

The Cave Diving Group Training Standard

13th March 2004

This Training Standard is a code of practice for UK cave diver training published by the Cave Diving Group of Great Britain. It does not represent a Rule of the Group.

Part 1 – Diver training to Qualified Diver level.

1 Scope

This Training Standard is intended to guide the tuition of amateur cave divers who wish to engage in cave diving for leisure purposes under the conditions commonly found in UK sumps.

This Standard addresses the tuition of the diving skills required for cave diving. Matters pertaining to caving, physical access to diving sites and dive-project planning are specifically outside the scope of this Standard.

This Standard is intended to teach cave diving skills using open circuit air diving equipment with a dry-suit or with a wetsuit and a buoyancy control device to divers who are already experienced in open-water diving techniques.

2 References

The Cave Diving Group Constitution (<http://www.cavedivinggroup.org.uk/Articles/Constitution.html>)

The Cave Diving Group Safety Code (<http://www.cavedivinggroup.org.uk/Articles/safetycode.html>)

The Cave Diving Group training manual (Mendip Publishing 1990 ISBN 0-905903-14-5).

3 Responsibilities

Trainer

At all times the Trainer must maintain the safety of the Trainee above the needs of the training.

The Trainer must fully explain the risks associated with cave diving.

The Trainer must provide direct tuition in person for a total of at least 10 hours on at least two different occasions.

The Trainer must provide in-water tuition to no more than three Trainees at any given time.

Trainee

The Trainee must inform the Trainer of all previous caving and diving experience.

The Trainee must inform the Trainer of all medical or physical conditions that might affect the trainee's ability to participate in diver training.

The Trainee must explain their motivation for wishing to be trained in cave diving techniques.

The Trainee must understand the risks associated with cave diving and must give informed consent to enter into the training on a voluntary basis.

4 Pre-Training Requirements

Trainer

The Trainer must belong to a national organization with recognized expertise in training cave diving in UK conditions. The Trainer must be fully recognized by that organization and be qualified and insured to conduct the training of inexperienced cave divers.

The Trainer must ensure that there is suitable access to out-of-water, open-water and sump sites that will enable controlled and relevant demonstration and practice of cave diving techniques.

Trainee

The Trainee must have had some experience of the cave environment before commencing cave diver training.

The Trainee must be able to demonstrate to the Trainer's satisfaction that they have basic cave, open-water diving and first aid skills that include the following:

- Carry a 20Kg load for 200m through simple, walking, wild-cave conditions.
- Conduct a 30 minute dive to a maximum depth of 30m in open-water conditions using commonly recognized diving practices with adequate planning and preparation for emergency situations.
- Demonstrate the ability to recognise a cardiac arrest, how to perform cardio-pulmonary resuscitation, maintain an airway and control bleeding.

5 Training

5.1 Delivery of Training

The Trainer will ensure that the Trainee is introduced to the skills of cave diving in a progressive fashion starting out of the water, then practicing the skills in open-water and finally using the skills in a cave diving situation. The open-water sites should, where possible, simulate the cave diving environment. The cave diving site should be suitable for tuition and practice of cave diving skills but still have a muddy floor and no clear air surface.

Either natural cave sumps or flooded mines can be used at the Trainer's discretion. The Cave Diving Group Safety Code must be observed at all times.

5.2 Out-of-water Training

The following topics should be explained, demonstrated and practiced out of the water:

UK Caves

- The formation of caves
- The physical environment
- Classic sites
- Access
- Sources of information
- Cave conservation
- Legal aspects to cave diving

Equipment configuration

- Suits
- Buoyancy compensation devices and techniques
- Harnesses
- Cylinders
- Regulators
- Lighting
- Ancillary Equipment

Underwater Skills

- Buoyancy control and recovery from failure
- Air contamination identification and responses
- Mask clearing
- Total mask failure
- Sinus and ear clearing failure
- Regulator swapping
- Breathing supply failure procedures
- Multiple cylinder diving
- Underwater transportation of equipment
- Fin strokes
- Removing and replacing equipment
- Emergency rescue procedures
- Zero visibility techniques

Above water skills and theory

- Pre-dive planning
- Gear assembly and pre-dive checks
- Kitting-up underground
- Air margin calculations
- Porterage to dive base
- Equipment maintenance
- Oxygen cleaning
- Compressors and compressing
- Cylinder markings and testing
- Risk assessment and mitigation
- Emergency rescue procedures

Physiology and Medicine

- Diving on medications (e.g. decongestants)
- Arterial gas embolism
- Pulmonary barotrauma
- Dysbarism

Psychology

- Motivation for cave diving
- Setting personal limits
- Pre-dive mental preparation
- Solo diving
- Multiple divers – single sump

- Coping with adversity

Line Management:

- A brief overview of the history of line laying and following in the UK
- The risks and benefits of using a dive line in a sump
- Line construction and properties
- Line tagging and junctions
- Line reels
- Common codes of conduct for line usage and maintenance
- Describing and navigating using lines
- Line laying and belaying techniques
- Branch lines and out tags
- Lost line procedures
- Line cutting procedures
- Clearing tangled line
- The affect of your actions on other divers

First Aid

- Cardiac arrest
- Cardio-pulmonary resuscitation
- Maintaining an airway
- Controlling bleeding

Surveying

- Surveying to true north
- Recording data underwater
- Drawing up surveys

Decompression Diving Techniques

- Gas laws
- Decompression diving physiology
- Decompression sickness
- Oxygen toxicity
- Nitrogen narcosis
- Development of the multiple compartment decompression algorithms
- Use of tables in square profile diving
- Use of dive computers in calculating decompression schedules
- Dangers associated with non-square profile diving
- Micro-bubble theory
- Flying after diving and diving at altitude
- In-water use of oxygen during decompression
- Decompression incident emergency procedures

Awareness of advanced diving techniques

- Nitrox
- Mixed gases
- Scooters
- Rebreathers
- Habitats

5.3 Open water practice

The Trainee should conduct at least two open-water dives totalling at least 60 minutes underwater practicing the following skills:

- Equipment assembly, check and weight for neutral buoyancy
- The use of a buoyancy control devices and techniques
- Changing between breathing sets
- Controlling a failed regulator due to:
 - A damaged or clogged exhaust port by purging the regulator for each breath.
 - A free-flowing regulation by turning the cylinder tap on and off for each breath and also to give a controlled slow free flow so as to free both hands.
- Mask clearance and total failure
- Reinstating an interrupted breathing supply
- Line laying and following
- Zero visibility techniques
- Line surveying

- Simulated emergency procedures

5.4 Cave diving under supervision

The Trainee should conduct at least two cave dives totaling at least 60 minutes underwater practicing the following skills:

- Line laying and following
- Simulated emergency procedures
- Surveying

6 Appraisal of Training

The Trainer should provide regular appraisals of the Trainee's progress with their development of cave diving skills to help the Trainee to plan further training and diving within safe personal limits.