

**PARTE II      RULES FOR THE CONSTRUCTION  
AND CLASSIFICATION OF SHIPS  
IDENTIFIED BY THEIR MISSIONS**

**TITLE 48      DIVING SUPPORT VESSELS**

**SECTION 8    NAUTIC AND ELECTRONICS**

CHAPTERS

- A      SCOPE
- B      TECHNICAL DOCUMENTATION
- C      MATERIALS AND MANUFACTURING  
**See Part II, Title 11, Section 8**
- D      BASIC PRINCIPLES FOR INSTALLATION  
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- E      NAVIGATION AID, SIGNALS, AND  
COMMUNICATION
- G      DSV VESSELS WITH DYNAMIC  
POSITIONING SYSTEMS  
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## CHAPTER A SCOPE

### CHAPTER CONTENTS

- A1. APPLICATION
  - A2. STANDARDS AND REGULATIONS  
See Part II, Title 11, Section 8
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### A1. APPLICATION

#### 100. Systems covered by this Chapter

101. The present Chapter contains requirements to nautical and electronic systems necessary for diving support vessels. Such requirements are additional to those of Part II, Title 11, Section 8.

## CHAPTER B TECHNICAL DOCUMENTATION

### CHAPTER CONTENTS

- B1. SCOPE OF THE TECHNICAL DOCUMENTS
  - B2. DOCUMENTS TO PROVIDE
- 

### B1. SCOPE OF THE TECHNICAL DOCUMENTS

#### 100. Submission

101. The documents required in this Subchapter B1 are additional to Part II, Title 11, Section 8, B1.

### B2. DOCUMENTS TO BE PROVIDED

#### 100. Document list

101. The following additional documents are to be provided for approval of RBNA in at least 3 hard copies or in digital files (.pdf format):

- a. Communication system including communication with the diving bell

## CHAPTER E NAVIGATIONAL AIDS, SIGNALS AND COMMUNICATION EQUIPMENTS

### CHAPTER CONTENTS

- E1. NAVIGATIONAL AIDS  
See Part II, Title 11, Section 8
  - E2. LIGHTS AND SHAPES  
See Part II, Title 11, Section 8
  - E3. COMMUNICATION  
See Part II, Title 11, Section 8
  - E4. INTERNAL COMMUNICATIONS
  - E5. COMMUNICATIONS IN DIVING SUPPORT  
VESSELS FITTED WITH DYNAMIC  
POSITIONING
- 

### E4. INTERNAL COMMUNICATIONS

#### 100. On-board Communications

101. A dedicated hard wire intercom should link the Diving Control Position (Diving Supervisor) with the bridge and the Deck Compression Chamber Control position, as well as ROV control.

- a. It should include arrangements such as loudspeakers or headphones for passing instructions to people on deck, for communication between the Diving Supervisor and winch operator and for ensuring that the Standby Diver and Tender can monitor communications with the diver.
- b. A back-up system shall be fitted for the communication system.

102. In particular the crane driver (if existing) should always be able to communicate with the dive control position and the bridge by hard wire. Operating positions should be located to ensure ease of use, and communications equipment should be operable with one hand. A suitable back-up system which need not be hard wired should also be provided.

103. Suitable communications should be provided between Dive Control and operators of auxiliary equipment.

104. Both audio and visual alarm systems should be fitted to provide warning from the bridge to the diving supervisor or a requirement to abandon the dive. This should be repeated, where appropriate, in the senior Diving Supervisor's and Master's cabin. Means should exist to cancel the audio alarm once it has been acknowledged by the Diving Supervisor.

105. The design of all communications arrangements shall consider the likely ambient noise levels.

## 200. Communication with installations

201. Primary and back-up voice means of communications between the Bridge shall be fitted for communication and the appropriate control position on the installation, for communication when diving or in the close vicinity of an offshore installation or other unit.

202. Voice communication between other positions on the ship such as the Dive Control Centre and the installation shall be available, for use when the installation is directly involved with the conduct of the dive, e.g., by use of its crane. It shall be possible to monitor such communications from the bridge.

## 300. Communication with the shore

301. Communication with the shore installations shall be possible for reporting incidents, seeking shore support and conduct of day-to-day operations.

## E5. COMMUNICATIONS IN DIVING SUPPORT VESSELS FITTED WITH DYNAMIC POSITIONING

[Ref. IMCA M 175 – *Guidance on operational communications: Part 1 – Bridge and dive control*].

### 100. Voice Communications

101. Voice communication by a priority system or dedicated channel should be available between dive control and the DP control location. In addition there should be a dedicated system between the control centres of the vessel for its various working scenarios. This system should include DP control, ECR, dive control, ROV control, crane control and other control stations as applicable. There should be a back up to this system which in most cases would be a common internal telephone network. These communications should be checked as part of the location checks made during the initial DP stabilisation period.

#### Guidance

*For good performance of the position control system it is essential that a period of stabilization is used after position is first established and after significant moves or heading changes which may affect the vessel model. The initial stabilization period should be at least 20 minutes; subsequent periods of stabilization should be determined by the circumstances and conditions.*

#### End of Guidance

102. Good liaison between the dive control position and the DP control is essential (Ref. IMCA M 175 – *Guidance on operational communications: Part 1 – Bridge and dive control*) and an open hands-free line with priority is a desirable facility. Each watchkeeper should inform the

other about any change in operational circumstances, either existing or planned. The following lists give an indication of the type of information which should be passed.

- a. Dive control to DP control:
  - a.1. Bell status
  - a.2. Diver status
  - a.3. Intention to use and use of water jetting equipment
  - a.4. Possibility of divers, bell or equipment blanking or moving acoustic reference signals
  - a.5. Requests to move the vessel
  - a.6. Intention to release high volume compressed air subsea
  - a.7. Status of all down-lines
  - a.8. Any situation which is unusual or may need a change to agreed procedures.
- b. DP control to dive control:
  - b.1. Intention to move vessel or change heading
  - b.2. Changes in operational status affecting position control
  - b.3. Any situation which is unusual or may need a change to agreed procedures
  - b.4. Any forecast or actual significant changes in weather
  - b.5. Vessel movements in the vicinity
  - b.6. Intention to handle down-lines of any description, including repositioning taut wire weight
  - b.7. Platform information relevant to operations.
- c. ECR to DP control:
  - c.1. Intention to start or continue work already approved under the permit to work system, and notification of completion. Advice of any electrical or mechanical system intervention which is operationally necessary and could directly or indirectly affect online DP equipment or make stand-by equipment unavailable
  - c.2. Intention to start and stop ancillary air/hydraulic units which may reduce

pressure on DP or diving associated equipment

*Dynamically Positioned Vessels* - section 2.7).

- c.3. Intention to start and stop pumping overboard bilge or ballast water
  - c.4. Intention to start and stop any equipment which may affect the DP control system or power management
  - c.5. Intention to handle equipment which may affect the trim of the vessel
  - c.6. Fault or failures of equipment which may reduce DP capability and/or redundancy.
  - d. DP control to ECR:
    - d1. Request for additional generators or power
    - d2. Vessel on location
    - d3. Divers in water
    - d4. Warning of moves that might require additional power
    - d5. Increasing/decreasing weather conditions
    - d6. Trim and list matters
    - d7. Ballasting requirements
    - d8. Major deck operations for example lifting
    - d9. Request for location checklist to be started.
  - e. Platform to DP control:
    - e.1. Planned movements of other vessels and helicopters
    - e.2. Planned crane lifts or outside platform work which could interfere with the diving operation or position references
    - e.3. Intention to use underwater discharges
    - e.4. Planned blackouts in communications or power and hazardous operations (for example well-tests)
    - e.5. Weather information
    - e.6. Other subsea operations
    - e.7. Other operational or abandoned acoustic beacons or transponders which may be in the vicinity
    - e.8. Mooring line adjustment (for moored platform) (see also IMCA M 103 Rev. I - *Guidelines for The Design and Operation of*
  - f. DP control to platform:
    - f.1. Changes in status of divers
    - f.2. Changes in status of DP system
    - f.3. Intention to perform tasks involving the operation of any hazardous tools or equipment
    - f.4. Vessel movements for example closer to platform or to new work location, major change of heading.
  - g. ROV control to DP control:
    - g.1. Request clearance to launch ROV
    - g.2. ROV in water
    - g.3. ROV at depth
    - g.4. Commence recovery of ROV
    - g.5. ROV on surface
    - g.6. Loss of control or communication with ROV.
  - h. DP control to ROV control:
    - h.1. Clearance to launch ROV
    - h.2. Positions of taut wires and other down-lines
    - h.3. Positions of transponders
    - h.4. Details of obstructions
    - h.5. Movements of the vessel and heading changes
    - h.6. DP alert status.
103. For further information on ROV intervention during diving operations consult IMCA D 010 – *Diving operations from vessels operating in dynamically positioned mode* – and AODC 032 Rev. 1 – *Remotely operated vehicle intervention during diving operations*.
104. Items E5.102.e. and E5.102.f. above assume the vessel is within 500m of an offshore platform or within an area under the jurisdiction of a designated marine controller.
- 200. DP Alert Status System**
201. **Visual and Audible Characteristics**
- a. A system of lights and audible alarms should be provided in dive control, saturation control, air

diving control area, working area, ECR and, where applicable, the ROV or submersible control position, manually activated from, and repeated in, the DP control room. The lights should be:

- a.1. Steady green light to indicate vessel under automatic DP control, normal operational status and confirming the alert status system functional;
- a.2. Flashing yellow light to indicate degraded DP control;
- a.3. Flashing red light to indicate DP emergency.
- b. In addition the distinctive alarm for the red alert should sound in the master/OIM's cabin, operations superintendent's cabin (if applicable) and the senior diving supervisor's cabin in conjunction with the flashing red light.
- c. Provision of a means of acknowledging and silencing the audio and flashing functions of the signals from the receiving positions should be made.
- d. When supporting divers on DP a clear procedure indicating the recommended responses to yellow and red alerts is required. The events that should trigger these alerts should be based upon a minimal number of standard operating status levels reflecting the capability of the DP system to maintain the vessel on station within safe working limits.

#### Guidance

Examples are provided below.

#### Green

Normal operational status (green light). The vessel can be defined as in normal operational status when all the following conditions apply:

- a. Vessel under DP control and DP system operating normally with appropriate backup systems available;
- b. Thruster power and total power consumption is equal to or less than the maximum thrust and power that would be available after the worst single failure;
- c. Vessel's indicated position and heading are within predetermined limits and the worst single failure would not result in safe working limits being exceeded;
- d. Negligible risk of collision exists from other vessels.

#### Yellow

Degraded status (yellow alert). The vessel can be defined as being in a degraded status when any of the following conditions applies:

- a. A failure in a sub-system has occurred leaving the DP system in an operational state (possibly after reconfiguration) but with no suitable backup available, such that an additional fault would cause a loss of position;
- b. Vessel's position keeping performance is deteriorating and/or unstable;
- c. Vessel's indicated position deviates beyond limits determined by risk analysis or HAZOP without simple explanation;
- d. Risk of collision exists from another vessel;
- e. Weather conditions are judged to be becoming unsuitable for DP diving;
- f. Any other condition or circumstance affecting the operation of the vessel which could reduce the status from normal.

#### Red

Emergency status (red alert). A vessel can be defined as in emergency status if either of the following conditions applies:

- a. System failure results in an inability to maintain position or heading control;
- b. Any external condition exists, including imminent collision, preventing the vessel maintaining position.
- c. Onboard this alert is often referred to as 'abandon dive'.

#### End of Guidance

### 300. DP Alert Responses

301. The following diving operational responses would be expected to the change of alert status initiated by the DP operator:

- a. **Green - Normal Operational Status** - Full DP diving operations can be undertaken.
- b. **Yellow - Degraded Status** The diving supervisor should instruct the divers to suspend operations and move to a safe location. The DPO, after consultation with the diving supervisor, should decide if any further action is necessary. If the Diving Supervisor is unable to get clear advice from the DPO he will instruct divers to return to the bell and obtain a seal or to return to the surface as appropriate.

#### Guidance

Flexibility has been provided in this alert response (1994 revision) so that (a) this alert is sounded early rather than late, (b) discussion can take place between senior



*personnel and (c) the safety of diving operations is improved.*

*End of guidance*

- c. **Red – Emergency status The Diving Supervisor should** instruct the divers to return immediately to the bell (or deployment device as appropriate) and obtain a seal. The bell should be recovered as soon as possible after due consideration of hazards involved in the recovery (for example fouling of mooring lines or jacket members).

402. Key DP personnel should use all reasonable means available to limit the loss of position while the divers are being recovered.

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