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**STANDARDS for
European Scientific Divers (ESD) and
Advanced European Scientific Divers (AESD)**

List of useful terms

residential course	full time course over several weeks or a set of week-ends
diving officer	diving supervisor at an institute
P**	Qualified sports diver who has undertaken a minimum of 30 SCUBA dives to a range of depths (usually between 10 and 30m) under supervision and who has been certified competent to lead a single team of qualified divers.
P***	A fully trained and experienced sports diver who has undertaken a minimum of 65 SCUBA dives to a range of depths (usually between 10 and 40m) plus additional safety and boat handling training and who has been certified competent to organise and lead a group including several teams of divers.
ESDC	European Scientific Diving Committee
ESD	(basic) European scientific diver
AEED	advanced European scientific diver
professional (scientific) diver	(scientific) diver who gets some sort of compensation or payment, or who has an employment type relationship with a legal or physical person
amateur scientific diver	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
EEC directive 92/51	general directive # 2 regulating recognition of training in the EU and in the EEA
EEC directive 89/391	directive regulating health and safety of employees and workers
EU	European Union
EEA	European Economic Area (15 EU Member States, Norway, Iceland and Liechtenstein)
open water	lake, river or ocean (excluding harbours and their structures)

PREFACE

As countries are setting national regulations for scientific diving, it has become increasingly difficult for scientific divers to work internationally. There are also problems with recognizing basic diving instructions and the competence level achieved by an individual diver.

This document deals with the Europe wide recognition of training received in any one of the Member States of the EU or EEA. Therefore, a number of European directives have to be kept in mind, e.g. the first general directive on the recognition of diplomas EEC 89/49, the second general directive on the recognition of diplomas and certificates EEC 92/51, as well as the general directive on safety and health at work (EEC 89/391).

The directives must be followed. As a result, if a scientific diver is fully qualified to practice his profession in his home Member State and applies for recognition in order to practice that same profession in another Member State, his professional qualifications have to be recognized as they stand, even if the training system in this Member State is different. (See directive 92/51 for rules and appreciation of level.)

European directives on health and safety represent minimum requirements for gradual implementation in each of the Member States. They do not prevent a Member State from maintaining or introducing more stringent measures for the protection of working conditions. Thus the directives are valid on the territory of a Member State in the form in which they have been transposed into national law, presuming the transposition is compatible with the Treaty establishing the European Community.

It is proposed to follow the engineers example who have basically established a list of equivalent diplomas. Under condition that a basic standard is followed or exceeded, the certificate of Scientific Diver obtained in a Member State would thus be recognized as equivalent to the nth level of the European Scientific Diver scheme.

Certificates from schools in the Member States following the scheme would then, subject to appropriate controls, be listed as equivalent to the nth level of European Scientific Diver, and an appropriate European certificate could be issued if the directors of the scientific divers wish to do so.

The question of who decides who gets the equivalence has been brought up several times. It is clear that the agreed standard would be a standard, which can under no circumstances be undermined, or it loses its credibility and not all Member States will recognize it any longer. As a result, the mobility of scientific divers would be lost again.

It is therefore proposed that a self-monitoring is done in some way, but decisions could be taken at a higher level by an already existing committee like the program committees associated to the European research programs like MAST-III or a committee linked to some Europe wide

scientific organization. It was therefore proposed to establish a European Scientific Diving Committee (ESDC).

It is also clear that a large amount of flexibility is needed at the national level. Therefore, substantial pre-consultations have been done and -at least for the moment- no standardized course is proposed. But the proposed standards rely on advanced SCUBA training, a given amount of experience in the open water, and a number of topics taught in the framework of a scientific diving course. But nowhere in the scientific diving course, the details of the teaching are fixed, but a number of topics is suggested. Depending on local requirements, employers will add modules in full recognition of the training already received. It should also be noted that the scientific diving course (or the modules corresponding to the scientific part if regular (P**) or advanced (P***) scuba training are also included in the course) need not be taught by a prescribed federation or organization. The director of the school or the diving officer of the institute would decide on the details according to his/her needs and the presence of diving instructors from federations or professional associations, in full respect of the attached requirements.

The director will also choose what is the most appropriate schedule for the course (weekends, evenings, fully residential), in agreement with national laws and regulations and in full respect of the agreed training standard.

Training outside the EEA or the EU needs to be discussed further. It seems that the baseline for the discussion would be the agreed standard and normally compensations would be asked for, even the full P**, P*** or nth Scientific Diving course, depending on the quality of the training. A list could be established similar to those which already exist to allow different Federations or schools to recognize each other's training.

ESD AND AESD STANDARDS

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

- a) to assure the mobility of fully trained scientific divers,
- b) to allow member states (EU and EEA) to assess the training level of a migrant,
- c) to enable specialist courses and optional training, above the minimum, to be developed on a European 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 European Scientific Diver. (ESD).
- b) the Advanced European Scientific Diver. (AESD).

Both of these standards represent a minimum agreed training and attestation of competence which promote scientists to move freely throughout the countries of the EEA in order to co-operate on and 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. All member countries of the EEA are expected to recognise one or both of these training levels (application of directive EEC 92/51). The ESD qualification exceeds the minimum standards for the P** training level, and the AESD qualification exceeds the minimum standards for the P*** training level.

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

Neither do the standards take account of any speciality requirements by employers. They simply define the minimum basic training of a scientific diver as needed for mobility and as a basic training level on which the employer can build further training modules.

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.

Both the ESD and AESD 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*

The issuing institutions must be registered within ESDC.

MAINTENANCE OF QUALIFICATIONS.

1. A scientific diver who satisfies these requirements will gain either an ESD or an AESD certificate that is valid for five years.
2. This certificate must then be renewed every five years by making an application to the issuing authority.
3. 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.

CROSS-OVERS.

Cross-overs from non European to European standard may be organised by the European Scientific Diving Committee (ESDC) if the standards are met.

TRANSITION RULE.

Already fully certified scientific divers (on a national basis), or scientific divers having more than two years of professional experience with a minimum of 30 scientific dives, and a total of more than 100 dives may receive the ESD certificate if applied within a year from official establishment of European Scientific Diving Standards and of the European Scientific Diving Committee.

Already fully certified scientific divers (on a national basis), or scientific divers having more than two years of professional experience with a minimum of 50 scientific dives, to include at least 20 dives leading the diving team, and a total of more than 100 dives may receive the AESD certificate if applied within a year from official establishment of European Scientific Diving Standards and of the European Scientific Diving Committee.

THE EUROPEAN SCIENTIFIC DIVER.

A European 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 ESD 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 ADVANCED EUROPEAN SCIENTIFIC DIVER.

An Advanced European 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 AESD 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.

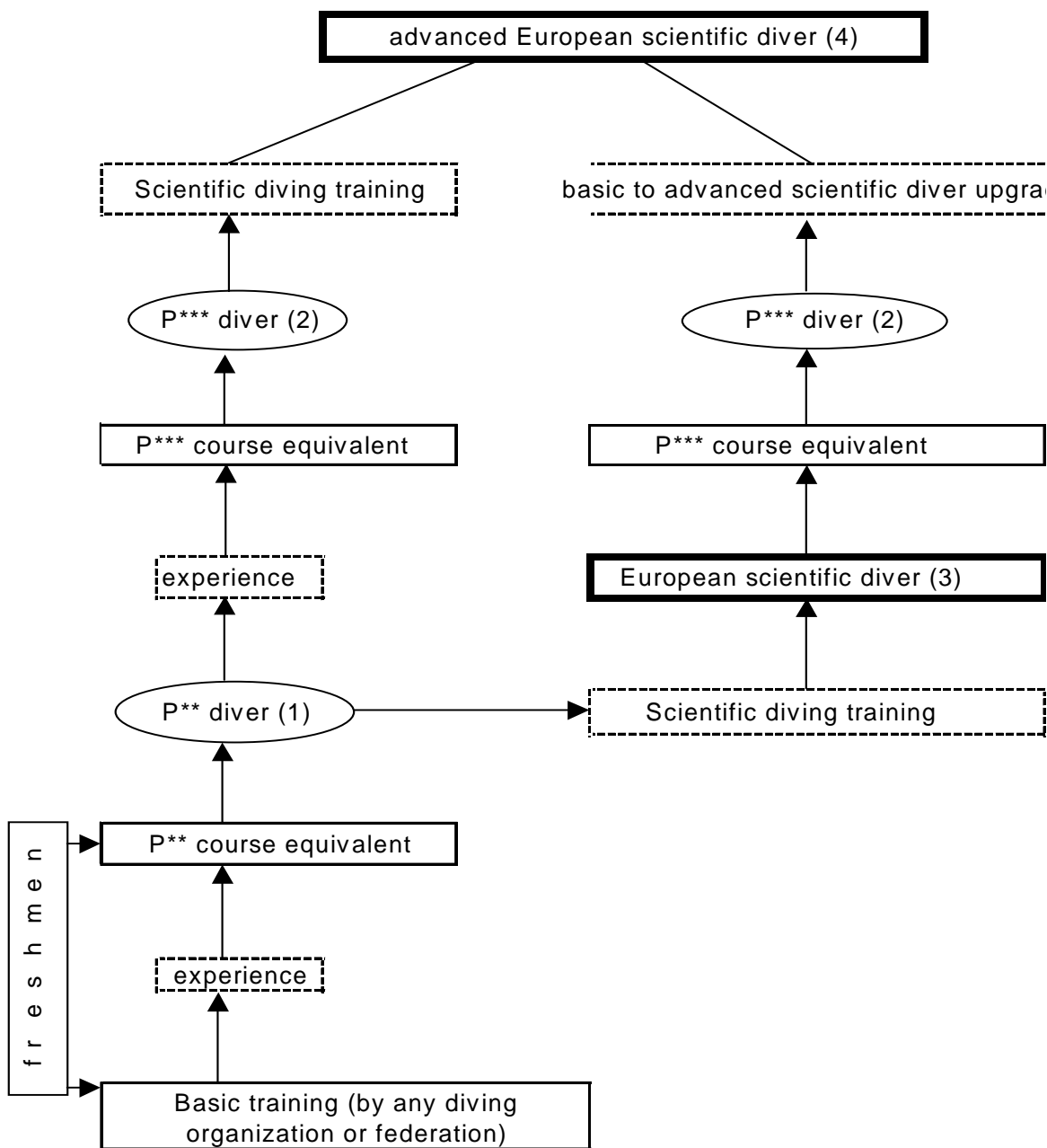
- show proof of having undertaken 100 open water dives, to include a minimum of:

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.

European Scientific Diver



(1) Minimum of 20 open water dives.
 (2) Minimum of 80 open water dives.

(3) Minimum of 70 open water dives.
 (4) Minimum of 100 open water dives.