

**SCIENTIFIC COMMITTEE OF CMAS**

**CMAS STANDARD FOR SCIENTIFIC DIVER**



**CMAS SCIENTIFIC DIVER**

**CMAS ADVANCED SCIENTIFIC DIVER**

**CMAS SCIENTIFIC DIVING INSTRUCTOR**

**CMAS CONFIRMED SCIENTIFIC DIVING INSTRUCTOR**

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## List of some useful terms

<b>residential course</b>	full time course over several weeks or a set of week-ends
<b>diving officer</b>	diving supervisor at an institute
<b>CMAS</b>	World Underwater Federation
<b>professional (scientific) diver</b>	(scientific) diver who gets some sort of compensation or payment, or who has an employment type relationship with a legal or physical person
<b>amateur scientific diver</b>	diver participating in a scientific project but who receives no compensation at all and who has no employment type relationship with the organisation responsible for the work
<b>open water</b>	lake, river or ocean (excluding harbours and their structures)

## **PREAMBLE.**

The goals of the CMAS Standards for Scientific Diving are:-

- a) to assure the mobility of fully trained scientific divers,
- b) to enable specialist courses and optional training, above the minimum, to be developed on a CMAS basis so as to provide a more effective use of self contained underwater breathing apparatus (SCUBA) diving techniques in science.

There are two different levels of standard, both of which are professional.

- a) the CMAS Scientific Diver. (CSD).
- b) the CMAS Advanced Scientific Diver. (CASD).

Both of these standards represent a minimum agreed training and attestation of competence which promote scientists to move freely throughout the countries where CMAS federation exist, to participate in sub-aquatic research projects involving diving using SCUBA. The equivalence is issued following certification by authorised national agencies. Depth and breathing gas limitations may apply. The CSD qualification exceeds the minimum standards for the P\*\* training level, and the CASD qualification exceeds the minimum standards for the P\*\*\* training level. (Respectively P\*\*\* and P\*\*\*\* in country where applicable)

The standards do not include any regulations such as insurance, medical examinations, safety rules, diving limits, rules for recognition of national scientific diving schools, etc. These are covered by national law.

Where applicable, national laws and regulations may regulate training but the minimum standards must be maintained.

Scientific diving training for these standards can be given by either one or a combination of more than one of the following:

- a) a taught course;
- b) a supervised programme of continuous training and assessment carried out in a nationally recognised institution;
- c) diving activities under the auspices of a nationally recognised diving training organisation:

In all of these cases, all dives must be logged and certified in the candidate's personal log. Any scientific dives must be further certified by the diving officer or director (or appointed deputy) of the scientific research institute for which they were undertaken.

A minimum of 18 years of age is required.

This standard is very close to European standard for scientific diver. It is foreseen that CMAS could be recognised by EU as training agency for such qualification.

## INSTRUCTOR LEVEL

As a general matter, CMAS Scientific Diving Instructor and CMAS Confirmed Scientific Diving Instructor are respectively 2\* and 3\* instructor (see CMAS technical committee standards) holding a CASD certification.

Both the CSD and CASD certificates will be issued to members of the permanent staff, contract staff, research students, technicians, and trainees or students of nationally recognised research institutions *such as:*

- *Universities;*
- *University departments;*
- *University field centres and stations;*
- *Technical colleges;*
- *Government research Laboratories;*
- *State research laboratories;*
- *Regional research laboratories;*
- *Local research laboratories;*
- *Engineering research institutions;*
- *Multi-national and European research laboratories;*
- *Hospitals;*
- *Medical research institutions;*
- *Diving physiological and ergonomic research institutions;*
- *National and Regional museums;*
- *Charitable or non-profit research foundations;*
- *Museums*
- *Parks*

## **MAINTENANCE OF QUALIFICATIONS.**

1. A scientific diver who satisfies these requirements will gain either an CSD or an CASD certificate that is life valid.
2. Holders of these certificates must comply with all national and local rules concerning third party insurance, medical fitness, safety at work and scientific diving activities when diving in a host member country when they are engaged in scientific diving activities. The certificate only indicates the training level, and not the current level of diving competence.

## **TRANSITION RULE.**

Existing scientific divers CMAS and confirmed scientific diver CMAS should receive the new brevet after demonstration of qualification. That will last after a period of 5 years following acceptance of the new standard by executive bureau of CMAS

The previous scientific diver certification will remain and be called “amateur scientific diver”.

## **THE CMAS ADVANCED SCIENTIFIC DIVER.**

A CMAS Advanced Scientific Diver is a diver capable of organising a scientific diving team. He/she may attain this level by either a course or by in-field training and experience under suitable supervision or by a combination of these two methods.

The CASD must:

- show proof of theoretical knowledge and a comprehensive understanding of:

1. diving physics and physiology, the causes and effects of diving related illnesses and disorders and their management.
2. the specific problems associated with diving to and beyond 30m, calculations of air requirements, correct use of decompression tables.
3. equipment, including personal dive computers and guidelines as to their safe use.
4. emergency procedures and diving casualty management.
5. the principles and practice of dive planning and the selection and assessment of divers.
6. legal aspects and responsibilities relevant to scientific diving in Europe and elsewhere.
7. dive project planning.

- be fully competent with/in:

1. diving first aid, including CPR and oxygen administration to diving casualties.
2. SCUBA rescue techniques and management of casualties.
3. the use and user maintenance of appropriate SCUBA diving equipment, including dry suits and full face masks.
4. basic small boat handling, and electronic navigation.
5. supervision of diving operations.

- be fully competent with:

1. search methods, such as those utilising free swimming and towed divers together with remote methods suitable for a various range of surface and sub-surface situations.
2. survey methods, both surface and sub-surface, capable of accurately locating and marking objects and sites.
3. the basic use of airbags and airlifts for controlled lifts, excavations and sampling.
4. basic rigging and rope work, including the construction and deployment of transects and search grids.
5. underwater navigation methods using suitable techniques.

6. recording techniques.
7. roped/tethered diver techniques and various types of underwater communication systems such as those utilising visual, aural, physical and electronic methods.
8. sampling techniques appropriate to the scientific discipline being pursued.

- show proof of having undertaken 100 open water dives, to include a minimum of:

1. 50 dives with a scientific task of work, such as listed above.
2. 10 dives between 20m and 29m.
3. 10 dives between 29m and the national limit.
4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.
5. 20 dives in adverse conditions, such as currents, cold water, or moving water.
6. 20 dives as an in-water dive leader.

All evidence must be recorded in nationally acceptable logs, countersigned by suitably qualified persons.

None of the above precludes the possible requirement for a practical or theoretical demonstration of any or all of the points shown.

### **THE CMAS SCIENTIFIC DIVER.**

A CMAS Scientific Diver is a diver capable of acting as a member of a scientific diving team. He/she may attain this level by either a course or by in-field training and experience under suitable supervision or by a combination of these two methods.

The CSD must :

- show proof of basic theoretical knowledge and a basic understanding of:

1. diving physics and physiology, the causes and effects of diving related illnesses and disorders and their management.
2. the specific problems associated with diving to and beyond 20m, calculations of air requirements, correct use of decompression tables.
3. equipment, including personal dive computers and guidelines as to their safe use.
4. emergency procedures and diving casualty management.
5. principles of dive planning.
6. legal aspects and responsibilities relevant to scientific diving in Europe and elsewhere.

- be fully competent with/in:

1. diving first aid, including cardio-pulmonary resuscitation (CPR) and oxygen administration to diving casualties.
2. SCUBA rescue techniques and management of casualties.
3. the use and user maintenance of appropriate SCUBA diving equipment.

- be fully competent with:

1. search methods.
2. survey methods, both surface and sub-surface, capable of accurately locating and marking objects and sites.
3. the basic use of airbags and airlifts for controlled lifts, excavations and sampling.
4. basic rigging and rope work, including the construction and deployment of transacts and search grids.
5. underwater navigation methods using suitable techniques.
6. recording techniques.
7. acting as surface tender for a roped diver.
8. sampling techniques appropriate to the scientific discipline being pursued.

- show proof of having undertaken 70 open water dives, to include a minimum of:

1. 20 dives with a scientific task of work supervised by a recognised research institution, such as listed above.
2. 10 dives between 15m and 24m.
3. 5 dives greater than 25m.
4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.

All evidence must be recorded in nationally acceptable logs, countersigned by suitably qualified persons.

None of the above precludes the possible requirement for a practical or theoretical demonstration of any or all of the points shown.



The following typical course durations are expected :

Admission requirement	Dives at admission	Duration (typical)	Final # of dives	Min. # of hours under open water	Final level
P** (*)	50	10-15 days	70	50	CSD
P*** (*)	80	10-15 days	100	80	CASD