GOMO Chapter 8

Collision Risk Management

Revision History

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

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8 Collision Risk Management

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

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

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

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

8.1 Safety Zones

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

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

8.2 Bridge Team Organisation and Management

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

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

8.2.1 Competencies

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

8.2.2 Distractions

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

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

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

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

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

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

8.2.3 Communication

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

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

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

8.2.4 Situational Awareness

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

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

8.2.5 Awareness of Environmental Conditions

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

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

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

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

8.2.6 Handovers

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

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

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

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

8.2.7 Precautions Against Fatigue

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

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

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

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

8.3 Approaching Location

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

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

8.4 Selection of Station Keeping Method

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

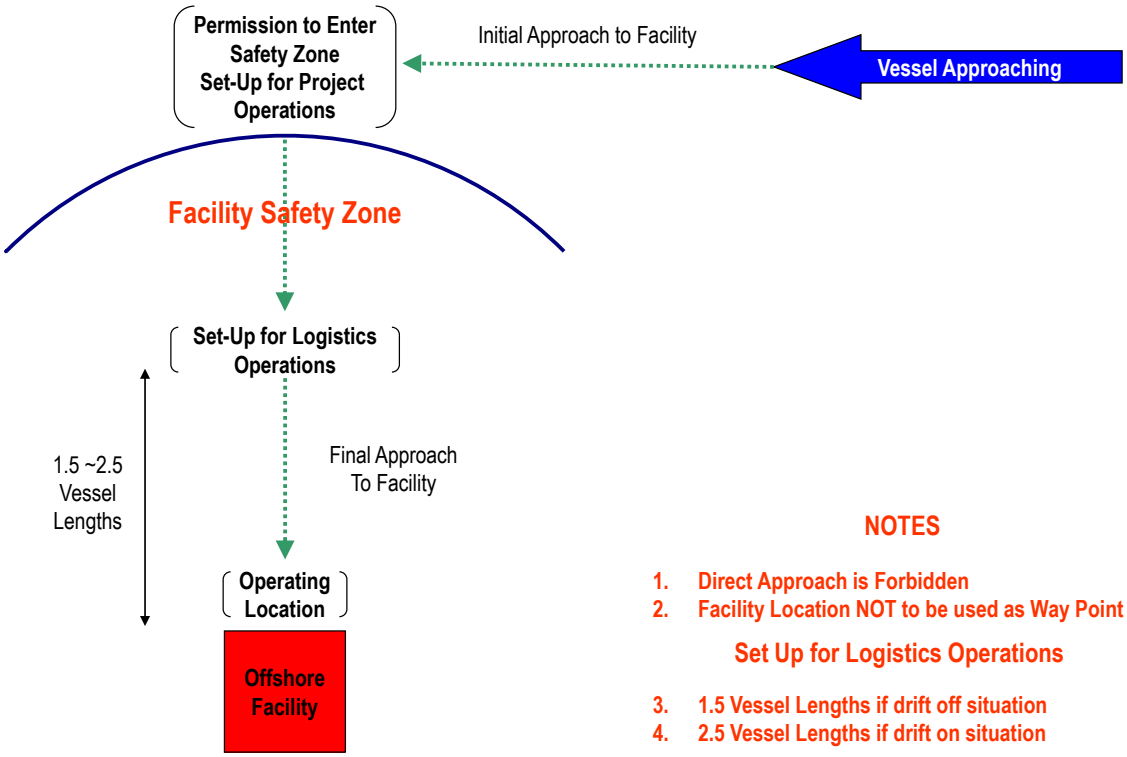

Figure 3: Approach to Facility

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

8.5 Pre-Entry Check Lists

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

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

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

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

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

8.6 Change of Control Station or Operating Mode

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

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

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

Further guidance is included in Section 8.7 of these Guidelines.

8.7 Setting Up Before Moving Alongside

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

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

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

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

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

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

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

8.8 Use of Dynamic Positioning

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

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

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

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

Further guidance is included in Section 7.5 of these Guidelines.

8.9 In Operating Position

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

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

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

Further guidance is included in Section 7.2 of these Guidelines.

8.10 Changes of Operating Location

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

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

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

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

locations.

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

8.11 Weather Side Working

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

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

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

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

8.12 Requests to Stand-By for Further Instructions etc.

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

8.13 Extended/Protracted Cargo Handling Operations

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

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

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

8.14 Departure and Commencement of Passage

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

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

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

8.15 Field Transits

Some offshore developments may consist of several independent facilities.

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

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

8.16 Other Recommendations to Minimise Collision Risk

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