

**GUIDANCE  
TO  
ORDER NO. 1395  
ON  
THE SAFE PERFORMANCE  
OF DIVING OPERATIONS**

This guidance provides an explanation for the order, its background and goal as well as about the understanding of the provisions. It does not contain legal requirements or regulations as such, but rather directions and good advice.

The guidance has been drawn up by person with wide association with underwater work, such as clients, project supervisors, underwater contractors, contractors, divers, public inspection authorities, etc.

**Rev. 1, 25 March 2014**



## **Applicable Danish diving legislation**

1. Consolidated act on diving operations and diving equipment, no. 69 of 17 January 2014.
2. Order on diving training programmes, no. 1393 of 12 December 2013.
3. Order on the safe performance of diving operations, no. 1395 of 12 December 2013.
4. Order on diving equipment, no. 1394 of 12 December 2013.
5. Order on offshore diving operations and offshore diving equipment, no. 1396 of 12 December 2013.
6. Order on medical examinations of divers, no. 476 of 17 June 1999, as amended by order no. 751 of 25 June 2013.

## **References to other related Danish legislation**

1. Order on safety at sea, no. 654 of 15 June 2010, as amended.
2. Consolidated act on occupational health, no. 1072 of 7 September 2010, as amended, issued by the Ministry of Employment.
3. Order on seafarers' hours of rest, no. 1016 of 16 August 2013, as amended.
4. Order on hours of rest and days off, etc. issued by the Danish Working Environment Authority, no. 324 of 23 May 2002, as amended, issued by the Ministry of Employment.
5. Maritime Labour Convention 2006 (MLC), entered into force on 20 August 2013.
6. Consolidated act on the safety, etc. of offshore installations for the exploration, production and transport of hydrocarbons, no. 520 of 13 May 2013, as amended, also known as the offshore safety act.
7. Order on the obligations of the client, order no. 117 of 5 February 2013 issued by the Danish Working Environment Authority.
8. Order on the obligations of project supervisors and consultants, etc. according to the act on occupational health, order no. 110 of 5 February 2013 issued by the Danish Working Environment Authority.
9. Order on sewage work, etc., order no. 473 of 7 October 1983, as amended, issued by the Danish Working Environment Authority.

## **Various references to non-Danish standards and guidances**

**The Danish Maritime Authority does not assume any responsibility when applying the following, which has not been listed in any order of priority and is not in any way exhaustive as regards what is available on this issue:**

- a. Norsok Standard U-103 Petroleum related Manned Underwater Operations inshore, [www.standard.no](http://www.standard.no).

- b. L 104 ACOP Approved Code of Practice; Commercial Diving Projects Inland/Inshore, Diving Work Regulations 1997, [www.hse.gov.uk](http://www.hse.gov.uk).
- c. ADC – CoP: 001 Code of Practice issue 02-07-2012 Conducting Diving Operations in Connection with Renewable Energy Projects ([www.adc-uk.info](http://www.adc-uk.info), free download).
- d. ADC – GP – 001 issue August 2009 Guidance Procedures Diving from, on or in Close Proximity to Merchant Vessels. Protocol for Isolating Machinery Systems.
- e. IMCA Guidelines; there are guidelines for more or less all types of diving, ROV operations, DP, etc., which are available for free downloading from [www.imca-int.com](http://www.imca-int.com).
- f. The IMCA issues SAFETY FLASHES according to need, [www.imca-int.com](http://www.imca-int.com).

## Guidance for the order on the safe operation of diving operations

In pursuance of section 13, section 14(2), section 18, section 20 and section 24(6) of the act on diving operations and diving equipment, etc. (*lov om dykkerarbejde og dykkermateriel m.v.*), cf. consolidated act no. 936 of 20 July 2010, and section 3(1)(vi) and section 32(8) of the act on safety at sea (*lov om sikkerhed til søs*), cf. consolidated act no. 654 of 15 June 2010, the following provisions are laid down:

### Scope

**Order** Section 1. This order shall apply to diving operations when performed on the Danish territory and continental shelf or from Danish ships and at diving depths of up to 50 metres.

**Order** Section 1(2). The order shall not apply to offshore diving operations, crew members on a foreign ship carrying out diving operations from the ship in question and to persons under the Defence carrying out diving operations as part of their work.

**Guidance** **Section 1(2). Crew members must have signed on in accordance with the regulations of the flag State in this area. If the flag State does not have any regulations in this area, the Maritime Labour Convention (MLC) must be observed.**

**Order** Section 1(3). In connection with diving operations from Danish ships abroad, foreign divers not holding a Danish professional diver's certificate may be used when they do not belong to the ship's crew.

**Guidance** **Section 1(3). The term "professional diver's certificate" is included in the act on diving operations and diving equipment, etc. and can be issued when the diver has passed the training programme as a professional diver at a diving school approved by the Danish Maritime Authority.**

**If diving operations are performed abroad from a Danish ship by the use of foreign divers who do not belong to the ship's crew, the master must ensure that the foreign divers have received training corresponding to the Danish training programme or similar.**

**The HSE in Great Britain has, in connection with its webpage, an overview that compares diver's certificates in great parts of the world. Link: <http://www.hse.gov.uk/diving/qualifications/approved.htm>.**

**In case the foreign divers cannot present any type of satisfactory documentation, they should be rejected since the master will have the overall responsibility for what goes on from “his ship”.**

Order Section 1(4). Diving operations at installations, etc. (offshore diving operations) shall be carried out in accordance with the order on offshore diving operations and offshore diving material.

**Guidance Section 1(4). The definition in section 2(xvi) states the meaning of “installations, etc.”.**

## **Definitions**

Order Section 2. For the purposes of this order, the following definitions shall apply:

Order 1) Dive operation log: An overview where all relevant information about a specific diving operation is recorded.

**Guidance 1) See section 8(5) of the guidance.**

Order 2) Treatment chamber: A duly equipped hyperbaric chamber designed for planned surface decompression and for treating diver’s palsy.

Order 3) Order on the client’s obligations: Order on the client’s obligations issued by the Danish Working Environment Authority.

**Guidance 3) Reference is made to the most recent order in force at any time, currently order no. 117 of 5 February 2013 issued by the Danish Working Environment Authority. Furthermore, order no. 110 of 5 February 2013 on the obligations of project supervisors and consultants, etc. according to the act on occupational health. Both orders contain provisions implementing Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites, Official Journal 1992, L 245/6. Normally, the provisions of the Danish Working Environment Authority are available from the webpage [AT.dk](http://AT.dk).**

Order 4) Mixed gas: Breathing gases other than nitrox with another composition than ordinary air.

<b>Guidance</b>	<p><b>4) Ordinary atmospheric air contains 21±1 % oxygen, cf. EN 12021. All other compositions of breathing gases are considered mixed gases, except from nitrox. In case of an oxygen content above 22% and an equally lower nitrogen content, we are dealing with nitrox. Nitrox 40/60 means nitrox with 40% oxygen and 60% nitrogen.</b></p> <p><b>Examples of mixed gases:</b></p> <ul style="list-style-type: none"> <li>a. <b>Heliox which is composed of oxygen and helium.</b></li> <li>b. <b>Trimix which is, for example, composed of oxygen, nitrogen and helium.</b></li> </ul>
Order	5) Decompression chamber: A duly equipped hyperbaric chamber located at the place of diving designed for planned surface decompression.
Order	6) Diving operation: A task carried out under water for which the use of breathing devices is required and which is normally carried out against remuneration. The performance of special diving operations, such as rescue operations or the like, including operations solved by municipal rescue services, shall be considered diving operations, regardless whether the work is carried out without any remuneration. Diving operations include all kinds of preparation at the place of diving from before the first diver enters the water until the last diver has left the water, chamber or any other environment and is no longer surrounded by a pressure greater than the atmospheric pressure. Diving operations shall not include operations carried out in connection with recreational diving.
Order	7) Diving doctor: Doctor appointed by the Danish Maritime Authority to carry out medical examinations of divers.
Order	8) Diving equipment: All equipment, including auxiliary equipment, used in connection with diving operations.
<b>Guidance</b>	<p><b>8) Equipment means diving equipment, diver's breathing gases, compressor systems, breathing gas containers, diving panels, hyperbaric chambers for planned decompression and/or treatment of decompression sickness, open bell, basket, A-frame and other material for the carriage of divers in and outside the water.</b></p> <p><b>Auxiliary equipment means other equipment forming part of the diving operation, such as buoyage balloons, underwater tools, including high-pressure water jetting, welding tools, NDT equipment, handtools and machinery.</b></p>

Order	9) Place of diving: The place, platform, quay, ship, etc. from where diving operations take place.
Guidance	<b>9) A place of diving means the physical place from where diving takes place, such as a ship, a semi-submersible, a barge, a jack-up, a quay, factory installation, bridge, fish farm, hotwater tank, sprinkler reservoir tank, etc.</b>
Order	10) Diving training programme: Diving training programme in accordance with the order on the diving training programme.
Order	11) Offshore wind farms: One or more offshore wind turbines located at sea outside the territorial waters of ports as well as associated transformer stations and cable connections, including cable connections to shore, etc. Other installations for the production of renewable energy at sea, such as wave energy installations and the like, shall also be considered as offshore wind farms for the purposes of this order.
Guidance	<p><b>11) The territorial waters of a port are evident from the relevant port's regulations and will typically be within the piers. Normally, the above information is available from <a href="http://www.danskehavnelods.dk">www.danskehavnelods.dk</a>.</b></p> <p><b>Where the Danish Maritime Authority is involved in port projects through Maritime Regulation and Manning (the reconstruction of piers, extensions of piers, etc.) where there are no clear delimitations, the port will be ordered by the Danish Maritime Authority to have regulations approved.</b></p>
Order	12) Coordinator: A person who, cf. the order on the client's obligations, is appointed for coordinating health and safety during the planning and carrying out of construction work.
Order	13) Basket: Transport platform without any air pocket.
Order	14) Log: An overview where all relevant information about the diving operations of each individual diver is recorded.
Guidance	<b>14) See section 8(4) of the guidance.</b>
Order	15) Nitrox: Breathing gas consisting of oxygen and nitrogen where the oxygen content is higher than 22% of the total content.
Guidance	<b>15) See section 2(1)(iv) of the guidance.</b>

Order 16) Offshore diving operations: Offshore diving operations shall mean diving operations:  
a) at installations, where installations shall mean offshore installations as defined in the act on safety, etc. of offshore installations for the exploration, production and transport of hydrocarbons (the offshore safety act) (*lov om sikkerhed m.v. for offshoreanlæg til efterforskning, produktion and transport af kulbrinter*) in force at any time as well as other units in the surrounding safety, protection and work zones,

Guidance **16) The consolidated act on safety at sea, etc. of offshore installations for the exploration, production and transport of hydrocarbons, referred to colloquially as the offshore safety act. The one in force is no. 520 of 13 May 2013. Offshore installations covered by act no. 520 are to be understood, referring to section 2(1), as:**  
i) **Platforms or other facilities,**  
a) **from where exploration or extraction of hydrocarbons is carried out from the subsoil below the seabed,**  
b) **used for the accommodation of persons employed on or at the facilities mentioned in a) above, or**  
c) **used in connection with transport of hydrocarbons and other substances and materials through pipelines between the platforms and facilities mentioned in paragraph a) above or between these and onshore installations.**  
ii) **Facilities used for storage and offloading of hydrocarbons produced by a facility mentioned in (i)(a) and which is permanently attached to such a facility.**

Order b) at pipelines outside the territorial waters of ports used in connection with pipe-carried transport of hydrocarbons,

Guidance **b) Hydrocarbons primarily consisting of carbon and hydrogen. They are known as, inter alia, methane (natural gas) and oils.**

**The provision applies irrespective of whether the pipe is part of an offshore installation or not.**

c) at depths exceeding 50 metres,

Guidance **c) Diving depths, etc. are defined in the approved diving table collection in force at any time.**

d) from dynamically positioned ships,

**Guidance** d) Dynamically positioned ships mean ships, platforms, etc. that automatically keep their position or a track decided beforehand exclusively by use of the propellers. A ship with an approved DP system will have an FSVAD covering the rectification and approval document of the flag State.

e) at offshore wind farms,

**Guidance** e) See section 2(xi) of the guidance.

f) where a risk analysis shows that it is necessary to impose correspondingly stricter requirements, or

**Guidance** f) The risk analysis must, as a minimum, contain the elements mentioned below, which have not been listed in order of priority and which are not necessarily exhaustive.

**Elements:**

1. The risk of being caught in structures, etc. where there is no possibility of free surfacing.
2. Where another breathing gas is used than atmospheric air or nitrox.
3. Where the number and extent of dives will extend over a longer period of time.
4. Where many and/or diversified operations are to take place within a limited work area.
5. Where repeated decompression dives are planned.
6. Where diving with planned water decompression occurs between 9 metres and 50 metres.
7. Access to treatment chamber.
8. Where diving takes place in polluted water or where there is a risk of the accumulation of combustible gases.
9. Weather, current, water temperature, wind, etc.
10. Diving platform, diving equipment and auxiliary equipment.
11. Will special equipment be used, including explosives, etc.?
12. In connection with crane operations.
13. Experience gained from previous similar or related jobs.
14. Other relevant areas occurring during the scrutiny of the project.

g) where it is, due to the nature, scope, conditions of health and safety of the diving operation, necessary to impose correspondingly stricter requirements.

Guidance	<b>g) The text is not considerably different from that stipulated in paragraph (f), but is in reality a reminder, inter alia, addressed at those who draw up the diving plan for the specific diving operation in order to ensure that all important elements have been considered.</b>
Order	17) Surface-supplied diver: Diver who, wearing diving equipment, is provided with a breathing gas from the surface through one or more tubes (umbilical).
Order	18) Recreational diving: Diving for the sake of sport and pleasure as well as teaching in this connection.
Order	19) Requesting person: Someone using persons for diving operations or requesting other diving operations, cf. section 3(4) of the act on diving operations and diving equipment ( <i>lov om dykkerarbejde og dykkermateriel</i> ).
	<b>19) Text from the act: “Anyone using persons for diving operations or ordering other diving operations shall ensure that the persons concerned hold the certificates required for the task.”</b>
Order	20) Underwater contractor: Person/employer/company performing diving operations on behalf of itself or on behalf of the client or requesting person.
Order	21) Open bell: Bell with an air pocket where it is not possible to establish a greater pressure in the air pocket than that of the surrounding water.

## Exemptions

Order	Section 3. The Danish Maritime Authority may grant exemptions from the provisions of sections 4-28 when special work methods are used, including the use of alternative standards and the use of special diving equipment or diving systems, as well as when other special circumstances apply that the Danish Maritime Authority is satisfied will result in as safe a performance of the diving operations as otherwise.
Order	Section 3(2). The Danish Maritime Authority may lay down special regulations on diving operations where it is considered necessary due to the safety of persons, the environment or the surroundings.

## Organization and performance of diving operations

Order	<p>Section 4. The underwater contractor shall ensure that the diving operations are carried out in accordance with the provisions of this order. When diving from ships, this obligation shall also rest with the master and the shipowner.</p>
Guidance	<p><b>Section 4. It is primarily the underwater contractor who is responsible for compliance with the diving legislation.</b></p> <p><b>The master of the ship must ensure that the underwater contractor complies with the diving legislation. This may, for example, have the form of the master issuing a work permit when the underwater contractor has presented an exhaustive diving plan, describing the scope of the work, including especially difficult and/or risky tasks, as well as of the diving operation being in compliance with the Danish diving legislation.</b></p> <p><b>When the diving operation has been finalized, the underwater contractor informs the master about the diving and whether any changes were made to the plan during the dive and whether the legislation was disregarded.</b></p> <p><b>Pursuant to part 4 of consolidated act no. 654 of 15 June 2010, as amended, on safety at sea, the shipowner has the overall responsibility. In ships from which diving operations are performed, the shipowner should establish a procedure, etc. so that he can procure the control imposed on him by section 4.</b></p> <p><b>In connection with diving operations from a ship with the International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code), the procedures on diving operations in relation to the behaviour of the master and the shipowner will be a part of the system.</b></p>
Order	<p>Section 5. All aspects of diving operations shall be planned, arranged and carried out properly in terms of health and safety in accordance with the Danish provisions in force, including that constructions, plan designs, detailed solutions and work methods that may present a danger to or otherwise impair the health and safety of the work are not prescribed or supposed used. The underwater contractor shall ensure that diving operations are arranged and carried out taking the greatest possible consideration of the overall effects of the working environment not impairing the employees' health or safety in the short or long term.</p>

Order	Section 5(2). Prior to starting diving operations, the underwater contractor shall be responsible for ensuring that the conditions mentioned in subsections 3-10 related to diving operations are arranged in a satisfactory manner and in accordance with the provisions in force.
Guidance	<b>Section 5(2). The underwater contractor will collect everything in a diving plan for the entire project so that the diving supervisor can, without any major difficulty, manage the underwater operation. In the absence of a diving supervisor, the diver will use the plan.</b>
Order	Section 5(3). The underwater contractor shall ensure that all personnel involved in diving operations are always informed about the procedures and other things necessary to carry out the task assigned with the greatest possible consideration of the health and environmental conditions. In addition, the underwater contractor shall draw up risk assessments for each individual task before the work is initiated. In connection with operations where a coordinator has been appointed in accordance with the order on the client's obligations issued by the Danish Working Environment Authority, the underwater contractor shall ensure that the coordinator has access to the procedures, risk assessments, etc. mentioned.
Guidance	<p><b>Section 5(3). Before commencing the diving operation, the underwater contractor must draw up a risk analysis of the work.</b></p> <p><b>The client, project supervisor, requesting person and other involved parties must contribute actively to the drawing up of the risk analysis, which has the form of a theoretical analysis of the entire work as well as an attempted identification of all risks.</b></p> <p><b>All risks are categorized according to the level of danger (and, for example, estimated frequency) and subsequently a plan is drawn up to minimize these risks.</b></p> <p><b>A risk analysis consists of at least five elements:</b></p> <ol style="list-style-type: none"> <li><b>1. A brief description of the work,</b></li> <li><b>2. a brief description of the method of work,</b></li> <li><b>3. a brief description of the equipment to be applied for the work,</b></li> <li><b>4. a brief description of the risk involved, including the risk of failure, and</b></li> <li><b>5. a brief description of the measures taken to reduce the risk of failure.</b></li> </ol>

A risk analysis is an open document, which can constantly be adjusted to the specific work. During the performance of the work, changes may be made that require a revision of the risk analysis (can go both ways).

All parties involved in a diving operation must be familiar with the relevant risk analysis.

Before all dives in a work process, a briefing is made with all the parties involved. This briefing includes the performance of the work and a risk analysis. Often, the briefing is referred to as "a toolbox talk" and can be made orally, but it must be recorded as "made" in the dive operation log. Often, a ready printed form is used with headlines for the issues considered, just as the participants' initials are recorded. To be attached to the dive operation log.

#### Example of a risk analysis

ACTIVITY	RISK	CONSEQUENCE	MEASURES
Too fast descent	Not capable of pressure equalizing	Ear injury	Use bottom rope to control the descent
Umbilical gets caught in an obstacle in the seabed	Umbilical may be damaged, the air supply may be disconnected, the diver cannot get to the surface	Panic, hypothermia and drowning	Keep the umbilical tight to the surface; the diver should be aware of the position of the umbilical during the dive. Use standby diver for assistance if the diver cannot release the umbilical by himself
Communication failure during the work	The diver cannot communicate with the surface	The diver may be injured during the work	Stop the dive by signaling through the umbilical and get the diver to the surface
Crane work above the diver	The diver may be hit by a crane hook or load	Injury to diver or damage to diving equipment	Inform the diver about the location of the crane wire in relation to the diver, let the diver manage the crane operation through communication
ETC			

This type of risk analysis can be made for use in connection with most diving operations and can be used over and over again – it should be placed together with checklists, etc. in the file with relevant diving papers and be gone through by the parties involved before diving operations are commenced.

**Example of a work and risk analysis in table form**

<b>Step</b>	<b>Description</b>	<b>Performance</b>	<b>Equipment</b>	<b>Risk</b>	<b>Measures</b>
1.0	The diver is to assemble two pipes by means of a flange connection. One of the pipes is on the seabed	A crane lowers one of the pipes to the pipe that is on the seabed	A crane, a beam and surface-supplied diver	The pipe may hit the diver, the diver's umbilical may get caught	The diver keeps clear of the pipe and the umbilical is held tight to the surface
1.1	The pipes are assembled by means of flanges and bolts	The crane lifts the pipe into the position for assembling	Crane, beam and diver as well as mandrels, clamps and bolts	The diver may have his fingers caught between the flanges, pipes and bolts	First, the diver fits the mandrels and then the bolt in the flange connection when there is no movement in the pipe and he keeps clear of the connection and pipes

**Order** Section 5(4). Together with the coordinator, where one has been appointed, the underwater contractor shall be responsible for establishing an emergency preparedness.

**Order** Section 5(5). The underwater contractor shall document all phases of diving operations. This shall include monitoring and recording, inter alia, changes in pressure and the composition of breathing gas in the water and the chamber. The extent of the monitoring and recording shall be established by the Danish Maritime Authority.

**Guidance** **Section 5(5). Until otherwise decided, automatic monitoring of pressure changes is not required.**

**All diving operation phases are documented as stipulated in the order and in section 8(5) of the guidance.**

**Order** Section 5(6). The underwater contractor shall ensure that the composition, training and competences of personnel involved in diving operations are compatible with the nature and scope of the diving operations.

**Guidance** **Section 5(6). It is important to ensure first that one has an overview of the nature of the diving operation so that the diving team can be composed appropriately:**

- 1. What is to be done?**

2. Which equipment is to be used?
3. Which tools are to be used, including diving equipment and special tools?
4. What is the risk associated with the work (a risk analysis is made)?
5. Water depth (how many divers are needed).

When one has an overview of the diving operation, the following must be ensured as regards the personnel involved in the diving operation:

1. That the personnel involved is trained for the task; what we have in mind are the necessary certificates, first aid courses, courses in the use of special tools, etc.
2. That the diving supervisor has the necessary insight into the work.
3. That the diving supervisor can understand the problems associated with the work and perform the work safely.
4. That divers and diver's assistants have the necessary knowledge about the use of any tools above and below the water.

The underwater contractor is responsible for ensuring that the necessary personnel is available so that the diver's assistant and/or the unskilled diver's assistant responsible for the umbilical does not have any other tasks while the diver is in the water.

Order	Section 5(7). The underwater contractor shall ensure that diving personnel have been subject to the necessary medical examinations with a satisfactory result.
Order	Section 5(8). The underwater contractor shall ensure that the quantity and quality of the equipment at any place of diving is sufficient to solve the planned task in a safe and appropriate manner.
Order	Section 5(9). The underwater contractor shall ensure that the equipment, including the supply of breathing gas to the diver, the necessary energy supply, etc., is duplicated so that malfunction does not prevent a sound and safe termination of the operation. In addition, the necessary amount of spare parts shall be available for general maintenance.
Order	Section 5(10). In connection with diving operations carried out outside the jurisdiction of the Danish Working Environment Authority, a coordinator, etc. shall be appointed on the same conditions as stipulated in the order on the client's obligations.
<b>Guidance</b>	<b>Section 5(10). When diving operations are carried out in connection with the shore, such as from quays, bridges, in district heating tanks, berthed</b>

ships, etc., the diving operation is – in addition to meeting the orders issued by the Danish Maritime Authority – also subject to parts of the provisions of the Danish Working Environment Authority in the field of occupational health. According to the order on the obligations of the client, currently order no. 117 of 5 February 2013, the client must – where two or more employers are expected to be present at the construction site at the same time – ensure that at least one coordinator is appointed. The coordinator must, together with the involved parties, plan and act so that the work can proceed without any safety-related problems and so that personal injury or damage to equipment and the environment, etc. is limited in case of uncontrolled incidents.

When a diving is carried out from a ship or a barge not moored to the shore the work is subject to the jurisdiction of the Danish Maritime Authority.

If diving operations from a ship or barge not moored to the shore would prescribe a coordinator in case the operations were carried out at the shore, the same provisions apply on board as ashore. This means that at least one coordinator must be appointed according to the same provisions as those stipulated in the order on the obligations of the client issued by the Danish Working Environment Authority.

Occasionally, there will be tasks in the water that start under the jurisdiction of the Danish Working Environment Authority and subsequently change to the jurisdiction of the Danish Maritime Authority. An example hereof may be a discharge pipe where the first part is laid out from the coast and therefore falls within the area of the Danish Working Environment Authority before it falls within the area of the Danish Maritime Authority later on. In order not to have different guidelines and assessments, it is recommended that the client already during the project phase coordinates the area with the Danish Working Environment Authority and the Danish Maritime Authority and any other interested authorities.

Order

Section 6. For all diving personnel, including personnel involved in the diving operation not under pressure, the work shall be arranged so as to ensure, in consideration of the duration of the work period, that the employee is given reasonable possibilities of resting and having periods off adjusted to the special conditions of the workplace and the crew with a view to carrying out the work in a fully appropriate manner in terms of health and safety.

Order Section 6(2). In connection with diving operations from a ship on which the divers and diving personnel spend the night, the provisions of the act on seafarers' conditions of employment, etc. (*lov om søfarendes ansættelsesforhold m.v.*) on hours of rest and work shall apply. Otherwise, the provisions on hours of rest and work stipulated in the health and safety at work act (*arbejdsmiljøloven*) shall apply.

**Guidance Section 6(2). The provisions on hours of rest at sea have become more homogeneous following the entry into force of the Maritime Labour Convention 2006 (MLC) on 20 August 2013.**

**The following applies to seafarers who have turned 18 years of age:**

- 1. A seafarer must have regular periods of rest of sufficient length to ensure health and safety.**
- 2. The hours of rest per working day must amount to at least ten hours, at least six of which must be uninterrupted.**
- 3. It is possible to divide the ten hours into a maximum of two periods of rest.**
- 4. The hours of rest must amount to at least 77 hours a week.**

**For seafarers below the age of 18, there are stricter provisions as regards the above.**

**It is recommended that the hours of rest are inserted in a table; from the webpage of the Danish Maritime Authority, a draft for the design and contents is available.**

**The currently applicable order on seafarers' hours of rest has number 515 and was issued on 21 June 2002, as amended.**

**The provisions on hours of rest stipulated in the act on occupational health are found in order no. 324 of 23 May 2002, as amended, issued by the Ministry of Employment.**

**The main rule according to order no. 324 prescribes that employees must have an uninterrupted period of rest during every 24-hour period of at least 11 hours.**

Order Section 7. The underwater contractor shall establish a system ensuring that the diving period for each individual diver is arranged in consideration of the occupational health conditions, including the planned depth, the diving technique as well as the nature of the diving equipment and of the task.

Order	<p>Section 8. The underwater contractor shall report industrial accidents and cases of poisoning in connection with diving operations to the Danish Maritime Authority. Reporting shall be made if the accident or the poisoning has caused incapacity for one or more days in addition to the day of the accident.</p>
Guidance	<p><b>Section 8. Accidents and/or cases of poisoning must be reported to the Danish Maritime Accident Investigation Board by telephone 0045 2324 2301.</b></p> <p><b>Accidents with serious personal injury must be reported immediately.</b></p> <p><b>Less serious accidents, such as a squeezed finger, etc., are reported during the normal opening hours on working days between 9 and 15 hours.</b></p> <p><b>The diver or the diving supervisor, where one has been appointed, informs the Danish Maritime Accident Investigation Board. On board a ship, the reporting is made in cooperation with the master.</b></p> <p><b>In case more authorities have an interest in the accident, they are all informed.</b></p>
Order	<p>Section 8(2). Furthermore, the Danish Maritime Authority shall be informed in case of the following:</p> <ol style="list-style-type: none"> <li>1) all treatments in hyperbaric tanks related to diving operations;</li> <li>2) if accidents or near-misses occur that may have caused considerable personal injury;</li> <li>3) fire;</li> <li>4) environmental damage or damage to property; or</li> <li>5) damage to the property of a third party.</li> </ol>
Guidance	<p><b>Section 8(2). In case of incidents as mentioned above, the Danish Maritime Authority must be informed electronically: <a href="mailto:cfs@dma.dk">cfs@dma.dk</a>.</b></p>
Order	<p>Section 8(3). If a diving accident causing personal injury occurs, the remaining part of the breathing gas shall be cut off at the source and in the distribution system as soon as possible for the sake of later investigations. Breathing gas equipment shall, insofar as possible, not be operated or adjusted just as it shall be ensured to as great an extent as possible that the Danish Maritime Authority can get access to the persons involved, the equipment involved and any witnesses and secure the equipment involved with a view to closer examination.</p>

## Guidance

**Section 8(3).** It is very important that the equipment is secured against unauthorized handling, and insofar as possible it must be kept under lock and key or constantly be watched over by a responsible person.

The equipment should not be used until the Investigation Board has given a "green light".

The task of the Investigation Board is to identify the cause of the accident and in this way help prevent similar accidents in the future.

The Danish Maritime Accident Investigation Board is not to have a view on the criminal or liability aspects of the accidents or incidents, and its investigation must be kept separate from criminal or other parallel investigations the purpose of which is to place responsibility or guilt.

Additional information about the guidelines, etc. of the Board is available from the webpage of the Danish Maritime Accident Investigation Board: [www.dmaib.dk](http://www.dmaib.dk).

## Order

Section 8(4). In connection with any pressure-setting, a log shall be kept for every diver the minimum contents of which shall be determined by the Danish Maritime Authority. Any entry about a dive or a pressure-setting shall be signed by the diver and by the diving supervisor. If there is no diving supervisor, the log shall be signed by the underwater contractor or by the master if the diver is employed by the same shipping company as the master.

## Guidance

**Section 8(4).** The log is important for the diver's documentation in connection with, inter alia, supplementary training. In the log, the pressure to which the diver has been subjected, etc. is collected; in case of any decompression sickness or long-term effect, the log could perhaps provide guidance about whether there has been a trend in the diving and/or decompression method, etc. which has caused the effect.

The following minimum data must be included in the diver's personal log:

1. Name and signature of the diver.
2. Date of the dive.
3. Name and address of the underwater contractor.
4. Name and signature of any diving supervisor.
5. The place of the diving operation, including the name of the vessel, IMO number or call sign from where the diving took place.
6. The maximum depth reached by the diver; for each dive.
7. The time when the diver left the surface, bottom time and the time when the diver reached the surface – every time.

8. **Breathing gas used by the diver.**
9. **Table of any decompression.**
10. **Description of the work/efforts made and an indication of the tools used.**
11. **Indication of any decompression sickness, malaise or injury that the diver has experienced, including information about any decompression sickness or treatment received by the diver.**
12. **Information about any emergency or special incidents that occurred during the diving.**
13. **Other factors of relevance to the health or safety of the diver.**
14. **Furnishing with company stamp when the daily log has been signed by the diver and diving supervisor/underwater contractor or master.**

**Order**

Section 8(5). In connection with diving operations, a dive operation log shall be kept the minimum contents of which shall be determined by the Danish Maritime Authority. Filled logs and dive operation logs shall be kept by the diver and the employer, respectively, for a period of at least 5 years after the last entry. If an action has been brought before the court concerning the performance of diving operations in the period covered by the log or the dive operation log, they shall be kept until the action has been finally settled.

**Guidance**

**Section 8(5). The following information must as a minimum be included in a dive operation log in connection with diving operations:**

1. **Name and address of the underwater contractor.**
2. **Date of the dive as well as the name of the diving supervisor/client representative (to be filled in for each dive).**
3. **The place of the diving operation, including the name of the vessel, IMO number or call sign from where the dive was made.**
4. **The names of those taking part in the diving operation as divers and other members of the diving team.**
5. **Risk analysis for the diving operation.**
6. **The purpose of the diving operation.**
7. **Breathing gas used by each diver during the diving operation.**
8. **Time of commencing ascent, when the diver returns to atmospheric pressure as well as the diver's bottom time.**
9. **The maximum depth reached by each diver.**
10. **Decompression plan with detailed information about the pressure (depth) and the duration of the period during which the diver is subject to the given pressure (or depth during decompression).**
11. **Has the first aid equipment been checked and is it in place?**

12. Information about every emergency or special incidents taking place during the dive, including information about any decompression, sickness, treatment, etc.
13. Indication of the check of the diving equipment and installation before starting the dive.
14. Any defect on the equipment and installation used during the dive must be recorded.
15. Information about all relevant environmental factors during diving operations.
16. Other factors can affect the health and safety of persons engaged in diving operations.
17. The name and signature of the underwater contractor/diver/diving supervisor or master as well as company stamp.

Order	Section 8(6). The Danish Maritime Authority may approve electronic logs and dive operation logs and permit that entries in logs or dive operation logs are replaced in part or full by logs made electronically on the following conditions: 1) Mechanical and electronic logs shall be such that they cannot be changed later. It shall be possible to make electronic logs only by using a personal code. 2) Electronically stored logs shall be secured by means of a daily safety copy.
<b>Guidance</b>	<b>Section 8(6). Before electronic logs are used, the principles must be approved by the Danish Maritime Authority. This applies both to each individual diver and to the underwater contractor. More detailed information is available from the webpage under diving.</b>
Order	Section 9. The underwater contractor shall, in consultation with the diver or the diving supervisor, where one has been appointed, appoint a diver's assistant. When diving from a ship, the diver's assistant shall be appointed in consultation with the master if the diver is employed by the shipping company.
<b>Guidance</b>	<b>Section 9. The diving supervisor should have the appointment as a diving supervisor in writing.</b>
Order	Section 9(2). During diving operations, a diving team shall be adjusted to each individual operation, but shall however consist of at least one diver and one diver's assistant as well as one additional person, an unskilled diver's assistant, who shall, at any time, be able to assist the diver and the diver's assistant.

## Guidance

**Section 9(2). The diver must have understood the task in connection with the specific diving operation to be performed. The diver must have the necessary training and understanding of the use of the tool used for the task as well as the risks related to the use of the tool.**

**It is the diver's responsibility that the diving equipment has been made ready for use and is fully functional.**

**The diver's assistant must have the necessary knowledge about the diving work, the equipment and the tools to be used in connection with the coming task so that he is able to assist the diver verbally when the diver performs underwater work if the diver encounters any problems both for safety reasons – but also with the performance of the work.**

**The unskilled diver's assistant must at any time be able to assist the diver and/or the diver's assistant. This means that the unskilled diver's assistant must be within visual and/or verbal distance of the place of the diving (not via telephone or any other mechanical connection).**

**The diver, the diver's assistant and the unskilled diver's assistant must have knowledge about where the first aid equipment is kept as well as about its use. However, it is possible to exempt the unskilled diver's assistant, cf. section 9(5), from having knowledge about the use of the first aid equipment.**

## Order

Section 9(3). The unskilled diver's assistant required in subsection 2 shall have completed a diving-related first-aid course approved by the Danish Maritime Authority.

## Order

Section 9(4). At least every 24 months, the diving supervisor, the diver, the diver's assistant and the unskilled diver's assistant shall complete a refresher course in diving-related first-aid approved by the Danish Maritime Authority.

## Order

Section 9(5). In special cases, the courses in diving-related first-aid and the refresher course in diving-related first-aid required by subsections 3 and 4 for the unskilled diver's assistant required in subsection 2 may be left out on the condition that the diver and the diver's assistant together with the unskilled diver's assistant – before initiating a diving operation – go through the procedures and emergency procedures, etc. for the diving operation and that account is made of this in the procedures and risk assessments required by section 5(3).

<b>Guidance</b>	<p><b>Section 9(5).</b> A special case cannot be considered legal if, during the planning of an agreed diving operation, it forms part of the diving planning. There may be situations where the normal unskilled diver's assistant of the team is prevented from being present, for example, because of own or a relative's sudden illness or where great values will be lost if immediate intervention does not occur.</p> <p><b>If the above-mentioned is practiced in exceptional cases, this must be recorded in the dive operation log each time.</b></p>
Order	Section 9(6). The diving team shall communicate in a language that is understood by the entire team.
Order	Section 9(7). In connection with diving operations, the diver's assistant shall not serve more than one diver or perform other tasks irrelevant to the diver's safety.
<b>Guidance</b>	<p><b>Section 9(7).</b> The diver's assistant and the unskilled diver's assistant may form part of the ship's crew only if they do not have any tasks according to the muster list and are not necessary either in connection with ship service where the ship is, for example, drifting in an uncontrolled manner, etc.</p>
Order	Section 9(8). It shall be ensured that all persons involved in a diving operation are familiar with the composition of the diving team and with the tasks of each individual team member.
Order	Section 10. Diving operations shall be arranged so that the health and safety of the diver and any other diving and assisting personnel is ensured as well as possible in consideration of the nature, scope and place of diving, etc. of the diving operation.
<b>Guidance</b>	<p><b>Section 10.</b> In connection with the diving operation, a diving plan has been drawn up that contains, inter alia, the risk analysis required by section 5(3). Immediately prior to the task of the day, the diver or the diving supervisor briefs all those involved (tool box talk) who can, for example, be divers, diver's assistants, unskilled diver's assistants, crane operators, watchkeeping officers on the bridge and in the engine, project supervisors, etc.</p> <p><b>It is recommended to work according to a work permit system at a suitable level.</b></p>

Order	Section 10(2). The diver shall ensure that the diving equipment is in order before being taken in use.
<b>Guidance</b>	<b>Section 10(2). The diver and the diver's assistant, and possibly the diving supervisor, must examine and test the equipment together immediately before the diver enters the water; this also applies to auxiliary equipment. It is recommended to use a check form and to enter in the dive operation log that the equipment has been checked.</b>
Order	Section 10(3). The diver or the diving supervisor, if one has been appointed, shall instruct the support team about its duties in connection with diving operations.
<b>Guidance</b>	<b>Section 10(3). The diver or the diving supervisor must, through a conversation with each individual person, ensure that they know their task and obligation; this can, for example, take place in connection with the tool box talk.</b>
Order	Section 10(4). The diver shall have the necessary time for rest and sleep. In connection with diving operations from a ship, the provisions of the act on seafarers' conditions of employment, etc. ( <i>lov om søfarendes ansættelsesforhold m.v.</i> ) on hours of rest shall apply, cf. however section 6(2). Otherwise, the provisions of the health and safety at work act ( <i>arbejdsmiljøloven</i> ) shall apply.
<b>Guidance</b>	<b>Section 10(4). See section 6 of the guidance.</b>  <b>If the underwater contractor is responsible for the accommodation, it must be ensured that the necessary peace and tranquility, etc. is provided so that the diver can get the necessary rest.</b>
Order	Section 10(5). A diver shall not be ordered to dive if he feels unwell, unsafe or in any other way less suited for this.
Order	Section 11. A diving supervisor shall be appointed if three or more divers carry out diving operations.
<b>Guidance</b>	<b>Section 11. A diving team must, as a minimum, consist of a diver, a diver's assistant and an unskilled diver's assistant. If the diving team consists of three divers and they all take an active part in diving during a period of 24 hours, a diving supervisor must be affiliated with the team.</b>

**If only two of the team divers are active during an uninterrupted period of 24 hours, a diving supervisor is not required.**

**Normally, the underwater contractor appoints the diving supervisor in writing to the client/requesting person or company.**

Order

Section 11(2). The diving supervisor shall have passed the required tests and courses that entitle him to be a diving supervisor and to carry out diving operations with the equipment used for the operation in question. In addition, the diving supervisor shall be able to prove that he has at least 2 years' practical experience as a professional diver as well as experience with the relevant diving operation.

Guidance

**Section 11(2). Divers holding a professional diver's certificate issued for the first time before 1 January 2011 can function as a diving supervisor without having completed the course as a diving supervisor mentioned in section 11(2) on the condition that the other requirements for a diving supervisor are met.**

**In addition to 2 years' experience, the diving supervisor must hold documentation of completion of the necessary supplementary courses. If blast operations are to be carried out, the diving supervisor must have completed the necessary blasting course, etc. Some divers and/or diving supervisors may not have a course certificate, but rather an endorsement in the diver's certificate in connection with a special interim arrangement, cf. order no. 30 of 15 January 1988 on safety in connection with professional diving operations and on the safe performance of diving operations.**

Order

Section 11(3). The diving supervisor shall not take part in dives when performing his duties as a diving supervisor or perform tasks irrelevant to the dive. Furthermore, the diving supervisor shall not have been exposed to over-pressure within the past 12 hours.

Guidance

**Section 11(3). In connection with diving operations where there is a diving supervisor, the diving supervisor must insofar as possible carry out this task through the entire operation so that he can keep an overview and maintain the routines and get a homogeneous diving management vis-à-vis the divers, the assistants and the client/requesting person or company.**

**It is not recommended to take shifts when it comes to the diving supervisor's job so that the diving supervisor does not take an active part in the dive as such.**

Order

Section 11(4). The diving supervisor shall see to the arrangement, carrying out, distribution and management of the work related to the diving operation in question and ensure that it is possible to carry out the diving operation properly in terms of health and safety. The diving supervisor shall see to it that all diving and auxiliary equipment used is in good condition in terms of health and safety and meet the provisions in force.

Guidance

**Section 11(4). Diving supervisor characteristics and tasks, listed in a random order:**

- **Have supervisor characteristics.**
- **Have in-depth knowledge about the working platform, the work description and the risk analysis.**
- **Have in-depth knowledge about diving-related first aid.**
- **Have in-depth knowledge about the diving equipment used.**
- **Be able to operate the air supply (panel), communication, video recordings and any black box equipment.**
- **Have in-depth knowledge about diving tables.**
- **Check that the certificates, first aid and medical certificates of the divers and the assisting personnel are valid.**
- **Check that the equipment and auxiliary equipment is sound in terms of safety and has been validly certified.**
- **Be able to check that all relevant papers and certificates are available at the place of the dive.**
- **Be able to fill in a dive operation log/log correctly.**
- **Be able to communicate with more persons at a time without losing control.**
- **Perform the briefing, tool box talk, with the involved parties before commencing the work.**
- **Be able to "read" the divers' well-being on the basis of communication and video recordings.**
- **Be able to assume responsibility and to assist the diver during the entire dive with the experience that the relevant diver has.**
- **Ensure that the hours of rest are observed.**
- **Be able to stay calm and keep a clear head in aggravated situations.**
- **Be able to represent the diving team as the one responsible to the client/requesting person or company.**

**The diving supervisor is the only person who can start a dive, i.e. everything related to diving operations must go through the diving supervisor.**

Order Section 11(5). If there is one or two divers and no diving supervisor has been appointed, it shall be the responsibility of the diver to ensure that the necessary auxiliary equipment, equipment and tools, etc. are in good condition and meet the provisions in force. If two divers are involved in a diving operation, it shall be evident from the dive operation log who is responsible for the safety procedures and risk assessments, etc.

### **Special training programmes**

Order Section 12. Diving operations shall be carried out only by persons holding a valid certificate as a surface-supplied professional diver.

Order Section 12(2). Diving operations for which mixed gas is used as a breathing gas shall be carried out only by professional divers who have passed a test in diving operations using the mixed gas in question.

**Guidance Section 12(2). According to section 14 of order no. 1393 of 12 December 2013 on diving training programmes, divers using nitrox must also complete a course where the teaching is in accordance with guidelines recognized by the Danish Maritime Authority.**

Order Section 13. Notwithstanding the provisions of section 12, persons holding a valid certificate as a professional scuba diver may carry out diving operations at depths of up to 30 metres with equipment that is not surface-supplied and using atmospheric air or nitrox as breathing gas. Such work is, however, limited to lighter diving operations,  
1) arranged in a proper way in terms of health and safety;  
2) not requiring the use of anything besides hand tools; and  
3) where no planned decompression is being made in connection with the diving operation.

**Guidance Section 13. A diver holding a certificate as a surface-supplied professional diver to 50 metres must also dive to a depth of 50 metres with scuba equipment and with planned underwater decompression stop(s).**

Order Section 14. Irrespective of the provisions of sections 12 and 13, persons holding a valid certificate as a restricted professional scuba diver may carry out diving operations at depths of up to 9 metres with equipment that is not surface-supplied and using atmospheric air or nitrox as breathing gas. Such work is limited to lighter diving operations such as feeding fish,

cleaning, safety diving in training pools and the like in artificial environments such as aquariums, swimming pools and training pools,  
1) arranged in a proper way in terms of health and safety;  
2) not requiring the use of anything besides hand tools.

Order Section 15. Diving operations carried out using nitrox as a breathing gas shall be made only by professional divers who have passed a nitrox diver's training programme recognized by the Danish Maritime Authority.

Order Section 16. Diving operations including cutting, welding, high-pressure washing (30 bar or more) or blasting shall be carried out only by persons holding a valid certificate as a surface-supplied professional diver after having completed a course in such work.

Order Section 16(2). Rescue diving shall be carried out by persons holding a certificate as either a professional scuba diver or a surface-supplied professional diver after having completed a course in rescue diving.

Order Section 16(3). The diving supervisor shall be able to document sufficient knowledge of the work by having completed a course for diving supervisors approved by the Danish Maritime Authority.

Order Section 16(4). The chamber operator shall be able to document sufficient knowledge of the work by having completed a course for chamber operators approved by the Danish Maritime Authority.

**Guidance Section 16(4). Divers holding a professional diver's certificate issued for the first time before 1 January 2011 can function as chamber operators without having completed the training required by section 16 as a chamber operator.**

Order Section 16(5). The courses mentioned in subsections 1-4 shall have been approved by the Danish Maritime Authority. The diver's certificate shall be endorsed to this effect by the Danish Maritime Authority or by the one who the Danish Maritime Authority has authorised for this.

Order Section 16(6). The diver's assistant shall be able to document sufficient knowledge of the work either by holding a diver's certificate issued by the Danish Maritime Authority or by having completed a course for diver's assistants approved by the Danish Maritime Authority.

## The place of diving

Order	<p>Section 17. At all places of diving, first-aid and resuscitation equipment and diving, decompression and treatment tables shall be available. The diving, decompression and treatment tables shall have been approved by the Danish Maritime Authority.</p>
Guidance	<p><b>Section 17. The oxygen content must be sufficient for a diver to be treated until a treatment chamber can be reached. This means that there must one or more spare bottles of oxygen suitable for the oxygen apparatus at the place of diving. Normally, it will be evident from the risk analysis how much oxygen must be available for the relevant place of diving.</b></p> <p><b>First aid and resuscitation equipment must always be ready for use. This means that the equipment has been assembled, that it has been checked before the diving is started, and that there is sufficient oxygen in the bottle.</b></p> <p><b>As diving and treatment tables the third edition of Arntzen-Eidsvik and Risberg has been approved. There is a Norwegian, an English and a Danish edition.</b></p>
Order	<p>Section 18. In connection with diving operations where decompression or treatment chambers are involved, a chamber operator shall be present at the place of diving. The chamber operator shall have completed the required tests and courses entitling him to be a chamber operator and shall not have been exposed to over-pressure within the past 12 hours.</p>
Order	<p>Section 19. In connection with diving operations under especially difficult or risky conditions, an extra diver as well as an extra diver's assistant shall be ready for immediate rescue or equally suitable safety measures shall be taken that shall be approved by the diver who is to perform the dive. Difficult circumstances may, for example, be diving in covered canals, pipes, wreckages that are not very accessible or the like.</p>
Guidance	<p><b>Section 19. In connection with diving operations of the nature mentioned, it is especially important to make a detailed risk analysis. On the basis of the conclusion, it is decided whether an extra diver must be a part of the team.</b></p> <p><b>The diver must approve the procedures and the measures taken. The procedures are made in writing and attached to the dive operation log.</b></p>

**Both the diver and the diving supervisor will sign the procedures. The dive operation log refers to the procedures.**

Order Section 20. The place of diving shall be marked with shapes, etc. in accordance with the International Regulations for Preventing Collisions in force as well as any provisions and special regulations on navigation in the waters concerned.

**Guidance Section 20. When divers are in the water, this must be marked in the place where it is best seen by displaying the international signal flag "A" in the form of a plate or a distended flag with a height of at least 1 metre. At night, the plate or the flag must be lit.**

Order Section 20(2). Safe means of communication shall be available between the ships, vessels, etc. taking part in the diving operation. If conditions so necessitate, a guard vessel with means of communicating with other passing ships and vessels shall, furthermore, be present.

**Guidance Section 20(2). In connection with diving in areas with ship traffic where radio contact is to be established with other units, a work channel is chosen; however, a listening watch must always be kept on the mandatory channel of call.**

**In connection with dives from a ship, there must always be a watch-keeping person on the bridge, and radio communication must be kept with the traffic in the area so that it is possible to inform other ships and units in the area about the diving. It would be expedient if the diving team had a portable radio with the work channels used in order to keep informed about traffic in the work area.**

**In connection with dives from the quay and a ship in port, the port regulations must be kept, and the port authorities should be informed about coming diving operations so that they can inform other ships and units in the area. It would also be expedient if the diving team has a radio with the work channels.**

Order Section 21. Equipment of such nature and design that the diver may easily and safely get into and out of the water shall be available.

**Guidance Section 21. The underwater contractor must, where dives are made from heights above the surface of the sea of more than 3 metres, ensure that a basket or open bell is used.**



section 5, that it would involve a greater risk wearing an immersion suit than omitting this. The assessment shall be entered in the dive operation log or be annexed to this.

**Guidance**

**Section 23. The provision stipulating that the diver must carry an immersion suit suitable for diving is found in paragraph 3.11 of Council Directive 89/686/EEC, normally referred to as the personal protective equipment directive. It is stipulated in paragraph 3.4.1 of the directive that the immersion suit must not impede the user's possibility of rescuing himself or coming to the assistance of others.**

**Order**

Section 24. During diving operations, the diver shall be in contact with the diver's assistant and/or the diving supervisor by means of a telephone connection and lifeline. Where lifting operations are carried out in connection with the diving, the diver shall furthermore be in connection with the operator of the lift by means of a direct telephone connection.

**Guidance**

**Section 24. Where the diving operation is documented electronically, the communication with the crane operator must also be recorded.**

**Order**

Section 25. During diving operations where the use of a lifeline involves an increased risk, the connection may, in exceptional cases, be omitted if it is assessed, in accordance with the risk assessment stipulated in section 5, that it would involve a greater risk using a lifeline than omitting this. Instead other, equally suitable safety measures shall be taken. The assessment shall be entered in the dive operation log or be annexed to this.

**Guidance**

**Section 25. The omission of a lifeline does not exempt communication between the diver and the diver's assistant, etc. If wireless equipment is used, the underwater contractor must ensure that the equipment is shielded in such a manner that it does not affect any electronic equipment in the surroundings, for example starting a propulsion engine, etc.**

## **Harmful substances**

**Order**

Section 26. During diving operations at discharge pipes and other places where harmful substances may be present in hazardous concentrations, the following measures shall have been taken:

1) Prior to the diving, the nature and extent of the pollution shall be examined, including any risk of explosion. Divers as well as support personnel shall be informed of this. Measures shall be taken so that persons

who are taken ill or injured may be medically examined without any undue delay.

- 2) The diver shall be protected against skin contact with the surroundings.
- 3) At the workplace, clean water shall be available for washing off the diver and the equipment before taking off the diving equipment.
- 4) An eye rinsing bottle shall be available ready for use.
- 5) In connection with work with sludge and sewage, the requirements on vaccination, work medical examination/surveillance, etc. issued by the Danish Working Environment Authority shall be met.

**Guidance**

**Section 26. The order on sewage work issued by the Danish Working Environment Authority stipulates to what extent divers and assistants must be vaccinated. It must be stated in the conclusion of the risk analysis whether the vaccination is a requirement or not for the planned diving operation. The current order on sewage work is no. 473 of 7 October 1983, as amended. There is also a so-called AT guidance D.2.14 from January 2005 on the vaccination of persons employed with sewage sludge and waste water.**

**In connection with diving operations at the above-mentioned localities, it is important that the power supply has been cut off for pumps, rotating parts of knives, carousels, etc., just as it is important that valves, etc. located on pipelines with connections to the place of the dive have been shut off. This in order to avoid Delta “p” accidents.**

**Attention is also drawn especially to the fact that the above-mentioned installations have often been made with some degree of remote control.**

**Order**

Section 27. A decompression or treatment chamber designed for the number of persons to be decompressed simultaneously shall be available at the place of diving when the conditions stipulated in section 5(1) so necessitates or in the circumstances mentioned in subsections 2 and 3 of this section.

**Guidance**

**Section 27(1). The depths mentioned in subsections 2 and 3 are actual depths and not equivalent depths (ELD).**

**Order**

Section 27(2). During diving operations, a decompression chamber shall be available at the place of diving if:

- 1) the risk assessment required by section 5 reveals a need for a decompression chamber at the place of diving. Circumstances such as the expected duration of the dive, the nature of the diving operation, the conditions of current and weather, the location of the place of diving, transport

to the treatment chamber preparedness, etc. shall be included in the risk assessment;

2) the dive, in accordance with approved tables, requires decompression of longer duration than 20 minutes; or

3) dives are being made to depths exceeding 30 metres.

Order

Section 27(3). In connection with diving operations, a treatment chamber shall be available at the place of diving if:

1) the risk assessment required by section 5 reveals a need for a decompression chamber at the place of diving. Circumstances such as the expected duration of the dive, the nature of the diving operation, the conditions of current and weather, the location of the place of diving, transport to the treatment chamber preparedness, etc. shall be included in the risk assessment;

2) the dive, in accordance with approved tables, requires decompression of longer duration than 60 minutes; or

3) dives are being made to depths exceeding 40 metres.

Order

Section 27(4). In connection with major works, the Danish Maritime Authority may, irrespective of the provisions of subsections 2 and 3, require the availability of a decompression or treatment chamber at the place of diving.

Order

Section 27(5). Persons being decompressed shall be surveyed and persons being treated in a chamber shall be accompanied by an assistant in the chamber with sufficient knowledge of diving-related first-aid, etc. The assistant shall be trained and suited for working under pressure. The lock shall be blown-off to atmospheric pressure when only one person is present in the chamber.

Order

Section 27(6). In connection with decompression and treatment in a chamber, tables approved by the Danish Maritime Authority shall be used.

## **Breathing gases**

Order

Section 28. As regards purity, composition, quantity, declaration, etc., breathing gases shall comply with the provisions of the order on diving equipment.

Guidance

**Section 28. Where diving is carried out using a breathing gas supplied in cylinders from the supplier, it is important to check that the declaration meets the given limit values. Before using the breathing gas for the first**

**time, it is also important to check by means of a analyzer that the oxygen content is in accordance with what is required for the breathing gas used.**

**Order** Section 28(2). The source of the breathing gas at the start of the dive shall contain sufficient breathing gas in consideration of the duration and depth of the dive.

**Guidance** **Section 28(2). As a minimum for the normal supply (primary), it is recommended that, when calculating the quantity of breathing gas for a given work dive, a consumption of 50 l/min is calculated at the given depth and with a safety factor in 1.5 times the planned time.**

**Order** Section 28(3). Sources of breathing gas not carried by the diver shall, irrespective of the composition of the breathing gas, consist of a source of breathing gas and a spare source of breathing gas. The source of breathing gas shall contain breathing gases sufficient for carrying out the planned diving operation, and the spare source of breathing gas shall contain breathing gases sufficient for a proper and safe finalisation of the dive.

**Guidance** **Section 28(3). As a minimum, it is recommended that the quantity of spare breathing gas (secondary) is calculated as a consumption of 50 l/min at the depth.**

**Order** Section 28(4). Irrespective of the composition of the breathing gas, divers being provided with breathing gas through a pipe from the surface, from an open diving bell or the like shall, furthermore, carry an emergency source of breathing gas containing breathing gas sufficient for a proper and safe finalisation of the dive.

**Guidance** **Section 28(4). As a minimum, it is recommended that the source of the emergency breathing gas (the Bailout cylinder) carried by the diver has a size which contains breathing gas for 10 minutes. This implies a consumption of 50 l/min at the greatest planned diving depth.**

**With the following cylinder sizes, this gives a maximum diving depth of:**

<b>5 l</b>	<b>of 200 bar</b>	<b>10 m</b>
<b>10 l</b>	<b>of 200 bar</b>	<b>30 m</b>
<b>10 l</b>	<b>of 300 bar</b>	<b>50 m</b>
<b>7 l</b>	<b>of 200 bar</b>	<b>18 m</b>
<b>12 l</b>	<b>of 200 bar</b>	<b>38 m</b>

**NB: According to the guidance on diving equipment, cylinders forming part of both the primary and the secondary supply must not have a water volume below 20 l.**

Order Section 29. In connection with diving and decompression in water, the oxygen partial pressure shall not exceed the values stipulated in the approved diving and treatment tables.

### **Illness and medical examinations**

Order Section 30. In case the holder of a diver's certificate has been incapacitated for one of the reasons below, he shall not start diving again until a diving doctor's declaration of capacity for work has been presented to the employer:

- 1) Incapacity due to illness or injury for more than 20 days.
- 2) Hospitalization or sending to a clinic.
- 3) Pregnancy.
- 4) Any disease or condition involving the use of optical or mechanical means.
- 5) Any disease or condition involving regular or recurring medical treatment.
- 6) If any other doubt arises, during the health-related approval period, whether the diver meets the health requirements.

### **Penalty**

Order Section 31. Contraventions of sections 4-30 of this order shall be liable to punishment by fine or imprisonment for a term not exceeding 1 year.

Order Section 31(2). The penalty may be increased to imprisonment for a term not exceeding 2 years if the contravention has been committed deliberately or grossly negligently and if the contravention has: 1) resulted in damage to the life or health of young persons below the age of 18 or risk of such damage or 2) given or has intended to give financial benefits to the transgressor or others, including through savings.

Order Section 31(3). If the financial benefits achieved or intended through the contravention is not confiscated, special consideration shall be taken of the size of the achieved or intended financial benefit, cf. subsection 2(ii), when determining the size of any fine, including any supplementary fine.

Order Section 31(4). Companies etc. (legal personalities) may be liable to punishment according to the provisions of part 5 of the Penal Code (*straffeloven*).

### **Entry into force**

Order Section 32. This order shall enter into force on 1 April 2014.

Order Section 32(2). The unskilled diver's assistant mentioned in section 9(2) shall have completed the courses required in section 9(3) and (4) in diving-related first-aid no later than by 1 November 2014.

Order Section 32(3). The diving supervisor mentioned in section 11 shall have completed the course required in section 11(2) as a diving supervisor no later than by 1 November 2014.

Order Section 32(4). Divers holding professional diver's certificates issued for the first time before 1 January 2011 may function as diving supervisors without having completed the course required in section 11(2) as a diving supervisor on the condition that the other requirements for a diving supervisor are met.

Order Section 32(5). The chamber operator mentioned in section 16 shall have completed the course required in section 16 as a chamber operator no later than by 1 November 2014.

Order Section 32(6). Divers holding a professional diver's certificate issued for the first time before 1 January 2011 may function as a chamber operator without having completed the training programme required in section 16 as a chamber operator.

Order Section 32(7). Course certificates on cutting and welding, back washing, blasting, mixed gas, nitrox as well as rescue diving issued pursuant to sections 12-14 of order no. 30 of 15 January 1998 on safety in connection with professional diving operations and on the safe performance of the work of professional divers or section 14 of order no. 828 of 1 September 2000 on the safe performance of diving operations shall remain valid for the time being.

Order Section 32(8). Concurrently with the date stipulated in subsection 1, order no. 828 of 1 September 2000 on the safe performance of diving operations shall be repealed.

Order

Section 32(9). This order shall not apply to Greenland.

Danish Maritime Authority, 12 December 2013

ANNE SKOV STRÜVER / Palle Kristensen