

1. Introduction

a. When diving within the UK 12-mile territorial limit, NERC divers must comply with the *Diving at Work Regulations (DWR) 1997*. If diving abroad then the Regulations are taken as the industry best practice and should be adhered to where reasonably practicable. When diving from a UK-registered vessel beyond the 12-mile limit, NERC divers must comply with *The Merchant Shipping (Diving Safety) Regulations 2002*.

b. There are five Approved Codes of Practice (ACoPs) that are published by the Health and Safety Commission. These are for:

- i. Scientific and Archaeological diving operations
- ii. Inshore diving operations
- iii. Offshore diving operations
- iv. Media diving operations
- v. Recreational diving operations

Although the Scientific and Archaeological ACoP is the one that will be most frequently used, NERC divers should be aware that any diving operations that are not directly or indirectly involved with scientific or archaeological research or educational instruction must be managed under one of the other ACoPs.

c. Diving in NERC is organised on a site-by-site basis. For each site a senior manager will be nominated to act as the diving contractor. It is the responsibility of each site to:

- i. advise the HSE of the name and contact details of the diving contractor and ensure that the HSE are informed of any changes.
- ii. have a named “suitable employee” with expertise in diving matters who can discharge some of the specialist duties of the diving contractor on their behalf.
- iii. have a written management structure that details the lines and levels of responsibility.
- iv. provide appropriate training and guidance to ensure the competence of the diving contractor (available through the Scientific Diving Supervisory Committee, contact <http://www.uk-sdsc.com/>).

2. The organisation of diving operations

a. All diving operations should be carried out in accordance with the guidance contained in the most appropriate ACoP.

b. Every diving operation must be part of a written Diving Project Plan. An example Diving Project Plan is shown in Annex 1.

c. The Diving Contractor must appoint, in writing, a fully competent diving supervisor for every diving operation. It is acknowledged that the Diving Contractor may be unable to make these appointments on a regular basis. In this case, appointing a diving supervisor for a longer period (but no longer than 1 year) may be done with more frequent allocations being made by the nominated suitable employee. In all cases the diving supervisor must be competent to supervise the diving operation they are being appointed to. An example of a diving supervisor appointment letter is given in Annex 2.

d. Every diving operation must be risk assessed for the form of diving to be undertaken, for the environmental conditions and for the task to be undertaken. Specific risk assessments may be based on the outcome of generic risk assessments. A generic risk assessment for the use of SCUBA is given in Annex 3. Examples of site- and task-specific risk assessments are given in Annexes 4 and 5. There is also a requirement to undertake an on-site risk assessment on the day of the diving operation and to note any changes that could alter the initial risk assessments. Any changes must be noted on the diving operation logsheet (Annex 6).

e. Every diver employed in a diving operation must be competent to undertake the tasks and must comply with the conditions of diving at work as set out in the DWR1997. Competency must be demonstrated by producing documentary proof of training or accredited previous experience.

f. Decompression must be planned in accordance with an accepted decompression table. Although the DWR1997 permit use of decompression computers total reliance on them to control decompression schedules must be risk assessed within the context of the diving operation and within planned gas consumption limits.

3. Other major Health and Safety legislation relevant to Diving Projects

There are 19 other pieces of Health and Safety legislation that may be relevant to diving projects. These are listed in Annex 2 of the Scientific and Archaeological ACoP.

4. Health issues

a. Certificate of medical fitness – NERC divers must have a valid certificate of medical fitness issued by an HSE-approved doctor before they can dive. Medical certificates must be renewed annually.

b. Women divers: pregnancy and diving – NERC has special duties towards pregnant women and nursing mothers under the *Management of Health & Safety at Work Regulations 1999* (see the Health & Safety Executives publication *HS(G)122, New and expectant mothers at work; a guide for employers*, HSE Books 2002, ISBN 0 7176 2583 4, price £9.50). The advice given by HSE guidance (p. 22) is that pregnant workers should not dive at all.

5. Diving overseas

a. It is NERC policy that if diving abroad then the DWR1997 and associated ACoPs are taken as the industry best practice and should be adhered to where reasonably practicable

b. In situations where the DWR1997 cannot be adhered to, then the following publication, which is accepted internationally as a manual for safe scientific diving, should be followed: *Code of practice for scientific diving: principles for the safe practice of scientific diving in different environments (UNESCO)*, by N C Flemming and M D Max, published by UNESCO in Paris in 1988. This publication is out of print but there are copies in the British Library at Boston Spa and at the University of Strathclyde.

6. Other information

a. *Scientific Diving Supervisory Committee (SDSC)*. The SDSC was set up in 1991 to represent the employers of scientific and archaeological divers in discussions with the HSE on diving at work issues. Following the publication of DWR1997, the SDSC is now regarded as the organisation that is most representative of the Scientific and Archaeological diving industry sector. The SDSC disseminates information about new techniques, developments and any legislative changes. For further information see the website at: www.uk-sdsc.com

b. *Health and Safety Executive*. The HSE maintains a dedicated website for diving at work issues. The website is used to publish research reports and any changes to pertinent H&S legislation. The site is useful for obtaining up to date information on diving qualifications, the HSE Diving Inspectorate, reporting diving injuries etc. For further information see the website at: www.hse.gov.uk/diving/

c. *Maritime and Coastguard Agency(MCA)*. The MCA maintains web-based versions of Statutory Instruments and M-Notices, though they can be hard to find. RSU Operations subscribes to an alternative system and can be contacted for assistance with the necessary diving regulations. For MCA regulations see the website at: <http://www.mcga.gov.uk/c4mca/mcga-mld-page.htm?textobjid=88E6A92E50489507> and <http://www.mcga.gov.uk/c4mca/mcga-mld.page.htm?textobjid=98A522C580657CDC>

Diving Project Plan	Annex 1
----------------------------	----------------

Location: NAME, lat/long
Dates of Dives: dates or duration (max. 1 year)
Maximum Depth:

Work Plan Code: identifier & date
Principal Investigator:
Project Code:

Named Diving Contractor:	
Diving Contractor Address:	Diving Contractor Contact Details
	Tel:
	Fax:

Diving Project Description:

An outlay of the whole diving project, the type and number of team required for the whole project and any special equipment that may be used (e.g. Nitrox, diving from RVs etc.). The Work Plan must be sub-divided into separate Diving Operations which are capable of being supervised by a single supervisor.

Diving Operations:	
Diving Operation Description	RA Code
1.	
2.	
3.	
4.	
5.	
6.	

Overall Associated Risk:	Rating	
Give an overall assessment of the Dive Project – (there is no rating system above this)		

Emergency Considerations:

1. State how, in an emergency, the diver will be retrieved
2. State what the on-site treatment will be
3. State how transfer for on-going treatment will be achieved
4. State what the contact details for the emergency services are

Risk assessments checked on behalf of the Diving Contractor by:

_____ (print name) _____ (position)

_____ (signature) ____/____/____ (date)

Dear

APPOINTMENT OF DIVING SUPERVISOR - <name>

In accordance with my duties as Diving Contractor under Regulation 6 (2) (b) of the Health and Safety Diving at Work Regulations 1997, I hereby appoint you as a named Diving Supervisor for diving operations where the Natural Environment Research Council is the contracting body. Your appointment lasts from **dd mmm yyyy** to **dd mmm yyyy**. Reappointment will be considered after this period and is dependent on providing evidence of being competent to supervise diving operations under the Scientific Diving Supervisory Committee competencies for Scientific and Archaeological diving operations.

Following guidance obtained from the Health and Safety Executive (HSE) it is permissible for me as Diving Contractor, under the HSE Scientific and Archaeological Diving Projects Approved Code of Practice interpretation of Regulation 5, to instruct suitable employees to ensure the competence of the Diving Supervisor for each diving operation on my behalf, prior to the diving operation commencing. To this end, your appointment as Diving Supervisor for every diving operation you are supervising must be verified by **<name(s) of suitable employee>**. This verification must be entered into the Diving Operation Record sheet.

Before a diving operation that you are supervising commences, it is your duty as a named Diving Supervisor:

- to be familiar with the overall Diving Project Plan under which the Diving Operation is to be undertaken;
- to have read, agreed with and have a copy of all the relevant risk assessments;
- to have checked the competencies and qualifications of the diving team; and
- to have checked the equipment and associated plant for the diving operation.

You must indicate on the Diving Operation Record sheet that the above checks have been undertaken by you prior to every diving operation taking place.

Thank you for agreeing to take on this very important role on behalf of **<research centre name>**.

<Signed name>

<Research centre name> Diving Contractor

NOTE

This risk assessment is for the use of SCUBA only. For a full diving operation to be compliant with the HSE *Diving at Work* regulations (1997) the following risk assessments also need to be completed:

- Diving Operation RA (describes and assesses the tasks to be undertaken)
- Site RA (describes and assesses the site at which the diving operation is to take place)
- Day RA (describes and assesses any day-specific elements that cannot be predicted ahead of the diving operation taking place).

The Supervisor of any Diving Operation should always be provided with copies of the Generic SCUBA RA, the Diving Operation RA and the Site RA prior to departing to undertake that operation. It will be their responsibility to undertake the Day-Specific RA on-site prior to the diving operation commencing.

SCUBA Risk Assessment

Identified RISK	Actions to minimise risk	Additional Comments (cross-reference with other RAs and/or supporting literature)
(1) Improper diver suitability	(a) Every diver in the team must be qualified to at least CMAS 3* or equivalent (b) Every diver must have an in date HSE medical (c) Every diver must be considered to be dive-fit	- the minimum requirements for a diving team at work are given by HSE Diving at Work Regulations 1997 (HSE DWR 1997) Regulation 6(3)(a) and detailed in the Scientific and Archaeological Approved Code of Practice (referred to as ACoP) sections 43-55 (pages 11-13). - CMAS 3* equivalencies are given in the SDSC guidance notes to the 1997 regulations (pages 77-85); a list of approved qualifications can also be obtained from the HSE. - See also HSE DWR 1997 Regulation 13(1)(a); ACoP sections 86-95 (pages 19-20). - HSE DWR 1997 Regulation 13(1)(b); ACoP sections 96-101 (pages 21-22) - guidelines on ‘dive fitness’ are given in the SDSC guidance notes to the 1997 regulations (page 13)
(2) Unacceptable standards of	(a) All equipment must be maintained and	- HSE DWR 1997 Regulation 6(3)(c); ACoP sections 70-75

<p>equipment provision and performance</p>	<p>serviced in line with manufacturers guidelines</p> <p>(b) All equipment must be assessed prior to a diving operation by a competent person to ensure that it is suitable, compatible and functional.</p> <p>(c) If there are any concerns over equipment performance then the diving operation should be terminated.</p> <p>(d) Each diver must be supplied with breathing gas to a recognized standard and adequate in volume and rate of supply for the specific diving operation</p>	<p>(page 16)</p> <ul style="list-style-type: none"> - a formal agreed maintenance schedule is recommended (ACoP section 71, page 16) - having one person in overall control of equipment provision should be considered. That person should undertake formal training in equipment maintenance where possible. - none - current British standard for air purity is BS4001 (see SDSC guidelines page 15). Mixed gas analyses should always be carried out twice before use. - an alternative breathing gas source or secondary life support system should be provided for emergency use.
<p>(3) Improper dive team suitability</p>	<p>(a) The minimum dive team for SCUBA consists of a Supervisor, a Diver and a Buddy. VHF or mobile phone connection to a fourth competent person is recommended as an addition to the minimum team size</p> <p>(b) If relying on remote communications for connection to the fourth team member, then those communications must be tested prior to departure to and at the site of the diving operation.</p>	<ul style="list-style-type: none"> - the minimum requirements for a diving team at work are given by HSE DWR 1997 Regulation 6(3)(a); ACoP sections 43-55 (pages 11-13). - none
<p>(4) Unacceptable standard of Diving Supervision</p>	<p>(a) Every Diving Operation must have a Dive Supervisor in charge of the operation, nominated, in writing, by the Diving Contractor.</p> <p>(b) Every Diving Supervisor must provide proof of having being assessed as being competent in line with the SDSC Dive Supervisor competencies (agreed with the HSE)</p>	<ul style="list-style-type: none"> - HSE DWR 1997 Regulation 9(1); ACoP sections 76-85 (pages 17-18) - SDSC Dive Supervisor competencies
<p>(5) Unacceptable standards of Communications</p>	<p>(a) The Dive Supervisor should have some method of communication with the divers. Hard-wire or through-water voice communications is the preferred method. Roped diver or diver</p>	<ul style="list-style-type: none"> - ACoP section 58, page 14. - SDSC guidance notes page 18.

	<p>Surface Marker Buoys (SMBs) are also considered acceptable as long as the Dive Supervisor can easily gain access to the SMB (by boat for example). Surface noise signals are acceptable where familiarization training for that technique has been undertaken.</p> <p>(b) Every Diving Supervisor should have the means to communicate with third parties and these should be tested as in (3)(b) above.</p> <p>(c) That a diving operation is underway must be communicated to other water users by use of an 'A' flag. If operating in ports, then the harbour master must be informed of the operation. (Does NERC dive in American waters – if so note that the USA uses another (unofficial) dive flag and do not know what an 'A' flag signifies.</p>	<p>- ACoP section 58, page 14.</p>
<p>(6) Unsafe Decompression procedures</p>	<p>(a) Decompression procedures must be determined by reference to approved Decompression Tables</p> <p>(b) Diving to the limits of any decompression table is not recommended. Additional safety can be provided through the use of mixed gases, limiting the number of dives per day, avoiding provocative dive profiles and applying nominal but agreed percentage limits.</p> <p>(c) Dive computers can permit unsafe diving practices and their use should only be allowed in association with decompression tables.</p> <p>(d) Altitude allowances for travel back from a diving operation must be made where applicable.</p>	<p>- see SDSC guidance notes, section 8, pages 60-63. - HSE DWR 1997 Regulation 8(1), (3); ACoP section 42 (page 10).</p> <p>- see SDSC guidance notes, section 8, pages 60-63.</p> <p>- see SDSC guidance notes, section 8, pages 60-63.</p> <p>- see SDSC guidance notes, section 8, pages 60-63. - NB. Altitude becomes an issue at only 100 metres and may effect many road-based diving operations, e.g. on the west coast of Scotland. - NB. Air travel also has hypobaric consideration and should be avoided for at least 24 hours after every diving operation.</p>

<p>(6) Improper Emergency actions</p>	<p>(a) All team members must be aware of the agreed emergency plan for each diving operation. The emergency plan must be specific to every diving operation.</p> <p>(b) It is recommended that ALL dive team members are qualified to at least HSE First Aid at Work standard</p> <p>(c) An emergency supply of oxygen must be available for every diving operation and the volume of that supply must be assessed in line with predicted emergency transfer times.</p> <p>(d) A diving-specific first aid kit must be available for every diving operation.</p> <p>(e) The Dive Supervisor should be aware of the nearest recompression chamber to the site of the diving operation. Contact with the chamber immediately prior to undertaking the diving operation is recommended. Evacuation procedures to the nearest recompression chamber must be entered on to the diving operation plan.</p>	<ul style="list-style-type: none"> - HSE DWR 1997 regulation 6(3)(b); ACoP sections 60-63 (page 14) - HSE DWR 1997 regulation 10(2)(a); ACoP sections 51-55 (pages 12-13) - all Dive Supervisors must be competent in the application of oxygen in an emergency - it is recommended that the contents of the oxygen supply are checked and noted prior to every diving operation. - it is recommended that the first aid box be sealed in order to indicate use. The contents should be checked for being ‘in date’ at intervals of no less than 6 months, and the date of last inspection clearly marked on the outside of the box and noted on the Dive Operations log. - HSE DWR 1997 Regulation 6(3)(b); ACoP sections 64-69 (page 15).
<p>(7) Unacceptable safety of Diver Ingress/Egress</p>	<p>(a) Shore diving presents a number of risks related to carrying large weights on land (see section 9 below), uneven surfaces on which to walk on and problems of emergency retrieval. Shore diving should only be used in exceptional circumstances where a surface boat cannot be used.</p> <p>(b) Diving from small boats (inflatables or RIBs) must only be undertaken with a fully competent coxswain in charge of boat handling.</p> <p>(c) All diving operations undertaken from larger</p>	<ul style="list-style-type: none"> - The Site-Specific Risk Assessment must, in detail, outline the reasons why a surface boat is to be dispensed with. - RYA Level 2 is the minimum standard for a boat handler though this is presently under revision. However, Level 2 does not specifically include training in diver deployment and retrieval. Formal training can be obtained through diving-specific training organizations. - The boat/ship Master must be provided with copies

	<p>displacement vessels must be undertaken with the full knowledge and involvement of the boat/ships Master.</p> <p>(d) All diving operations conducted beyond 12m from shore must comply with the marine legislation and specialist advice may be required.</p>	<p>of the diving operations plan and all of the Risk Assessments. The Supervisor must be in communicative contact with the Master</p> <ul style="list-style-type: none"> - at all times of the diving operation. Methods of diver deployment/retrieval must be agreed prior to the diving operation taking place and must be assessed for risk. The Dive Supervisor should insist on a demonstration of the Master's competency if in doubt (How exactly is this to be done?) Location and operational status of all vessel suction and discharge points must be established. Procedures in the case of the vessel having to use main or secondary propulsion units must be established. - <i>Merchant Shipping (Safe Diving) Regulations 2002</i>
(8) Unsuitable Diver protection	(a) All divers and the Dive Supervisor should be provided with protective equipment to prevent excessive environmental exposure. Additional care must be taken in areas of potential contamination risk.	<ul style="list-style-type: none"> - HSE DWR 1997 Regulation 6(3)(b); ACoP sections 59 (page 14). - SDSC guidance notes section 6.17 (pages 40-41).
(9) Unsuitable Manual Handling Assessment	(a) Diving is regarded as a high-risk manual handling work procedure. A detailed manual handling risk assessment must form part of the diving operation plan. In particular the dive plan should seek to minimise lifting procedures and reduce any form of body twisting.	

Location: Name plus Lat/Long

Dates of Dives: to last no longer than 1 year

Maximum Depth:

Site Code: site/001 (identifier)

Principal Investigator:

Project Code:

Tidal Conditions:

Likelihood vs severity of tidal influence
If high state at what time diving should take place

Rating

Diver experience/qualifications:

Likelihood vs severity of the site influencing the choice of diver. Low = no restrictions

Rating

Surface traffic:

Likelihood vs severity of surface traffic interference
If medium/high state what steps taken to minimise

Rating

Underwater Hazards:

Likelihood vs severity of potential underwater hazards, including dive vessel – if medium/high then what steps taken to minimise

Rating

Recompression Considerations:

Is the site remote? Are the travel distances to a chamber at the 2 hour limit? If yes then steps to minimise decompression injury.

Rating

Access/Egress:

Default practice is to dive from surface vessels. If diving from shore then give reasons why and outline how retrieval can occur.

Rating

Air/Sea temperatures / Weather exposure:

Likelihood vs severity of exposure to weather extremes. If medium/high state what steps taken to minimise

Rating

Special Hazards:

Likelihood vs severity of any special hazards – water contamination etc.

Rating

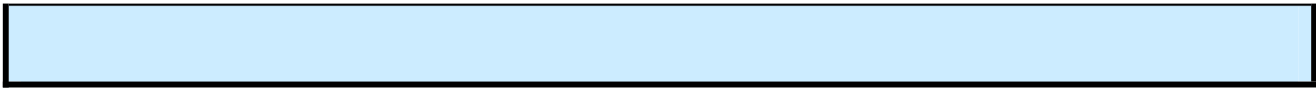
Overall Associated Risk:

Rating

Give an overall assessment of the Dive SITE (an average of the above rating scales where rated)

Emergency Considerations:

1. State how, in an emergency, the diver will be retrieved
2. State what the on-site treatment will be
3. State how transfer for on-going treatment will be achieved
4. State what the contact details for the emergency services are



Risk assessment undertaken by:

_____ (print name)

(position)

_____ (signature) ____/____/_____(date)

Diving Operation Risk Assessment Form

B: TASK

Annex 5

Dates of Dives: to last no longer than 1 year

Maximum Depth:

TASK Code: task/001 (identifier)

Principal Investigator:

Project Code:

Task: Brief description

Tidal Conditions:

Likelihood vs severity of how tidal influence could affect the diving task. If high state when diving should take place (?)

Rating

Diver experience/qualifications:

Likelihood vs severity of the task influencing the choice of diver. Low = no restrictions

Rating

Diver protection / personal equipment needs:

Likelihood vs severity of diver requiring specific/additional protection from the equipment used for the TASK, to include full vs half masks.

Rating

Task Operation:

Likelihood vs severity of hazards arising from the actual TASKS to be undertaken – if medium/high then what steps taken to minimise

Rating

Manual Handling:

Does the equipment required for the task present manual handling risks on and/or below the surface.

Rating

Special Hazards:

Likelihood vs severity of any special hazards – towed diver, filming grabs/landers, taking contaminated samples etc.

Rating

Surface to diver communications:

Likelihood vs severity of not maintaining voice communications with the diver / divers. If voice comms are not going to be used state why here .

Rating

Overall Associated Risk:

Rating

Give an overall assessment of the Dive TASK (an average of the above rating scales where rated)

Planning Considerations / Task Protocol:

LIST how the TASK is to be planned and executed. State clearly which diver is to perform which part of the TASK. Where medium or high risks are identified, state clearly how the risks will be avoided or minimised.

Risk assessment undertaken by:

_____ (print name)

(position)

_____ (signature) ____/____/____ (date)

Diving Operation Log

Annex 6

**DIVE
NUMBER:**

DIVING OPERATION DETAILS

Diving Project Name and Code:

Operational Project Code:

Diving Operation Name and Code:

Dive Site and Site RA code:

Dive Task and Task RA code:

Date of Diving Operation:

Time of Commencement:

DIVING CONTRACTOR:

The **DIVING SUPERVISOR** for this Diving Operation, having been appointed in writing as an approved
Diving Supervisor by the Diving Contractor, is:

As checked by (suitable employee) under instruction from
the Diving Contractor

_____ (name)

(signed)

_____ (date)

DIVING OPERATION TEAM:

Divers:

Tender:

Nominated Boat Handler:

Nominated First Aider:

Additional Personnel:

PRE-DIVING OPERATION CHECKS

(the following have been checked and found to be acceptable)

Generic Risk Assessment

Diving Project Plan

Site Risk Assessment

Task Risk Assessment

Divers' qualifications & medicals

Diving Equipment / plant

The following on-site / on-day changes from the above Risk
Assessments are:

(signed by the **DIVING SUPERVISOR**)

ADDITIONAL INFORMATION

Recompression chamber:

(Location and travel time from Dive Site)

Breathing apparatus used:

Breathing gas used:

Decompression Tables used:

Communications used:

Method of transport/recovery:

1st aid equipment:

Dive No	Diver Names	Left Surface	Left Bottom	On Surface	Deco Stops	Max Depth (m EAD)	Total Time
1					____ @ ____ m ____ @ ____ m		
2					____ @ ____ m ____ @ ____ m		
3					____ @ ____ m ____ @ ____ m		

DIVING INCIDENTS:

(note any injuries or incidents of decompression sickness; any incidents must also be placed in the Laboratory accident book and reported via RIDDOR if appropriate)

DIVING OPERATION:

Additional Comments:

Time of completion of Diving Operation:

Signed:

(Dive Supervisor)

Date:

