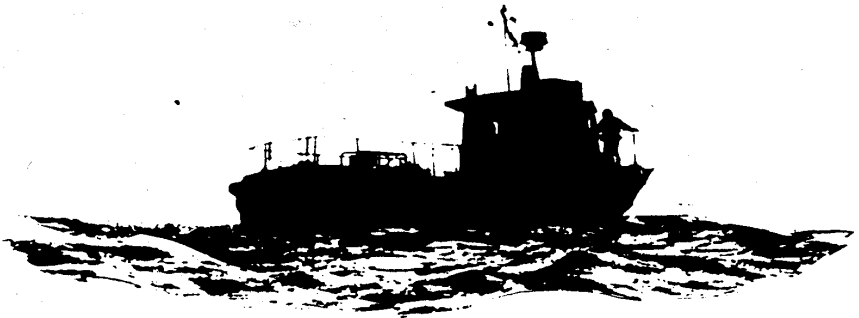




COMMERCIAL SHELLFISH DIVING IN INSHORE WATER

DIVING AT WORK REGULATIONS 1997



This information leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

Introduction

Explanation and intention of this information leaflet

1. Diving for shell fish, where the catch is to be sold to a merchant or direct to a customer, is a commercial undertaking and therefore the activities of the divers are subject to the Health and Safety at Work etc. Act 1974, the Diving at Work Regulations 1997 and certain other health and safety legislation.
2. This information leaflet has been written to help those who are associated with diving for shellfish to comply with the requirements of the Diving at Work Regulations 1997 (referred to as 'the Regulations'). For ease of reference the layout of the headings and paragraphs used in this information leaflet is similar to that in the Approved Codes of Practice issued under the Regulations.

Scope and areas covered by this information leaflet

3. This information applies to all commercial diving for shellfish and is referred to in the commercial diving projects inland/inshore Approved Code of Practice - (L104) - para 6(a) as scallop diving:
 - inshore within United Kingdom territorial waters adjacent to Great Britain (generally 12 nautical miles from the low water line); and
 - inland in Great Britain including in rivers, lakes, ponds and reservoirs.

Clients and others

4. Regulation 4 places a duty on anyone with responsibility for, has control over or is engaged in a diving project covered by this information leaflet. They are to ensure so far as is reasonable that the Regulations are complied with.

5. These people include:
- the client who has placed a contract with a shellfish diving contractor;
 - a master of a vessel from which diving is to take place; and
 - any other person whose actions or activities may affect the safety of the dive.
6. These people should consider carefully the actions required of them to comply with the Regulations. They should, where appropriate, take reasonable steps to ensure that any diving contractor selected is capable of complying with the Regulations.
7. Other groups of people, for example harbour masters, may have authority over the dive under regulations other than the Regulations.

Diving contractors

8. Regulation 5 requires that before a diving project can take place there must be a diving contractor. The diving contractor may be the employer of the divers or a self-employed diver in the dive team. The contractor has important legal duties to ensure that the dive project is carried out properly.
9. Many shellfish diving teams will not be employees of a larger organisation but a group of self-employed divers working with a boat owner or master who assists them. The Regulations acknowledge that diving is a team activity where the members of the team need clearly defined responsibilities.
10. A diving contractor has to be appointed to co-ordinate the overall effort of the team. It is therefore necessary for a team to come to an agreement as to who will carry out the duties of the diving contractor and appoint that person in writing. In most cases the diving contractor will also supervise the dives but a separate supervisor may be appointed.

11. The contractor's responsibilities are to ensure that:

- the dive is managed safely;
- risk assessments have been carried out;
- the vessel from which the diving is to take place is suitably equipped, maintained and seaworthy and has adequate navigation, communication and emergency equipment;
- a suitable dive plan is prepared which includes emergency and contingency plans;
- the supervisor, dive team and vessel master are fully briefed on the dive;
- there are sufficient personnel in the dive team to enable the work to be carried out safely;
- the personnel are competent and, if necessary, qualified;
- supervisors are appointed in writing;
- suitable and sufficient plant is provided and that it is correctly certified and maintained;
- as far as they are able that the team is medically fit to dive; and
- diving project records are kept containing the required details of the dives.

Diving methods

12. SCUBA diving equipment and techniques are acceptable for shellfish diving. SCUBA diving generally involves higher risks than surface supplied diving. SCUBA diving for shellfish should, therefore, only take place in open water under benign conditions.

13. The diving contractor should ensure as a minimum that:

- each diver carries an independent secondary source of breathing gas (for example, a pony cylinder);
- the diver is equipped with a means of providing positive buoyancy which will float him or her on the surface while awaiting recovery;
- the diver is equipped with a suitable means of emergency location such as flares, strobe light, high visibility flag, an Emergency Personal Indicating Radio Beacon (EPIRB) or a combination of these;
- there is a lifeline from the diver to the surface. This line may be tended or may be attached to a high visibility surface float; and
- the number of divers in the water at any one time is limited to what the appointed supervisor can properly manage. This will vary with the type of boat employed, the size of the crew available for top side duties and the prevailing sea and weather conditions but it is unlikely that, even in favourable conditions, one person will be able to supervise more than three divers in the water at one time.

Use of compressed air or gas mixtures

14. Divers breathing a mixture of oxygen and nitrogen under pressure, whether compressed natural air or an artificial mixture, are at risk of both oxygen toxicity and nitrogen narcosis as the depth increases. The maximum depth for breathing mixtures of compressed air or oxygen and nitrogen is 50 metres of water. The recommended maximum partial pressures for oxygen are 1.4 for SCUBA and 1.5 for surface-supplied diving plant. This does not apply to therapeutic recompression.

Exposure limits for surface orientated diving

15. Diving carries an inherent risk of decompression illness (DCI). The incidence of DCI drops if the length of time that a diver spends at any particular depth is limited. A table of depth/time limitations is reproduced below.

Maximum bottom time limitations for surface decompression (SD) and in-water decompression

Depth		Bottom time limits (minutes)
Metres	Feet	SD and in water
0-12	0-40	240
15	50	180
18	60	120
21	70	90
24	80	70
27	90	60
30	100	50
33	110	40
36	120	35
39	130	30
42	140	30
45	150	25
48	160	25
51	170	20

The total elapsed time from when the diver is first exposed to a pressure greater than atmospheric.

16. Use of this table has resulted in a significant reduction in the incidence of DCI, and dive plans should incorporate these maximum time limits. When breathing oxy-nitrogen (nitrox) mixtures with oxygen percentages higher than in natural air, the equivalent air depth should be established. It is this equivalent air depth that should be used to establish bottom time limits.

Specific hazards

17. SCUBA divers can easily be entrapped or entangled. SCUBA shellfish diving should therefore not take place in the proximity of intakes or discharges or where there is a risk of entrapment near underwater nets or structures. Similarly SCUBA diving should not take place in the vicinity of remotely operated vehicles, or where the diver is required to use electrical equipment (other than battery powered) or other high energy tools or equipment.

Restricted surface visibility

18. The dive plan should identify when an operation should be suspended because of restricted surface visibility. The use of SCUBA drift diving techniques is particularly vulnerable to poor visibility. Supervisors must be aware of worsening conditions or poor forecasts, diving must be suspended before conditions deteriorate.

Weather

19. Adverse weather conditions may affect the safety of a diving operation and the dive plan should identify when an operation should be suspended. Shell fishing boats are often small craft which are quickly affected by worsening seas. Not only may a vessel's handling be affected, making it more difficult to reach a diver in the water but also the ability to see a marker buoy reduces rapidly as the sea state increases. Supervisors must be aware of this and suspend diving before conditions become hazardous.

Underwater currents

20. Currents may impose limitations on a diver's operational ability and safety. Changing currents may separate divers who enter the water together. Supervisors must be alert to recalling divers if they are in danger of becoming so separated that they can no longer be monitored efficiently.

Breathing gases

Quantity of gases

21. The quantities of gases required for diving operations, including primary, secondary and, where appropriate, therapeutic treatments, should be calculated and procedures for the provision of them stated when planning a dive.

Quality of gases

22. Procedures for checking and maintaining gas purity standards should be provided to ensure that the breathing gas is safe to breathe.

Medical and physiological considerations

Liaison with a doctor

23. The situation where a member of the dive team may be injured or become ill and a doctor is not available at the work site should be considered in the dive plan.

Diver monitoring

24. Supervisors must monitor the position of divers and the duration of dives. The surfacing time for each diver must be known in advance and the supervisor must be able to recall individual divers if required. Each surface marker buoy should identify which particular diver it is marking.

Decompression illness

25. The diving contractor should identify the arrangements in place for the treatment of any cases of DCI.

Thermal stress

26. Excessive heat and cold can affect the health, safety and efficiency of divers and the dive team. Appropriate personal protective equipment and procedures should be provided to maintain thermal balance, both in the water and in the boat before and after a dive.

Familiarisation

27. When arriving at a dive site before the start of a diving project, all members of the dive team should familiarise themselves with the dive, plant, and any relevant details.

Dive teams and associated working practice

28. Regulation 6 requires the diving contractor to ensure that there are sufficient people with suitable competence to carry out the dive plan.

Team size

29. The required size of the dive team will depend on the risk assessment which should take into account the number of hours to be worked each day, the type of diving, the diving plant and the techniques to be used, any decompression requirements, and the appropriate number required for safety.

30. The minimum team size normally required to conduct a dive safely when diving for shellfish is three - a supervisor, a working diver, and a standby diver. Additional people may be required to operate the boat and to assist in an emergency.

Standby diver

31. A standby diver should be in immediate readiness to provide any necessary assistance to a diver in the water. The standby diver will be on the surface and should be dressed to enter the water, but need not be wearing a mask. The mask should, however, be immediately to hand.

Personnel not employed by the diving contractor

32. Personnel who are not employed by the diving contractor but who are considered for inclusion in the dive team must be competent for the work that they are going to do. They should be familiar with the diving contractor's procedures, rules and the diving plant that is to be used.

First-aid

33. The diving contractor is responsible for ensuring that enough people in each dive team have an in date qualification in first-aid at work and oxygen administration. The supervisor and at least one diver in each dive team should have these qualifications.

34. The diving contractor should provide adequate first-aid equipment. This should include equipment to administer oxygen in an emergency.

Diving plant

35. Regulation 6 requires that the diving contractor ensures that suitable and sufficient plant is available to carry out the project and cope with any reasonably foreseeable emergency.

Oxygen

36. Pressurised oxygen can intensify a fire or lead to an explosion. It should therefore be stored and handled correctly. Any gas mixture containing more than 25 per cent oxygen by volume should be handled as if it were pure oxygen.

Communications

37. There must be a suitable means of communication between the divers and the surface supervisor. This may be by hard wire or through-water voice communication or by rope signals via the buoyed line attached to each diver. If rope signalling is to be relied on then all members of the team must be competent in the technique and supervisors must ensure that they can access each buoy readily.

Availability of compression chambers

38. The diving contractor has a responsibility to ensure the provision of facilities so that a diver can be recompressed in an emergency should this be necessary. Treatment of DCI in a compression chamber should commence as soon as possible. The provision of a recompression chamber should be in accordance with the decompression procedures selected as part of the diving project plan.

39. In addition the following minimum standards should also be applied:

- for dives with no planned in-water decompression and that are less than 10 metres the diving contractor should identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances should this be more than six hours travelling distance from the dive site;
- for dives over 10 and up to 50 metres with either:
 - no planned in-water decompression; or
 - with planned in-water decompression of up to twenty minutes;

a suitable two person, two-compartment chamber should be no more than two hours travelling distance from the dive site; and

- for dives with planned in-water decompression greater than twenty minutes a suitable, operational, two-person, two-compartment chamber should be provided for immediate use at the site of the diving project.

40. In all cases where the recompression chamber is not located on the site, the dive plan should include arrangements to ensure that in an emergency a diver will be able to be transported and recompressed to ensure, so far as is reasonably practicable, his or her safety. The dive plan should record the suitable chambers which have been identified and the arrangements which have been made for emergency recompression throughout the course of the diving project.

Oxygen availability

41. Oxygen should be immediately available at all dive locations, including those where there is a recompression chamber. Sufficient gas should be provided for the duration of a transfer of a diver to a recompression chamber, hospital or other place. It should be provided by a tight-fitting mask or by a mouthpiece with nose clip.

Maintenance

42. Diving plant should be maintained, examined and tested regularly. It should be inspected immediately before use by a competent person to ensure that it is not damaged or suffering from deterioration.

Supervisors

43. Regulation 9 addresses the appointment of supervisors and Regulation 10 addresses the duties of a supervisor.

44. A supervisor must be appointed in writing by the diving contractor. More than one supervisor may be appointed in a shellfish diving team but only one may be in control at any one time. The appointed supervisor should have immediate overriding control of all safety aspects of the diving operation.

Suitable qualifications

45. A supervisor must be suitably qualified as a diver for the diving techniques to be used in the operation.

46. Supervisors do not have to have a certificate of medical fitness to dive, but should have an in date first-aid at work qualification and should be competent to manage a medical emergency.

47. The diving contractor must consider the competence of a person before appointing him or her as a supervisor. When considering competence, the diving contractor should consider such questions as whether the person is knowledgeable, practical, reliable; capable of conducting the diving operation in a safe manner; capable of managing

members of the diving team appropriately; capable of acting sensibly in an emergency; and so on.

Responsibility of the supervisor

48. Supervisors are responsible for the operation that they have been appointed to supervise and they should only hand over control to another suitably qualified supervisor appointed for that diving project by the diving contractor.

49. During diving operations from a vessel, the supervisor should liaise with other personnel, such as the vessel master. In such circumstances, the supervisor should recognise that the vessel master has responsibility for the overall safety of the vessel and its occupants.

50. To ensure that a diving operation is carried out safely, supervisors must:

- satisfy themselves that the proposed dive site and the water and weather conditions are suitable;
- satisfy themselves that the personnel they are to supervise are competent and fit to carry out the work required of them and all those who are to dive hold a suitable and valid certificate of diving competence;
- ensure that the diving project plan and arrangements for dealing with foreseeable emergencies are clearly understood by all those engaged in the diving operation;
- check that the plant they propose to use is adequate, safe, properly certified and maintained. They should ensure that the plant is adequately inspected by themselves or another competent person before its use;

- establish that all relevant people are aware that a diving operation is to start or continue. They should also obtain any necessary permission before starting or continuing the operation, for example when working in or close to a lock, shipping lane or in a harbour;
- maintain proper records of the diving operation. As a minimum this would include a description of the dive, the names of those taking part and their qualifications, the date, time and location, maximum depth attained by each diver and their bottom time or dive time, the decompression schedule being used and a record that the plant has been inspected before the dive; and
- maintain the diving operation record throughout the diving operation for which they are appointed.

Divers

51. Regulations 12 and 14 address the appropriate qualifications for divers.

Qualifications

52. All divers at work must hold an approved diving qualification suitable for the work they intend to do. A list of current approved qualifications can be obtained from the HSE.

Medical checks

53. All divers at work must have a valid certificate of medical fitness to dive issued by an HSE medical examiner of divers.

54. Persons who dive in a diving project and who consider themselves unfit for any reason, for example, fatigue, minor injury, recent medical treatment, must inform their supervisor. Supervisors should seek guidance from the diving contractor, their medical adviser or an HSE approved diving doctor if there is doubt about a diver's fitness to dive.

Copies available from:

Health and Safety Executive
Diving Operations Strategy Team
Rose Court
2 Southwark Bridge
London
SE1 9HS