



**CMAS**

CONFÉDÉRATION MONDIALE  
DES ACTIVITÉS SUBAQUATIQUES

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WORLD UNDERWATER FEDERATION

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**Altitude Diver Standard  
Version (2010/00)**

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# Section A

## Introduction

### 1. Scope and purpose

- 1.1 The CMAS Board of Directors adopted this CMAS Altitude Diver Standard, which forms the basis for the Altitude Diver Training Programmes of CMAS Federations and CDC's, upon recommendation by the CMAS Technical Committee.
- 1.2 The CMAS International Diver Certification System only provides for one grade of CMAS Altitude Diver.
- 1.3 The CMAS Altitude Diver Training Standard specifies the following:
  - 1.3.1 The competencies that a participant has to have achieved in order for a CMAS Instructor to award a CMAS Altitude Diver certification to the participant indicating that he has been assessed and has shown that he has met or exceeded the minimum requirements for certification as a CMAS Altitude Diver;
  - 1.3.2 The specific conditions under which training has to be provided; and
  - 1.3.3 The minimum training programme content requirements for instruction leading to the different CMAS Altitude Diver certification.
- 1.4 The requirements of this CMAS Standard are meant to be comprehensive, but general in nature. That is, the standard presents all the required subject areas essential for CMAS Altitude Diver certification, but it does not give a detailed listing of the skills and information encompassed by each area.
- 1.5 Although the information categories are outlined in what may appear to be a logical sequence, the outline shall not be viewed as a lesson plan. That means that the order in which the information is presented in this standard, while logical as a framework for the basic requirements of the specific standard, does not necessarily define the sequence of a class lesson plan. Similarly, the requirements presented in this standard do not indicate the emphasis that should be placed upon a particular subject area, or the manner in which subjects are to be taught. Rather, course outlines, lesson plans, and other training aids prepared by CMAS Federations responsible for CMAS Altitude Diver training shall be used as guidelines for the sequencing and emphasis of course content requirements presented in these standards. Decisions as to the sequencing and the emphasis of subject matter are at the discretion of the CMAS Instructor within the requirements of the CMAS Instructor's Federation, to be made within the context of environmental factors, participant characteristics, and other relevant considerations.
- 1.6 These standards represent minimum standards, which means that subject matter and diving skills may be added by CMAS Federations, CDC's to suit the local conditions in a specific area.
- 1.7 These CMAS Standards are applicable to all CMAS Federations and CDC's and CMAS Instructors presenting training on behalf of Federations or a CDC.

# Section B

## Definitions

1.1 In these Standards, unless the context indicates otherwise –

- 1.1.1 “**Air**” shall mean an appropriate mixture of oxygen and nitrogen, with no less than 20% oxygen, which can be used as a breathing gas for SCUBA diving.
- 1.1.2 “**Altitude**” shall mean elevation above sea level.
- 1.1.3 “**Altitude diving**” shall mean SCUBA diving where the surface is above sea level. The specific height above sea level that will be used to determine whether a dive is an altitude dive or not is determined by the Dive Tables used to plan the dive (e.g. the US Navy Dive Tables regards any dive in excess of 91 meters above sea level as an altitude dive and the Buehlmann Dive Tables regard any dive in excess of 700 meters above sea level as an altitude dive).
- 1.1.4 “**Breathing gas**” shall mean any gas mixture suitable for diving and includes air, Nitrox, Trimix and Heliox mixtures.
- 1.1.5 “**CDC**” shall mean a CMAS Diving Centre that is registered with the CMAS International Technical Committee and that is in good standing with CMAS International.
- 1.1.6 “**Certification**” shall mean a CMAS Certification Card (“C-Card”) documenting that a student has completed all requirements of a specific CMAS Diver Training Programme. This verification is issued by either CMAS International or the National Federation upon receipt of an instructor’s written confirmation of satisfactory completion of all course requirements by the participant, as documented in the participant’s Personal Log Book/Training Record.
- 1.1.7 “**CMAS Dive Leader**” shall mean an individual who is currently certified as a CMAS Three Star Diver and who is sanctioned by CMAS International and/or his National Federation to lead guided and organised open water dives and to assist a CMAS Instructor during confined and open water training.
- 1.1.8 “**CMAS National Federation**” shall mean a National Federation that is a member of the CMAS International Technical Committee and that is in good standing with CMAS International.
- 1.1.9 “**CMAS Instructor**” shall mean an individual who is currently certified and sanctioned by CMAS International and/or his National Federation to teach open water SCUBA diving and to authorize the issuance of CMAS Diver certification.
- 1.1.10 “**Competencies**” shall mean a cluster of related knowledge, skills and attitudes performed to a specific standard under specific conditions.
- 1.1.11 “**Confined water**” shall mean a swimming pool with a depth appropriate to the activity or any body of water that offers conditions similar to those of a swimming pool with regard to visibility, depth, water movement and access.
- 1.1.12 “**Decompression stop dive**” shall mean a dive that requires a mandatory in-water decompression stop.

- 1.1.13 **“Emergency-signalling device”** shall mean a device suitable for the venue in which open water diving is performed which can be used to attract the attention of the surface party or a search party if the diver or dive group become separated from the dive boat or surface party such as a BC integrated emergency horn, signalling mirror, safety sausage etc. or during any other emergency.
- 1.1.14 **“Instructional Assistant”** shall mean a CMAS One Star Instructor or a CMAS Dive Leader.
- 1.1.15 **“Knowledge”** shall mean the specific information required for the participant to develop the skills and attitudes for effective accomplishment of diving tasks/duties.
- 1.1.16 **“Minimum instructional diving system”** shall mean the equipment required to be worn by the CMAS Instructor, his assistants and the students while performing the skills prescribed for both the confined and open water sections of the Altitude Diver Training Programme. This equipment includes, as a minimum, the following:
- mask
  - snorkel
  - fins
  - exposure suit (if appropriate)
  - quick release weighting system
  - cylinder and valve
  - cylinder-support system
  - buoyancy control device with low-pressure inflator system
  - regulator
  - alternate air source (could range from a simple octopus system to a duplicate breathing system with a separate breathing gas system)
  - submersible pressure gauge
  - timing device
  - depth gauge
  - cutting device (if not prohibited by legislation)
  - emergency signalling device (acoustical, optical)
- 1.1.17 **“No-decompression stop dive”** shall mean a dive that does not require a mandatory in-water decompression stop.
- 1.1.18 **“Open water”** shall mean any body of water significantly larger than a swimming pool offering conditions typical of a natural body of water encountered in the region.
- 1.1.19 **“Open water training dives”** shall mean supervised, open water SCUBA training experiences to fulfil the certification requirements of a CMAS Altitude Diver Training Programme and shall, as a minimum consist of the following:
- a briefing
  - preparation to dive
  - pre-dive checks
  - an appropriate method of entry into the water
  - descent procedures
  - underwater activity of at least 15 minutes at depths between 5 and 20 metres
  - an appropriate method of exit from the water
  - a debriefing
  - post dive procedures including equipment care
  - recording (logging) the dive in student's Personal Log Book.

- 1.1.20 **“Participant”** shall mean an individual that complies with the prerequisites for participation in any of CMAS Diver Training Programmes and who has formally enrolled on such a training programme presented by a CMAS Instructor. Synonyms for the word “participant” are “student”, “candidate” or “learner”.
- 1.1.21 **“Risk assessment”** shall mean the identification of hazards and who may be harmed by them.
- 1.1.22 **“SCUBA”** shall mean self-contained underwater breathing apparatus.
- 1.1.23 **“Skill”** shall mean an ability, learned and acquired through training, to perform actions that achieve a specific desired outcome.
- 1.1.24 **“Supervision”** as it relates to confined and open water training shall mean the prescribed level of supervision required by either the CMAS Instructor or CMAS Dive Leader in order to ensure the safety of the diving activity. The level of supervision required is prescribed as either direct or indirect supervision, which is defined as follows:
- **“Direct supervision”** shall mean visual observation and evaluation of student skill performance and student diving activities by a CMAS Instructor or CMAS Dive Leader. Direct supervision requires personal observation and evaluation of the performance of the skills required for certification. During underwater skill performance and evaluation, direct supervision requires the student to be accompanied underwater.
  - **“Indirect supervision”** shall mean the overall control, general observation, evaluation, and direction of student skill performance and student diving activities. The Instructor must be personally present at the training site and be prepared to come to the aid of a student.

# Section C

## CMAS Altitude Diver Training Programme

### 1. Purpose

1.1 The purpose of this standard is to provide the training requirements for instruction leading to the CMAS Altitude Diver certificate.

### 2. Aim and objectives

2.1 This training programme aims at introducing the basic concepts of altitude diving to certified CMAS divers which will enable them to participate in altitude diving in a safe manner.

2.2 The specific objectives of the programme are the following:

- 2.2.1 To provide the participant with an overview of the training programme and to introduce the participant to the CMAS as well as the CMAS International Diver Certification System;
- 2.2.2 To introduce the participant to the differences between diving at altitude and at sea level;
- 2.2.3 To introduce the participant to the equipment requirements for altitude diving;
- 2.2.4 To develop the participant's knowledge with regard to the use of dive tables for altitude diving;
- 2.2.5 To develop the participant's knowledge with regard to the dive planning requirements for altitude diving;
- 2.2.6 To develop the participant's knowledge with regard to the conservation of the altitude diving environment;
- 2.2.7 To introduce the participant to further career development opportunities;
- 2.2.8 To access and, if necessary, develop the prescribed essential diving skills of the participant, in the safety of the confined water environment, which will enable the participant to participate in open water diving activities in a safe and competent manner; and
- 2.2.9 To introduce the participant to altitude diving by providing the participant with the opportunity to gain altitude diving experience by participating in two (2) structured open water training dives under the guidance and supervision of a CMAS Instructor.

### 3. Classification

3.1 The CMAS Altitude Diver Training Programme is classified as an entry level speciality diver training programme.

### 4. Competencies of a certified CMAS Altitude Diver

4.1 A CMAS Altitude Diver shall be trained such that when assessed in accordance with Clause 13 of this standard, he shall be deemed to have sufficient knowledge, skill and experience to plan, conduct, and log open-water dives at altitude in a safe manner, without the supervision of a CMAS Instructor or CMAS Dive Leader, when properly equipped and accompanied by another certified altitude diver, provided the diving activities undertaken, the diving conditions and the diving area are similar, equal or better to those in which training was received.

4.2 A CMAS Altitude Diver is qualified to dive within the following parameters unless he has received additional training or is accompanied by a CMAS Instructor on any open water dive at altitude:

- 4.2.1 To dive to the recommended maximum depth of the other diver training certifications he already holds;
  - 4.2.2 To only use air as a breathing gas, unless he is certified to use other breathing gas mixtures;
  - 4.2.3 To only make dives which do not require mandatory in-water decompression stops, unless he is certified to participate in dives that require mandatory in-water decompression stops;
  - 4.2.4 To only make dives during normal daylight hours, unless he is certified to participate in night diving activities;
  - 4.2.5 To only dive in environments where direct vertical access to the surface is possible, unless he is certified to dive in overhead environments;
  - 4.2.6 To dive only when appropriate support is available at the surface; and
  - 4.2.7 To dive under conditions that are equal or better than the conditions in which he was trained.
- 4.3 Where further instruction is required this can only be provided by a suitably qualified CMAS Instructor.
- 4.4 If accompanied by a CMAS Instructor, the certified CMAS Altitude Diver may gain progressive experience beyond these parameters and develop competency in managing more challenging diving conditions (e.g. increased depth and current, reduced visibility, extreme temperatures) designed to lead to higher qualifications.

## 5. Target group

- 5.1 This training programme is designed for certified CMAS Divers who enjoy normal health, are reasonably fit, have a reasonable swimming ability and who have the desire to participate in altitude diving activities.

## 6. Prerequisites for training

- 6.1 The CMAS Instructor shall ensure that the participant fulfils the following prerequisites to participate in this training programme:

### 6.1.1 **Age**

- 6.1.1.1 The participant shall be at least fourteen (14) years of age; there is no upper limit.

### 6.1.2 **Previous SCUBA diving certification or experience**

- 6.1.2.1 Participation in this training programme shall be limited to certified divers who hold at least a CMAS One Star Diver or equivalent certificate and who have successfully completed and logged at least five (5) open water dives.

- 6.1.2.2 The basic concepts of altitude diving as outlined in this standard must be included in all CMAS entry level and other diver training programmes that are presented at altitude. Participants of such diver training programmes shall automatically qualify for the CMAS Altitude Diver certification, over and above the certification for the other training



programme they are attending, as provided for in clause 15.2 of this Standard.

### **6.1.3 Physical Conditioning and Watermanship Evaluation**

6.1.3.1 The participant shall effectively demonstrate his basic watermanship ability by performing, to a CMAS Instructor, the following watermanship evaluation:

6.1.3.1.1 A continuous two-hundred (200) meter surface distance swim; and

6.1.3.1.2 A ten (10) minute survival swim/float without the use of mask, fins, snorkel or with any other swimming aids.

### **6.1.4 Medical History/Statement**

6.1.4.1 The participant shall complete the medical history/statement form required by the CMAS Federation prior to participating in any in-water activities. Participants shall comply with all stipulations thereon before continuing with any in-water training. It is required that participants with out-of-the-ordinary medical histories be approved, without conditions or restrictions, as medically fit for diving by a licensed medical practitioner prior to engaging in in-water activities. In no event shall medical approval be accepted when the person signing the approval is the participating individual.

### **6.1.5 Acknowledgment and Assumption of Risk**

6.1.5.1 Participants of this training programme shall be informed of the inherent risks of SCUBA diving and shall agree to sign appropriate forms acknowledging and assuming those risks prior to participating in any in-water activities.

6.1.5.2 Parental or legal guardian signature is required on the appropriate form(s) when the applicant is a minor.

## **7. Requirements for certification**

7.1 In order to be certified as a CMAS Altitude Diver, the student shall:

7.1.1 Comply with all the prerequisites for participation in the training programme as prescribed by Clause 6 of this Standard;

7.1.2 Successfully complete the theoretical assessment as provided for in Clause 13.1 of this Standard;

7.1.3 Successfully complete the confined water assessment as provided for in Clause 13.2 of this Standard; and

7.1.4 Successfully complete the two (2) open water training dives as provided for in Clause 13.3 of this Standard.

7.2 The CMAS Instructor shall have the right to withhold the participant's certification, if in the opinion of the CMAS Instructor, the participant has not performed satisfactorily in any one or more of the requirements for certification as described in Clause 7.1 of this Standard.

## **8. Scope of the training programme**

### **8.1 Content**

8.1.1 In order to accomplish the aim and objectives of the CMAS Altitude Diver Training Programme as provided for in Clause 2 of this Standard, the training programme shall consist of the following

three (3) sections:

- 8.1.1.1 A **Theoretical Section**, which concentrates on certain basic altitude diving knowledge requirements as provided for in Clause 9 of this Standard;
- 8.1.1.2 A **Confined Water Section**, where certain prescribed entry level confined water skills, as provided for in Clause 10.1 of this Standard, shall be assessed in a protected environment and, if necessary, remedial training provided to the participant in order to ensure that the participant can safely participate in the Open Water Section of the training programme; and
- 8.1.1.3 An **Open Water Section**, which consists of the completion of two (2) supervised open water training dives where they will be required to demonstrate the mastery of the skills provided for in Clause 10.2 of this Standard.

## 8.2 Limitations of the CMAS Altitude Diver certification

- 8.2.1 The CMAS Altitude Diver is only certified to dive in diving conditions and in diving areas that are similar, equal or better to those in which training was received.
- 8.2.2 If diving conditions and the diving area is significantly different from those previously experienced, a CMAS Altitude Diver requires an appropriate orientation from a CMAS Instructor or CMAS Dive Leader before participating in such open water diving activity.
- 8.2.3 The following diving activities are beyond the level of competency of a certified CMAS Altitude Diver:
  - 8.2.3.1 Any dive beyond the maximum depth of his other diver training certifications;
  - 8.2.3.2 Any dive where a breathing gas other than air is used, unless he is certified to use other breathing gas mixtures;
  - 8.2.3.3 Any dive that requires a mandatory in-water decompression stop, unless he is certified to participate in diving activities that require mandatory in-water decompression stops;
  - 8.2.3.4 Any dive outside of normal day light hours, unless he is certified to participate in night diving activities;
  - 8.2.3.5 Any dive in an overhead environment, unless he is certified to participate in dives in overhead environments;
  - 8.2.3.6 Any dive without appropriate surface support; and
  - 8.2.3.7 Any dive in conditions that are worse than the conditions in which he was trained.

## 9. Required theoretical knowledge

### 9.1 Introduction

- 9.1.1 The following information shall be made available to the participant before or during the first class meeting.

- 9.1.1.1 The aim and objectives of the CMAS Altitude Diver Training Programme (see Clause 2 of this Standard).
- 9.1.1.2 The competencies of the certified CMAS Altitude Diver (see Clause 4 of this Standard).
- 9.1.1.3 The prerequisites for participation in the training programme (see Clause 6 of this Standard).
- 9.1.1.4 The class requirements, which shall include the following:
  - 9.1.1.4.1 The costs of participating in the training programme;
  - 9.1.1.4.2 Medical suitability to dive as well as the importance of appropriate regular SCUBA diving medical examinations;
  - 9.1.1.4.3 Insurance options/requirements in accordance with national regulations (if applicable); and
  - 9.1.1.4.4 Contractual agreement, including conditions bearing on the signature, delivery and termination of the contract.
- 9.1.1.5 The scope of the training programme, which includes the following:
  - 9.1.1.5.1 Content (see Clause 8.1 of this Standard); and
  - 9.1.1.5.2 Limitations of eventual qualification (see Clause 8.2 of this Standard)
- 9.1.1.6 The diving related legislation and/or legal requirements applicable to the student in the country where the training programme is presented.
- 9.1.1.7 The specific equipment requirements of the participant during the training programme.
- 9.1.1.8 The local environmental considerations that will have an impact on the participant and/or the presentation of the diver training programme.
- 9.1.1.9 The means and methods of assessment of the participant's knowledge and skills (see Clause 13 of this Standard).
- 9.1.1.10 The requirements for certification/successful completion of the training programme (see Clause 7 of this Standard).
- 9.1.1.11 The specific training programme procedures and schedule.
- 9.1.1.12 The fact that records shall be kept of the participant's personal data and that these records may be passed on to the CMAS Federation and/or CMAS International. The personal data that the CMAS instructor is supposed to obtain from the participant and keep in safe-keeping for a period of at least three (3) years shall include the following:
  - 9.1.1.12.1 Name, address and date of birth
  - 9.1.1.12.2 Medical certification
  - 9.1.1.12.3 Any previous training/certification, experience
  - 9.1.1.12.4 The progress of the student
  - 9.1.1.12.5 Records of certification once the training has been completed
- 9.1.1.13 The following information about the CMAS shall be made available to the participant during the first class meeting.
  - 9.1.1.13.1 The CMAS as an international body for the management of underwater sport
  - 9.1.1.13.2 The relationship between the School/Club/Federation and the CMAS
  - 9.1.1.13.3 The CMAS International Divers Certification System

9.1.1.13.4 The position of the CMAS One Star Diver Training Programme in the CMAS International Diver Certification System

## **9.2 The differences between diving at altitude and diving at sea level**

9.2.1 The participant shall have an appropriate knowledge concerning the major differences between diving at altitude and diving at sea level, including the following:

- 9.2.1.1 Decreased pressure of the air at increased altitude
- 9.2.1.2 The changing ratio of the nitrogen pressure in the human body
- 9.2.1.3 How long the body needs to acclimatize and the various differences between different altitudes
- 9.2.1.4 Hypoxia after ascent
- 9.2.1.5 Buoyancy changes
- 9.2.1.6 Temperature
- 9.2.1.7 Visibility
- 9.2.1.8 Different tables on the strength of reduced inert-gas pressures of the human body
- 9.2.1.9 Shallower safety and decompression stops

## **9.3 Diving equipment**

9.3.1 The participant shall have an appropriate knowledge concerning the equipment requirements for altitude diving, including the following:

9.3.2 Depth gauges

- 9.3.2.1 Changes to depth gauge readings
- 9.3.2.2 Selecting a suitable depth gauge

9.3.3 Dive computers

- 9.3.3.1 Changes to dive computer readings
- 9.3.3.2 Selecting a suitable dive computer
- 9.3.3.3 Selecting the correct mode in the computer for altitude diving

9.3.4 Regulators

- 9.3.4.1 Regulator malfunctions due to a drop in ambient air and water temperature
- 9.3.4.2 Selecting a suitable regulator

9.3.5 Exposure suits

- 9.3.5.1 Hypothermia
- 9.3.5.2 Selecting a suitable exposure suit

## **9.4 The use of decompression tables**

9.4.1 The participant shall have an appropriate knowledge concerning the use of decompression tables for altitude diving, including the following:

- 9.4.1.1 Adapting sea level tables for altitude diving
- 9.4.1.2 Altitude tables
- 9.4.1.3 Changes in decompression procedures
- 9.4.1.4 Planning single and repetitive dives at altitude
- 9.4.1.5 Flying after diving

## 9.5 **Dive planning**

9.5.1 The participant shall have an appropriate knowledge concerning the requirements for the planning of dives at altitude, including the following:

9.5.1.1 Additional factors that need to be considered when planning dives at altitude

9.5.1.2 Emergency planning for secluded diving locations

## 9.6 **The Diving environment**

9.6.1 The participant shall have an appropriate knowledge concerning the diving environment at altitude, including the following:

9.6.1.1 Environment and special cycles of nature in the mountains

9.6.1.2 Minimising diver impact on the environment

## 9.7 **Career development**

9.7.1 The participant shall be informed of the following:

9.7.1.1 The diving opportunities open to the participant as a certified CMAS Altitude Diver

9.7.1.2 The different CMAS Diver Training Programmes that can be attended as a certified CMAS Altitude Diver.

## 10. **Required SCUBA skills**

### 10.1 **Confined water skills**

10.1.1 The participants shall demonstrate and be assessed with regard to the following skills, whilst using all the equipment they intend to use in the open water section of the training programme, in order to determine whether they require any remedial training before participating in the open water section of the training programme:

- 10.1.1.1 Pre-dive checks
- 10.1.1.2 Entry techniques
- 10.1.1.3 Regulator removal and replacement
- 10.1.1.4 Mask clearing
- 10.1.1.5 Buoyancy control
- 10.1.1.6 Breathing gas sharing techniques
- 10.1.1.7 Exit techniques

### 10.2 **Open water skills**

10.2.1 The participant shall be able to demonstrate the following skills in a comfortable and relaxed manner:

- 10.2.1.1 Use of dive tables for the planning of dives at altitude
- 10.2.1.2 Pre-dive equipment inspection and in and out of water buddy checks
- 10.2.1.3 Appropriate entry technique
- 10.2.1.4 Proper weighting
- 10.2.1.5 Buddy-system techniques (e.g. appropriate hand signals, staying close, monitoring buddy)
- 10.2.1.6 Underwater and surface buoyancy control
- 10.2.1.7 Maintaining correct depth for safety stop

- 10.2.1.8 Appropriate exit technique
- 10.2.1.9 Equipment care and maintenance (at water's edge)

## 11. Theoretical training parameters

- 11.1 The CMAS Instructor shall ensure that theoretical training is conducted in an environment that is free from significant distractions to learning, such as a dedicated classroom. Furthermore, the training venue shall provide participants with sufficient working facilities and training aids (e.g. writing surfaces, reference materials, computer, visual or audio materials) to ensure that participants are able to understand the information being presented.
- 11.2 Each participant shall be provided with relevant training material, in either printed or electronic format, that will assist him in mastering the required theoretical concepts and principles.

## 12. Practical training parameters

### 12.1 **Risk assessment**

- 12.1.1 The CMAS Instructor shall ensure that a risk assessment is conducted before each confined and open water dive, and shall adopt procedures to ensure that all risks are controlled as far as is reasonably possible. The following factors shall be considered as part of this assessment taking into account the capability of participants:

- 12.1.1.1 water movement (e.g. current, wave action)
- 12.1.1.2 depth
- 12.1.1.3 underwater visibility
- 12.1.1.4 pollution
- 12.1.1.5 entry/exit methods
- 12.1.1.6 restricted zones
- 12.1.1.7 suitability of the site for the planned activities
- 12.1.1.8 emergency action plan

- 12.2 The CMAS Instructor shall have the right to prevent any participant from taking part in the activity if following a risk assessment this is deemed to be in the best interest of the participant and/or of the other participants.

### 12.3 **Emergency equipment and procedures**

#### 12.3.1 **Emergency equipment**

- 12.3.1.1 For all locations where confined or open water activities take place the CMAS Instructor shall ensure the availability of the following:

- 12.3.1.1.1 A first aid kit suitable for the planned diving activities;
- 12.3.1.1.2 An emergency oxygen unit with a capacity of delivering at least 15 litres/min of pure oxygen for at least 20 min or for an extended period of time equal to the time for the Emergency Medical Services to respond if diving is conducted in a secluded area; and
- 12.3.1.1.3 A communication system suitable for alerting the Emergency Medical Services.

### 12.3.2 **Emergency procedures**

12.3.2.1 The CMAS Instructor shall ensure that, at each dive site where confined or open water diving activities take place, a documented emergency plan comprising at least the following information is available:

12.3.2.1.1 Procedures for casualty recovery, resuscitation and evacuation;

12.3.2.1.2 Procedures for the use of the emergency oxygen supply; and

12.3.2.1.3 Information about the nearest medical resources (including data about the availability of the nearest hyperbaric recompression chamber).

### 12.4 **Equipment**

12.4.1 The minimum equipment to be worn by a CMAS instructor, a CMAS Dive Leader and a participant while conducting confined and open water training consists of the prescribed diving equipment listed in Section B under the definition of "**minimum instructional diving system**". When appropriate for open water diving, the use of a surface support-station with dive flag or a surface marker buoy and a reel or a buoy and a shot line is also encouraged.

12.4.2 In the event that the CMAS Instructor or the training facility by whom he is employed/on whose behalf he is presenting the training programme is providing or renting any diving equipment to the student the CMAS Instructor shall ensure:

12.4.2.1 That the diving equipment rented or provided to the student conforms to the relevant International Standards as prescribed by legislation applicable in the country where the training programme is being presented;

12.4.2.2 That the diving equipment rented to the student is subjected to an inspection prior to delivery in order to ascertain that it is fully operational;

12.4.2.3 That all diving equipment is maintained and serviced in accordance with the manufacturer's instructions, and records of maintenance, servicing and inspection is kept;

12.4.2.4 That the student is advised on choosing the proper diving equipment taking into account the envisaged diving activity and the qualification and needs of the student (e.g. the proper fit of buoyancy control devices and suits); and

12.4.2.5 That the student should not use the equipment unsupervised as the use of the diving equipment requires specific training.

### 12.5 **Information to be provided**

12.5.1 Prior to each confined and open water training session, participants shall have the safety provisions identified to them by the CMAS Instructor, including the following:

12.5.1.1 The identity and role of any assistants or other staff;

12.5.1.2 Emergency procedures;

12.5.1.3 Buddy/group assignments ; and

12.5.1.4 The conduct required of the students.

12.5.2 The following additional information shall be provided to the participants before any open water training dive by the CMAS Instructor:

12.5.2.1 Information concerning the dive site, in particular hazards which could affect the safety of the dive (e.g. under-water obstructions);

12.5.2.1.1 Arrangements concerning buddy teams and/or group size; and

12.5.2.1.2 Depth and/or time limitations.

## 12.6 **Instructor/student ratio for practical training**

12.6.1 The **maximum** number of students for practical training is eight (8) students per CMAS Instructor. Two (2) additional students per certified CMAS Dive Leader may be added up to a maximum of twelve (12) students per CMAS Instructor. Although additional CMAS Dive Leaders may be used, no additional students may be added to the responsibility of the individual CMAS Instructor. These ratios are considered maximum and should be reduced if environmental conditions or other factors are not optimum.

## 12.7 **Confined water training**

12.7.1 Prior to the first confined water training lesson the student shall undergo the "Physical Conditioning and Watermanship Evaluation" as prescribed by Clause 6.1.3 of this Standard.

12.7.2 The participant shall be assessed by a CMAS Instructor and, if necessary, receive remedial training on the skills prescribed in Clause 10.1 of this Standard during a minimum of one (1) confined water lesson.

12.7.3 Participants shall receive their initial training of each SCUBA skill under the direct supervision of the CMAS Instructor. Further skill development may continue under direct supervision of a certified CMAS Dive Leader and indirect supervision of the Instructor. The CMAS instructor shall conduct the final assessment to determine the satisfactory skill performance of each student.

## 12.8 **Open water training**

12.8.1 Before participating in the open water training dives the participant shall have demonstrated sufficient theoretical knowledge and SCUBA skills in confined water to be able to perform the open water dives in the prevailing conditions.

12.8.2 An open water training dive shall comprise of the activities as provided for in the definitions in Section B, Clause 1.1.19 of this Standard and shall be directly supervised by a CMAS Instructor.

12.8.3 Participants to be certified shall complete at least two (2) open water training dives under the direct supervision of a CMAS Instructor at depths between ten (10) to twenty (20) meters with a minimum underwater duration of twenty (20) minutes per training dive. (Participants who hold certifications that enable them to participate in deeper diving are allowed to conduct training dives to a maximum depth of thirty (30) meters on this training programme).

12.8.4 All under-water skills in open water shall be taught, directly supervised and evaluated by a CMAS Instructor, who shall be in the water during each open water training dive. The CMAS



Instructor shall be in direct control of the students throughout all open water training dives.

- 12.8.5 All open water training dives shall be conducted during normal daylight hours.
- 12.8.6 No open water training dive shall be conducted in any overhead environment where direct vertical access to the surface is not possible. Open water training dives shall therefore not be conducted in under-water caves, inside wrecks or below ice.
- 12.8.7 No more than three (2) open water training dives may be conducted on a given day.
- 12.8.8 The safe supervision of participants is the sole responsibility of the CMAS Instructor. The CMAS Instructor shall lower the instructor/ participant ratio as provided for in Clause 12.6.1 of this Standard where environmental conditions are less than ideal, for example where underwater visibility is poor or where there is significant water movement. The CMAS Instructor may also use additional aids to improve safety such as ascent lines, surface support stations or Instructional Assistants. Where Instructional Assistants are used they shall comply with the requirements as prescribed by Clause 1.1.14 of the definitions in Section B of this Standard.
- 12.8.9 The CMAS Instructor shall limit the number of participants on open water training dives so that either the CMAS Instructor or a CMAS Dive Leader is able to establish physical contact with every participant at any time during the open water dive.
- 12.8.10 The CMAS Instructor shall cancel or abort the open water training dive if environmental conditions, equipment problems or a participant's physical or mental condition make this necessary.

### 13. Assessment

#### 13.1 **Knowledge**

- 13.1.1 The student shall demonstrate to the CMAS Instructor knowledge of SCUBA diving by taking and passing an oral or written examination. This examination shall test basic altitude diving theoretical knowledge according to Clause 9 of this Standard.

#### 13.2 **Confined water SCUBA skills**

- 13.2.1 The student shall demonstrate to the CMAS Instructor his mastery of the confined water SCUBA skills, as prescribed in Clause 10.1 of this Standard, during one or more of the confined water lessons.

#### 13.3 **Open water SCUBA skills**

- 13.3.1 The student shall demonstrate to the CMAS Instructor his mastery of the open water scuba skills, as prescribed in Clause 10.2 of this Standard, during the two (2) open water training dives.
- 13.3.2 Each one of the two (2) prescribed open water training dives shall consist of the activities as prescribed in Clause 1.1.19 of the definitions in Section B.

### 14. Instructor and Instructional Assistant requirements

- 15.1 This training programme may only be presented by a CMAS Instructor with a minimum of a CMAS One Star Instructor grading who also holds a CMAS Altitude Diver certification that complies with the requirements as prescribed by Clause 1.1.9 of the definitions in Section B of this Standard.

- 15.2 The CMAS One Star Instructor may be assisted by another CMAS One Instructor who must also

hold a CMAS Altitude Diver certification and that complies with the requirements as prescribed by Clause 1.1.7 of the definitions in Section B of this Standard or by a CMAS Dive Leader who must also hold a CMAS Altitude Diver certification and that complies with Clause 1.1.7 of the definitions in Section B of this Standard.

## 15. Certification

15.1 Upon successful completion of the training programme the participant shall be awarded with a CMAS Altitude Diver C-card.

15.2 Participants of any CMAS Diver Training Programme who successfully complete at least two (2) of their training dives at altitude automatically qualify for a CMAS Altitude Diver C-card.

## 16. Quality Assurance

16.1 Both CMAS International and a CMAS Federation shall have the right to institute any such quality assurance measures that they deem appropriate in order to ensure that all CMAS Altitude Diver Training is conducted throughout the world in accordance to the minimum requirements of this Standard.