



CMAS

CONFÉDÉRATION MONDIALE
DES ACTIVITÉS SUBAQUATIQUES

WORLD UNDERWATER FEDERATION

CMAS

NORMOXIC TRIMIX DIVER

STANDARDS AND REQUIREMENTS

(VERSION 2006/00)

Course Outline

1. Course Classification (Type and level)

1.1 **Classification**

This CMAS Normoxic Trimix Diver course is an advanced speciality course, which can only be undertaken after satisfying the entry standards as set out below.

1.2 **Qualification term**

This CMAS qualification has no expiry date Subject to national standards (including medical status).

1.3 **Qualification Limits Qualification Limits**

Graduates are qualified to dive:

1.3.1 Using so-called "Normoxic" Trimix.

1.3.2 To a maximum operating depth (MOD) of 60metres, subject to a ppO₂ maximum of 1.4bar at the MOD.

1.3.3 Using Nitrox and /or oxygen for decompression purposes, subject to a maximum ppO₂ of 1.6bar.

1.3.4 To a maximum Equivalent Narcotic Depth (END) of 40m.

1.4 **Course documentation**

Instructor will provide all necessary course documentation.

2. Aims & objectives of the training

- 2.1 To provide the candidate with a clear understanding of subject matter related "Normoxic" Trimix diving including the practical use of the additional diving and associated equipment.
- 2.2 To provide a clear understanding of the physical and physiological aspects of Normoxic Trimix diving and strategies to cope.
- 2.3 To provide a clear understanding of the extensive dive planning required for Normoxic Trimix diving, including Risk assessment, equipment selection, equipment configuration, Back-up gas, escape routes, accelerated decompression and support teams.

3. Course entry qualifications

- 3.1 Minimum age 18years.
- 3.2 Diving qualification: 3-Star diver CMAS or equivalent CMAS Advanced Nitrox Diver (level 2) or equivalent qualification from a recognised diver training agency.
- 3.3 Minimum number of logged qualifying dives: Candidates must show proof of 150 logged dives as a CMAS 3-star Diver, plus logged proof 20 dives as an Advanced or Extended Range Nitrox Diver.
- 3.4 Medical declaration: Candidates must provide a medical declaration of fitness to dive, as set out by their National Federation.
- 3.5 Equipment: Candidate will provide all necessary diving equipment to complete this course (see suggest list below).

4. Instructor / candidate Ratio:

Theory/classroom: Instructor / Candidates maximum ratio 1:8

Practical/open water: Instructor / Candidates maximum ratio 1:2

5. Requirements of the instructor/assistants

- 5.1 Instructor /Course Leader:
 - 5.1.1 Minimum 18 year of age.
 - 5.1.2 CMAS 2 Star Instructor or equivalent.
 - 5.1.3 CMAS Normoxic or Advanced Trimix Instructor.
- 5.2 National Qualifications: Instructor must have a valid instructor classification according to the requirements of his/her National Organisation or CDC.
- 5.3 Assistants: According to the requirements of the course leader.

6. Personal Equipment

- 6.1 Candidates will only provide their own diving equipment they are familiar with (Note: This is not a course for experimentation with new equipment).
- 6.2 All equipment used must well maintained and fit for the purpose.
- 6.3 Oxygen Service: Candidates will provide certification to prove that all:
 - 6.3.1 Equipment for use with gas mixtures other than air is in "oxygen service",
 - 6.3.2 Dive cylinders are in "test".
- 6.4 Candidates will pay the cost of all the breathing gases that they use or store in their dive cylinders.

Equipment list

One Twin cylinder set; Two stage-decompression cylinders including harnesses; one twin bladder Buoyancy Control device (BCD) (when diving in dry-suit single bladder BCD is sufficient); One runtime underwater slate /wet notes; one demand valve (DV) with standard inter-stage hose and one DV with 1.5metre long inter-stage hose plus two-decompression DVs all with submersible contents pressure gauges; one primary underwater torch and one back-up underwater torch; two small very sharp knives (or small sharp knife and a line-cutter); two face masks; two decompression reels each with 100metres of line; one Red delay surface marker buoy (DSMB) and one Yellow DSMB these may inflated either by their own mini-cylinders or from a gas-gun supplied via one of the diving (not deco) DV's; Dive-suit to accommodate the expected water temperature (dry-suit to have a separate suit inflation system; two depth gauges or two suitable personal decompression computers (PDC's); two timing devices and a Jon-line.

7. Course Facilities:

- 7.1 A Class room suitable to match the needs of the course and number of candidates.
- 7.2 Open water diving locations suitable for the training needs:
 - 7.2.1 One shallow for practising skills (20-metres maximum).
 - 7.2.2 One deep for qualifying dives (60-metres maximum, subject to local conditions).

The course requires candidates to satisfactorily complete six open water dives, with a minimum of 300 minutes spent underwater. The first two dives using air or Nitrox, with a maximum depth of 20-metres, shall be used for practising Normoxic Trimix diving skills. The second pair of dives, to a maximum of 40-metres, should be Nitrox dives again practising skills and run-times. The final pair of dives shall be Normoxic Trimix dives to a maximum of 60-metres. All six dives must be performed with the candidates and Instructor(s) configured for Normoxic Trimix diving. The maximum ppO₂ at the Maximum Operating Depth (MOD) will be limited to 1.4bar. Additionally, Trimix dives must have a maximum Equivalent Narcotic Depth (END) of 40metres.

The maximum ppO₂ during stage-decompression must not exceed 1.6bar. Safety requirements: On this course, candidates must under the direct supervision of a CMAS Trimix Instructor at all times.

8. Aims of the participants

At the end of the course, candidates must be able to demonstrate the required knowledge and skills related to Normoxic Trimix diving to the satisfaction of the Course Leader as follows:

- 8.1 Sit and pass the Normoxic Trimix theory examination.
- 8.2 Demonstrate, through application, a through understanding of the diving planning process {i.e. all trainees will plan their own dives; these plans will be assessed by the Course Leader}.
- 8.3 Complete all the Normoxic Trimix in-water Skills to the satisfaction of the CMAS Trimix Course Leader.

9. Minimum course duration

Theory/practical lectures: 10 hours
Open water dives: Six dives, with a minimum of 300 minutes in-water experience. No more than two dives per day. The surface interval between Dive one and Dive two will be not be less than 3-hours. The Bottom-Time at 60metres will no greater than 15 minutes.

10. Quality Assurance

For the sake of safety and quality assurance CMAS highly recommend that Trimix authorised Federations use only high quality equipment. Federations are also commended to ask candidates to complete quality assurance feed-back questions, which can be used to analyse training courses; completed questionnaire to be returned to the National Federation.

Definitions

- 1 **Normoxic:** For the purpose of this Standard "Normoxic" means any mixture of breathable gas must have an oxygen content that will support human life at the surface, usually 21% but never lower than 18%.
- 2 **Maximum partial pressures of oxygen limits at :**
 - a. Maximum Operating Depth (MOD): 1.4bar.
 - b. Stage-stop depth: 1.6bar.