are dangerous.
- Hoses are not designed for pressurized gas.
- Leaks in hydrocarbon hoses can produce a flammable mist.
- Pinhole leaks are not always detected.

In Service Hose Hanging Arrangements and Deployment

To avoid hand injuries all hoses should be suspended in arrangements that avoid all sharp bends and protrusions wherever possible. Slings used for hanging off bulk hoses should be connected to hard couplings thus avoiding cutting into the body of the hose. Hose lifters are available for fitting at hose connection points. Hoses should be left hanging clear of the sea to avoid undue movement in stormy or poor weather conditions and immersion in seawater, which degrades the hose fabric. Potable water hoses should have an end cap fitted to prevent seawater contamination of the hose when stowed.











Before deploying hoses the end caps, where fitted, should be removed by the installation and retained there.

Supply Vessels etc.

The supply vessel should position itself ready to receive the hose. The drilling rig Crane Operator must then lower the hose to the vessel, holding the hose against the ship's side and at a height that allows the crew to catch and secure the hose to the vessel's side rail, keeping the hose end clear of the crews' heads. Once secure, the hose end is lowered inboard of the rail and the crew disconnects the crane hook. When clear, the crew will connect the hose to the appropriate connection on the ship's manifold. Uncoupling is the reverse of the above procedure.

Vessel crews should be reminded that hose couplings should, whenever possible, avoid contact with the ship's structure and to monitor the integrity of the couplings by visual inspection of the painted line on the couplings, where applied. Note that in marginal weather greater care than normal is needed by the vessel to avoid over running the hose especially if deck cargo is also being worked. Consideration should be given to working bulk only at this time.

Below is the color coding to be used for the Hose End Coupling (color refers to coupling and not hose) which is passed to the supply vessel.

HOSE APPLICATION	COUPLING COLOR	CONNECTION	
DRY CEMENT	YELLOW		
DRY BARITES	ORANGE		
POTABLE WATER	BLUE		
DIESEL / FUEL	BROWN		
BASE OIL	WHITE		
DRILL WATER	GREEN		
OIL BASED MUD	BLACK		
BRINE	RED		
GLYCOL	PURPLE		
SCALE INHIBITOR	NO COLOR		

ANNEX E

Cargo Manifest SA 7106

MATERIAL MANIFEST Saudi Aramco 7106 (10/89)		75- *****		From TANAJIB		Wednesday, August 20, 2014			
SHIPPED TO:		Rig Name		WELL NO.		SFNY-****			
BY M/V		Vessel Name		Date		Wednesday, August 20, 2014			
WELL HEAD EQUIPMENT									
Landing Base		Casing Spool		Tubing Spool					
X-Tree		Casing Hanger		Tubing Hanger					
CASING & TUBING									
ITEM NO.	CASING DESCRIPTION	OUTBOU NO.	REMARKS	DRSS #	Request Date	WELL #	QUANTITY ORDERED (FT)	QUANTITY RECEIVED (JTS)	LOCATION
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
ITEM NO.	DESCRIPTION	DC NO. or PO NO. WEIGHT	DRSS OR TICKET#	DATE RECEIVED AT TANAJIB	REQUIRED DATE	QUANTITY			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
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38									
39									
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42									
43									
44									
45									
<Finished Loading>									
<<Shipped By>>									
Dispatcher (TH)		Received by (RIG)							
Received By:		Date							

ANNEX G

SBV Weekly Drill Log Sheet

FiFi Class AHTSS Off Ship Fire Fighting and Rescue Systems Weekly Exercise Log Sheet

Exercise date:		Vessel:	
Start time		End time	

FiFi Equipment Preparedness

Port Pump operation		Stbd. Pump operation	
Pump discharge pressure		Pump discharge pressure	
FiFi water monitor inlet pressure		FiFi water monitor inlet pressure	

Port FiFi water monitor operation			Stbd. FiFi water monitor operation		
	Yes	No		Yes	No
Jet straight stream			Jet straight stream		
Spray pattern			Spray pattern		

Port FiFi water monitor movement			Stbd. FiFi water monitor movement		
	Yes	No		Yes	No
Full horizontal movement			Full horizontal movement		
Full vertical movement			Full vertical movement		
Remote control operational all functions			Remote control operational all functions		

Port protective water spray system			Stbd. protective water spray system		
	Yes	No		Yes	No
Protective spray nozzle operation			Protective spray nozzle operation		
Pump discharge pressure			Pump discharge pressure		

Open Sea Rescue System

FRC Launch Time		Victim Rescue Time		Victim Transit Time	
-----------------	--	--------------------	--	---------------------	--

Remarks/Improvements to exercise:

Vessel Captain _____

Chief Engineer _____

ANNEX H

Security Incident/Threat Offshore Notifications Checklist

Vessel actions in any Security Incident/Threat Offshore

Immediately do the following:

- Inform nearest Marine Coordinator (Tanajib Port Control, West Pier Control, etc...):
- Inform Rig Foreman(If assigned to an Offshore Drilling Rig):
- Inform Company DPA (Designated person Ashore):
- Implement ISPS Ship's Security Plan (Contractor Vessels):
- Maintain Radio Watch in case of further instructions (from Rig, Port Control etc.):
- Do not attempt to initiate contact/communication with source of Security Threat:

Take necessary actions to ensure vessel and crew safety is maintained at all times.

Subsequent Notifications/Actions by Marine Shift Coordinators

Immediately do the following:

- Inform Offshore Security :
- Inform Marine Operations Division responsible for the Vessel:
- Inform Marine QA & VI Unit:
- Inform Weekend Superintendent:
- Record the time, name of sender and content of each message Received:
- Record the time, name of receiver and content of each message Sent:

Subsequent Notifications/Actions to be taken by Marine Operations Division or Weekend Superintendent

Immediately do the following:

- Inform Manager Marine Department:
- Ensure Offshore Security are fully informed :
- Provide Vessel with necessary instructions and actions to be taken :

NOTES:

- The following information, at a minimum, shall be reported:
 - Type of incident: Security Incident of Threat
 - Time and date of incident onset
 - Location of incident: Position Lat. & Long. and/or name of area (e.g. Oilfield)
 - Location of nearest Offshore Security Boat

All incident notifications and reporting shall be documented and records maintained.

**RECORD ALL INFORMATION AND
THE TIMING OF ALL REPORTS SENT OR RECEIVED
IN THE LOGBOOK**

ANNEX I

Tank Cleaning Checklist

TANK CLEANING CHECKLIST				Checklist No:			
				Vessel Name:			
				Vessel Permit No:			
Reason for Entry							
Tank No's							
Confined Space Content							
SAFETY CHECKS							
1	Has enclosed space been thoroughly:	Yes	N/A		Hazards:	Yes	N/A
1.1	Depressurised			7.1	Noise		
1.2	Ventilated (by natural/mechanical means)			7.2	Toxic		
1.3	Drained			7.3	Chemical		
1.4	Isolated by - Blankg			7.4	Corrosive		
	- Disconnecting			7.5	Explosive		
	- Valves			7.6	Flammable		
1.5	Steamed			7.7	Electrical		
1.6	Water Flushed			7.8	Static Electricity		
1.7	Inert Gas Purged			7.9	Fall from Height		
1.8	Tank Appliances Electrically Isolated and Locked			7.10	Overhead Hazards		
1.9	Opened tank hatches guarded			7.11	Potential Dropped Objects		
2	Tank Prime Mover has been:	Yes	N/A	7.12	Entrapment		
2.1.1	Electrically isolated and locked (All stations, wheelhouse engine room etc.)			7.13	High Pressure Jetting		
2.1.2	Mechanical motive power isolated and locked (All stations, wheelhouse engine room etc.)			7.14	Suction		
3	Vessel Machinery — Main Engines, Shafts Generators etc.	Yes	WA	7.15	Trip Hazards (Specify)		
				7.16	Hot Surfaces		
3.1	Agreed isolation of vessel machinery (All stations, wheelhouse engine room etc.)			7.17	Other		
				8	Protective Equipment:	Yes	N/A
3.2	Agreed change of status, start-up procedure			8.1	Eye Protection (Specify)		
4	Other Considerations:	Yes	N/A	8.2	Face Shields		
4.1	Material Safety Data Sheets available			8.3	Respiratory		
4.2	Annex A Analysis Sheet			8.4	PVC Gloves		
4.3	Suitable Access / Egress provided			8.5	Safety Boots		
4.4	Standby Personnel detailed			8.6	High Pressure Jetting Boots		
4.5	Lifeline / Safety Harnesses / Rescue Hoist			8.7	Wet Suit		
4.6	Breathing Apparatus			8.8	Full Chemical Protective Clothing		
4.7	Means of communications tested OK			8.9	Breathing Apparatus		
4.8	Area free of flammable materials			8.10	Head Protection		

ANNEX I (Continued)

Tank Cleaning Checklist

4.9	Area free of ignition sources			8.11	Ear Protection	Yes	WA	
4.10	Work time / Fatigue			8.12	Other			
4.11	Clear working area			9	Emergency Procedures:			
4.12	Illuminations			9.1	Muster Points Identified			
4.13	Visibility of Hoses			9.2	Escape Routes Identified			
4.14	Other work that could cause hazard			9.3	Alarms Understood			
5	Tool Box Talk:	Yes	N/A	9.4	Location of fire-fighting and first aid equipment			
5.1	TBT conducted with ALL applicable personnel			9.5	Contact No's:			
5.2	Special Training / Briefing required							
5.3	Other							
6	Plant Required:				Emergency Services:			
6.1	Compressor	6.2	Safety Barriers/Signs	Vessel Bridge				
6.3	Pressure Washers	6.4	Lighting	Base Operator				
6.5	Vacuum Tankers	6.6	Air Driven Pumps	Tank Cleaning Contractor				
6.7	Jetting Lance Baffles	6.8	Others (Specify):					
10.	Other Requirements / Limitations:							
11.1	Ongoing Gas Monitoring Required:	Yes	No	11.3	11.3 Competent Analyst(s) required)	Yes	No	
11.2	Frequency of Ongoing Monitoring	30mn	1hr	2hr	Other - specify			
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		

ANNEX J

Oil Contaminated Cargoes Analysis

Good Practice - Oil Contaminated Cargoes, for Transportation by OSV

TO BE COMPLETED AND PROVIDED TO OSV MASTER PRIOR TO BACK LOADING.

APPENDIX 2 ANALYSIS FORM

Sample Description	
Sample Reference	

Vessel		Date		
Offshore Asset		Producer		
Total number of Barrels		Waste Note		
Component name	Value	Units	Method	MSDS Available
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
		% volume	N/A	
pH			pH Meter	
Salinity (Chloride) (mg/l)		mg/l	Titration	
Flash Point (Oil Fraction)		°C	Closed Cup Flash Point	>60°C
Base Oil Flash Point		°C	Closed Cup Flash Point	From MSDS
Other low Flash point chemical		°C	Closed Cup Flash Point	From MSDS
Gas Test (H2S)		Mg/l	Gas Meier	Zero mg/l
Gas Test (LEU)		%		<25%
Gas Test (Oxygen)		%		
Water		% volume	Retort	
Oil Content		% volume	Retort	
Solids		% volume	Retort	
Bulk Specific Gravity		S.G.		<2.5

Appearance	
Odour	
Conclusions	
Analyst (print name)	
Analyst signature	
Date	

ANNEX K

Bulk Transfer Checklist

Wet Bulk Transfer Checklist

Pre-Start Check List PORT		Pre-Start Check List OFFSHORE	
Type & quantity of product(s) to be transferred, confirmed and MSDS available		Type & quantity of product(s) to be transferred, confirmed and MSDS available	
Allocate tanks to product		Order of discharge confirmed, if more than one	
Confirm transfer rate and max. allowable rate per product		Confirm transfer rate and maximum allowable rate per product	
Topping off procedure agreed		Emergency stop procedure agreed	
Emergency stop procedure agreed		Tank changeover/topping off procedure agreed	
Hose(s) confirmed as fit for purpose and of sufficient length		Confirm notice required to stop cargo	
Hose(s) connected to correct coupling(s)		Confirm whether vessel or installation stop	
Vessel springs tensioned to limit ranging		Slings and lifting arrangement satisfactory	
Communications procedure established for transfer, including agreement on central control point, i.e. bridge		Hose(s) visually inspected and found suitable	
Appropriate pollution prevention equipment deployed as SMPEP		Hose(s) connected to correct coupling(s)	
Scuppers plugged if hydrocarbons to be transferred		Communications procedure established and agreed for transfer	
All Hot Work Permits withdrawn if hydrocarbons to be transferred		Appropriate pollution prevention equipment deployed as per SMPEP	
Watch established on manifold with suitable communications in place		Underdeck lighting adequate for task in hand	
Lines set ready for cargo transfer		One person appointed to sight hose(s) and advise Master of position	
Tank monitoring system proven		Lines set ready for transfer	
		Crane Operator and both drilling rig and vessel deck crews close at hand	

ANNEX K (Continued)
Bulk Transfer Checklist

Wet Bulk Transfer Checklist

Transfer Check List PORT		Transfer Check List OFFSHORE	
All communications to be routed via control point which should be vessel bridge		Start transfer slowly until cargo confirmed as entering correct tank(s)	
Start transfer slowly until cargo confirmed as entering correct tank(s)		If fuel to be transferred, line checked for leaks at start up	
Volume checks conducted at regular intervals with receiver/provider		Volume checks conducted at regular intervals with receiver	
All personnel involved in transfer in regular contact		Cargo Officer can see bulk hose(s) throughout	
Adequate warning given of tank changeover		Adequate warning given of tank changeover etc.	
Rate reduced for topping off			

ANNEX K (Continued)

Bulk Transfer Checklist

Dry Bulk Transfer Checklist

Pre-Start Check List LOADING		Pre-Start Check List DISCHARGING	
No residue remaining from previous cargo and tank (s) dry		Vessel settled in position and ready to receive hose(s)	
Tank air distribution slides are in good condition		Type and quantity of product(s) to be transferred confirmed and MSDS available	
Tank access seals are in good condition		Appropriate tankage on vessel lined up and ready for discharge	
Type and quantity of product(s) to be loaded confirmed and MSDS available		Confirm transfer rate and max. allowable per product	
Tank(s) allocated to product		Emergency stop procedure agreed	
Order of loading confirmed, if more than one product to be loaded		Notice required to stop agreed	
Proper vent line connected to vessel		Confirm whether cargo will be stopped by vessel or receiver	
Confirm loading rate and max. allowable rate per product		Hose Lifting arrangement satisfactory	
Emergency stop procedure agreed		Hose(s) visually inspected and found fit for purpose	
Notice required to stop, agreed		System de-pressurized, ready for hose(s)	
Confirm whether cargo will be stopped by vessel or provider		Hose(s) connected to correct coupling(s)	
Confirm tank(s) and lines are vented to atmospheric pressure		Communications procedure established and agreed for transfer	
Confirm Lines set for cargo		Underdeck lighting adequate task in hand	
Hose(s) connected to correct coupling(s)		Vent position(s) identified	
Hose(s) inspected and fit for purpose.		Cargo Officer appointed to watch hose(s) relative to vessel's stern	
Moorings tensioned sufficiently, particularly springs, to limit ranging		Crane Operator and both installation and vessel deck crews close at hand	

ANNEX K (Continued)

Bulk Transfer Checklist

Dry Bulk Transfer Checklist

Pre-Start Check List LOADING		Pre-Start Check List DISCHARGING	
Communications procedure established for transfer, including agreement on central control point, i.e. Bridge			
Watch established on manifold with suitable communications in place			

LOADING Check List		DISCHARGING Check List	
All communications to be routed via control point which should be vessel bridge		Good vent obtained from receiver before commencing discharge of cargo	
Good vent obtained on start up		Good watch maintained on hose(s) in case of blockage	
Bulk hose(s) and vent checked throughout operation for blockages		Contact with receiver's personnel maintained throughout	
Contact with loading personnel maintained throughout		Lines blown clear to receiver on completion of cargo	
Lines cleared back to vessel		System de-pressurized before hose disconnection	
System de-pressurized on completion, before disconnection		Blank cap(s) fitted to hose end(s) before passing back to receiver	



Marine Department
July 2014