

## Circular - Series V

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### **Guidelines on the implementation of specific measures to ensure a sufficient safety level during anchor handling (AH) operations carried out by supply ships or tugs.**

## 1. Introduction

As a result of the tragic disaster with Bourbon Dolphin west of Shetland on 12 April 2007, the Norwegian Maritime Authority (NMA) decided, on 10 May 2007, to introduce specific measures (immediate measures) for planning and safety management on vessels used for anchor handling, pending the report from the appointed Special Investigation Committee. The immediate measures were communicated in Norwegian for distribution to members of the Norwegian Shipowner's Association on 16 May 2007 and in English to the same organization on 21 June 2007.

As a follow-up of the immediate measures, as well as to ensure a unified implementation of these measures, the NMA, on 7 September 2007, prepared the NIS/NOR Circular 7/2007 titled "GUIDELINES FOR REVISION OF ISM-MANUALS ON SUPPLY SHIPS AND TUGS USED FOR ANCHOR HANDLING REGARDING THE IMMEDIATE MEASURES ISSUED BY NMD."

The Commission of Inquiry into the loss of the "Bourbon Dolphin" on 12 April 2007, submitted on 28 March 2008 the NOU 2008-8 "The loss of the "Bourbon Dolphin" on 12 April 2007" to the Ministry of Justice.

As a result of findings and conclusions in the NOU 2008-8, the NMA has decided to prepare a circular containing guidance on critical measures to be addressed and implemented in organizations responsible for the planning and carrying out of anchor handling operations in which supply ships and tugs are involved.

## 2. The purpose of this circular

In this circular, the NMA has prepared guidelines to be followed by organizations and personnel involved in the planning and carrying out of activities related to anchor handling operations. The immediate measures referred to in the introduction of this circular, which were communicated to the

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industry on 16 May 2007, are included in this circular. Affected parties shall therefore act in accordance with and implement measures included in this circular.

### 3. Scope of application

This circular shall apply to all Norwegian supply vessels and tugs that are designed and equipped to provide anchor handling.

### 4. Definitions

Definitions expressed in the statutory provisions shall apply for the application of this circular.

### 5. Legal basis

The guidelines provided in this circular are based on the following Norwegian laws and regulations issued pursuant to law.

- Act of 16 February 2007 No. 9 relating to Ship Safety and Security (Ship Safety and Security Act) sections 7 and 8.
- Regulations of 14 March 2008 concerning a safety management system on Norwegian ships and mobile offshore units, section 2.
- Regulations of 15 June 1987 No. 507 concerning safety measures, etc. on passenger ships, cargo ships and lighters, section 14.
- Regulations of 15 September 1992 No. 695 concerning the construction of passenger ships, cargo ships and barges, sections 12, 15 and Chapter 8.

### 6. Measures in addition to the immediate measures identified in the letter of 16 May 2007

#### 6.1 ***Calculation and documentation for the use of roll reduction tanks.***

*Legal basis:* Regulations of 15 June 1987 No. 507 concerning safety measures, etc. on passenger ships, cargo ships and lighters, second paragraph of section 14, cf. Regulations of 15 September 1992 No. 695 concerning the construction of passenger ships, cargo ships and barges, section 12 and sixth paragraph of section 15.

Factual information proving that roll reduction tanks are used on a regular basis during AH operations has been obtained.

In the instructions to the master, it must be indicated which consequences the use of roll reduction tank(s) will have on the stability. The instructions (roll reduction instructions) require that anchor handling conditions the vessel uses during anchor handling have been prepared. Based on such conditions, equivalent conditions shall be prepared, where the only difference is that optimal filling level(s) have been entered for roll reduction tank(s). This is to illustrate and make the company, master and crew aware of the stability reductions the use of roll reduction tank(s) will cause. The resulting stability reductions shall appear clearly from the instructions for the use of roll reduction tanks.

## **6.2 Fuel consumption plan with accompanying documentation for fuel oil/water and ballast water.**

*Legal basis:* Section 2 of the Regulations of 14 March 2008 concerning a Safety Management System on Norwegian ships and mobile offshore units, cf. section 7 of the ISM Code cf. the second paragraph of section 14 of the Regulations of 15 June 1987 No. 507 concerning safety measures, etc. on passenger ships, cargo ships and lighters.

For anchor handling vessels, a fuel consumption and ballasting plan shall be prepared and documented which indicates the sequence for how and when tanks should be emptied/filled in order to comply with the stability requirements.

## **6.3 Preparation and documentation of anchor handling procedure**

*Legal basis:* It is provided by section 2 of the Regulations of 14 March 2008 concerning a Safety Management System on Norwegian ships and mobile offshore units, cf. the ISM Code's Rule 7 that key shipboard operations shall be identified by the company which should prepare accompanying plans and instructions, including checklists as appropriate.

For vessels carrying out anchor handling this means requirements for vessel-specific anchor handling procedures which include the vessel's capacities and limitations and requirements for actual risk assessments.

The procedures must include criteria for control limits (attention zones), interruption criteria and plans for the handling of critical situations.

## **7. Measures communicated in letter of 16 May 2007<sup>1</sup> (immediate measures)**

### **7.1 Stability during anchor handling.**

For vessels that are used for anchor handling and which at the same time are utilizing their towing capacity and/or tractive power of the winches, calculations must be made showing the acceptable vertical and horizontal transverse force/tension to which the vessel can be exposed. The calculations must consider the most unfavourable conditions for transverse force/tension and as a minimum include the following:

Calculations must be made for the maximum acceptable tension in wire/chain, including the maximum acceptable transverse force/tension that can be accepted in order for the vessel's maximum heeling to be limited to one of the following angles, whichever occurs first:

- Heeling angle equivalent to a GZ value equal to 50% of GZ max.
- The angle which results in water on working deck when the deck is calculated as flat.
- 15 degrees.

The heeling moment must be calculated as the total effect of the horizontal and vertical transverse components of force/tension in the wire or the chain. The torque arm of the horizontal components shall be calculated as the distance from the height of the work deck at the guide pins to the centre of

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<sup>1</sup> Numberings and references to statutory authorities edited

main propulsion propeller or to centre of stern side propeller if this projects deeper. The torque arm of the vertical components shall be calculated from the centre of the outer edge of the stern roller and with a vertical straining point on the upper edge of the stern roller.

The other loading conditions for the vessel shall be as stated for anchor handling in approved stability calculations and in accordance with prevailing practice with regards to loads on deck and winch reels. The vertical force from the tension shall be included in the loading conditions, upon which calculations of trim and curve for righting arm are based.

Information stating the maximum force/tension in wire or chain, as well as corresponding lateral point of direction according to the calculations, must be communicated to the vessels crew and be displayed next to the control desk or at another location where the navigator on duty easily can see the information from his command post.

The displayed information must be in the form of simple sketches showing the vessel's righting moment curves in addition to a table stating the relevant combinations of force/tension and point of direction which gives the maximum acceptable heeling moment.

## **7.2 Vertical lifting capacity**

The maximum tension in chain or wire during a clean vertical lift without bollard pull, is not permitted to be more than that which is stated for anchor handling (if any) in the approved stability calculations, nor such that the highest transverse force according to the calculations stated in item 7.1 above, are exceeded.

## **7.3 Horizontal bollard pull**

A vessel specific curve must be prepared and arranged showing the maximum available continuous bollard pull (BP) for anchor handling as a function of the total power balance when required capacity to ensure sufficient operation of the winch pumps and side propellers/azimuth-thrusters has been taken into consideration.

It is not permitted to adjust the original stability calculations for reduced BP, cf. second paragraph (a) and (b) of section 43 of Regulations of 15 September 1992 No. 695 concerning the construction of passenger ships, cargo ships and barges.

## **7.4 Towing and anchor handling equipment**

The effect of emergency release on winches and equipment according to the second, third and tenth paragraphs of section 48 of Regulations of 15 September 1992 No. 695 concerning the construction of passenger ships, cargo ships and barges, shall be reviewed. Procedures for unintended situations shall be established, which for each type of equipment will describe emergency release methods, time delays and release speed. The procedures shall be communicated to the vessel's crew and vital information shall be displayed next to the control desk or another appropriate location on the bridge where the navigator on duty easily can see the information from his usual command post.

## **7.5 Planning of anchor handling operations**

Every vessel taking part in anchor handling operations has an obligation to make sure that calculations are carried out and that plans are made clearly showing the loads/forces (tension) that may occur. If necessary, this information must be recovered from the principal.

Such calculations must take into consideration the weight of the anchor lines (chain) in question and the anticipated force/tension or forces which may occur in any phase of the operation and/or which will be required in order to obtain sufficient anchor holding power at preset operations.

Based on the results from item 7.1, 7.2, 7.3 and 7.4 above, verifications must be made that the calculated forces are within the capacity of the vessel.

It must be stated in the operation plan that the anchor handling must be discontinued, the gear and equipment relieved if the vessel is exposed to greater load/forces/tension than anticipated in the plans.

## **7.6 Tandem operations or other joint towing operations**

Every vessel taking part in anchor handling operations, in which tandem- or joint tugging operations are planned, is obliged to make sure that calculations are made showing the loads/forces (tension) that may occur during the operation in question. If necessary, this information must be recovered from the principal.

The calculations must be accompanied by procedures describing the method for ensuring that the individual vessel is not exposed to forces exceeding the capacity of the vessel based on results from item 7.1, 7.2, 7.3 and 7.4 above.

During tandem and joint towing operations, the towing gear must be connected in towing hooks with emergency release or in some other way be arranged so that in case of a breakage in towing line or loss of power/bollard pull in one of the vessels, the other vessels may quickly be disconnected. A communication plan for the operation must be established which in particular ensures an effective and coordinated action in case of any unintended incident.

It shall not be allowed to connect the anchor towing gear directly to a winch on one vessel, unless the vessel in question can handle the load and the dynamic conditions alone, based on the vessel's permissible capacity calculated according to item 7.1, 7.2, 7.3 and 7.4 above.

The operation plan must state that the towing operation is to be discontinued/relieved or emergency released if one of the vessels is exposed to greater forces than anticipated.

## **8. Implementation**

The measures included in this circular are to be implemented immediately. Until the calculations and documentation required to comply with the immediate measures can be presented, a general limitation will apply. Anchor handling operations are to be stopped or relieved when a ship heels to the angle of flooding – i.e. danger of getting water on working deck considering the deck flat. If the relief does not reduce the heeling, the wire or chain is to be disconnected by emergency release.

Yours faithfully

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