

**DRAFT STANDARDS**  
**for**  
**EUROPEAN SCIENTIFIC DIVERS**  
**and**  
**ADVANCED EUROPEAN SCIENTIFIC DIVERS**

The following standards were reached, following much preparatory work by Marco Weydert (DG XII D/3), by the participants on the course/seminar for the Instructors of European Scientific Divers held at Cavo, Isola d'Elba, Italy over the period 1st - 11th May 1997 (supported by the grant MAS3-CT96-6351 from the European Commission); primarily by the following members of the specially convened workshop:

Phil Lonsdale,	(Chairperson), University Marine Biological Station Millport, Scotland.
Juha Flinkman,	(Vice Chairperson), University of Helsinki, Finland.
Jaoa Feotoria,	University of Algarve, Portugal.
Inez Flameling,	Netherlands Institute of Ecology.
Jo Hammelin,	Centre d'Océanologie de Marseille, France.
John Heine,	American Academy of Underwater Sciences, USA.
Peter Konig,	Federal Maritime and Hydrographic Agency of Germany.
Brian Munday,	University College Galway, Ireland.
George Petihakis,	Institute of Marine Biology of Crete.
Hanne Skjaeggstad,	University Marine Laboratory, Northern Ireland.
Mats Walday,	Norwegian Institute of Water Research.
Vidar Wennevik,	Institute of Marine Research, Norway.

**PREAMBLE.**

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 (and others) 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 European Economic Area (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 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) recreational diving activities under the auspices of a nationally recognised diving 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:*

## **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 Supervisory Committee (ESDSC) 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 for by 1.1.99, under the condition that they have obtained P\*\* level or higher by 1.1.97.

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 for by 1.1.99, under the condition that they have obtained P\*\*\* level or higher by 1.1.97.

## **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, 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 utilizing 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 transacts 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.

**THIS TABLE IS FOR COMPARISON ONLY, AND IS NOT PART OF THE STANDARDS.**

THE EUROPEAN SCIENTIFIC DIVER.	THE ADVANCED EUROPEAN SCIENTIFIC DIVER.
<p>An ESD is a diver capable of <i>acting as a member of</i> 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.</p>	<p>An AESD is a diver capable of <i>organising</i> 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.</p>
<p><b>- show proof of <i>basic</i> theoretical knowledge and a <i>basic</i> understanding of:</b></p> <ol style="list-style-type: none"> <li>1. diving physics and physiology, the causes and effects of diving related illnesses and disorders and their management.</li> <li>2. the specific problems associated with diving to and beyond <b>20m</b>, calculations of air requirements, correct use of decompression tables.</li> <li>3. equipment, including personal dive computers and guidelines as to their safe use.</li> <li>4. emergency procedures and diving casualty management.</li> <li>5. principles of dive planning.</li> <li>6. legal aspects and responsibilities relevant to scientific diving in Europe and elsewhere.</li> </ol>	<p><b>- show proof of theoretical knowledge and a <i>comprehensive</i> understanding of:</b></p> <ol style="list-style-type: none"> <li>1. diving physics and physiology, the causes and effects of diving related illnesses and disorders and their management.</li> <li>2. the specific problems associated with diving to and beyond <b>30m</b>, calculations of air requirements, correct use of decompression tables.</li> <li>3. equipment, including personal dive computers and guidelines as to their safe use.</li> <li>4. emergency procedures and diving casualty management.</li> <li>5. the principles <i>and practice</i> of dive planning <i>and the selection and assessment of divers</i>.</li> <li>6. legal aspects and responsibilities relevant to scientific diving in Europe and elsewhere.</li> <li>7. <i>dive project planning</i>.</li> </ol>
<p><b>- be fully competent with/in:</b></p> <ol style="list-style-type: none"> <li>1. diving first aid, including CPR and oxygen administration to diving casualties.</li> <li>2. SCUBA rescue techniques and management of casualties.</li> <li>3. the use and user maintenance of appropriate SCUBA diving equipment.</li> </ol>	<p><b>- be fully competent with/in:</b></p> <ol style="list-style-type: none"> <li>1. diving first aid, including CPR and oxygen administration to diving casualties.</li> <li>2. SCUBA rescue techniques and management of casualties.</li> <li>3. the use and user maintenance of appropriate SCUBA diving equipment, <i>including dry suits and full face masks</i>.</li> <li>4. <i>basic small boat handling, and electronic navigation</i>.</li> <li>5. <i>supervision of diving operations</i>.</li> </ol>
<p><b>- be fully competent with:</b></p> <ol style="list-style-type: none"> <li>1. search methods.</li> <li>2. survey methods, both surface and sub-surface, capable of accurately locating and marking objects and sites.</li> <li>3. the basic use of airbags and airlifts for controlled lifts, excavations and sampling.</li> <li>4. basic rigging and rope work, including the construction and deployment of transacts and search grids.</li> <li>5. underwater navigation methods using suitable techniques.</li> <li>6. recording techniques.</li> <li>7. <i>acting as surface tender for a roped diver</i>.</li> <li>8. sampling techniques appropriate to the scientific discipline being pursued.</li> </ol>	<p><b>- be fully competent with:</b></p> <ol style="list-style-type: none"> <li>1. search methods, <i>such as those utilizing free swimming and towed divers together with remote methods suitable for a various range of surface and sub-surface situations</i>.</li> <li>2. survey methods, both surface and sub-surface, capable of accurately locating and marking objects and sites.</li> <li>3. the basic use of airbags and airlifts for controlled lifts, excavations and sampling.</li> <li>4. basic rigging and rope work, including the construction and deployment of transacts and search grids.</li> <li>5. underwater navigation methods using suitable techniques.</li> <li>6. recording techniques.</li> <li>7. <i>roped/tethered diver techniques and various types of underwater communication systems such as those utilising visual, aural, physical and electronic methods</i>.</li> <li>8. sampling techniques appropriate to the scientific discipline being pursued.</li> </ol>
<p>-show proof of having undertaken <b>70</b> open water dives, to include at least:</p> <ol style="list-style-type: none"> <li>1. <b>20</b> dives with a scientific task of work, such as listed above.</li> <li>2. 10 dives between <b>15m and 24m</b>.</li> <li>3. 5 dives <b>greater than 25m</b>.</li> <li>4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.</li> </ol>	<p>-show proof of having undertaken <b>100</b> open water dives, to include at least:</p> <ol style="list-style-type: none"> <li>1. <b>50</b> dives with a scientific task of work, such as listed above.</li> <li>2. 10 dives between <b>20m and 29m</b>.</li> <li>3. <b>10</b> dives <i>between 29m and the national limit</i>.</li> <li>4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.</li> <li>5. <b>20 dives in adverse conditions, such as currents, cold water, or moving water</b>.</li> <li>6. <b>20 dives as an in-water dive leader</b>.</li> </ol>

THE EUROPEAN SCIENTIFIC DIVER.	THE ADVANCED EUROPEAN SCIENTIFIC DIVER.
<p>An ESD is a diver capable of <i>acting as a member of</i> 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.</p>	<p>An AESD is a diver capable of <i>organising</i> 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.</p>
<p><b>- show proof of <i>basic</i> theoretical knowledge &amp; a <i>basic</i> understanding of:</b></p> <ol style="list-style-type: none"> <li>1. diving physics and physiology, the causes and effects of diving related illnesses and disorders and their management.</li> <li>2. the specific problems associated with diving to and beyond <b>20m</b>, calculations of air requirements, correct use of decompression tables.</li> <li>3. equipment, including personal dive computers &amp; guidelines as to their safe use.</li> <li>4. emergency procedures and diving casualty management.</li> <li>5. principles of dive planning.</li> <li>6. legal aspects &amp; responsibilities relevant to scientific diving in Europe &amp; elsewhere.</li> </ol>	<p><b>- show proof of theoretical knowledge &amp; a <i>comprehensive</i> understanding of:</b></p> <ol style="list-style-type: none"> <li>1. diving physics &amp; physiology, the causes &amp; effects of diving related illnesses and disorders &amp; their management.</li> <li>2. the specific problems associated with diving to &amp; beyond <b>30m</b>, calculations of air requirements, correct use of decompression tables.</li> <li>3. equipment, including personal dive computers and guidelines as to their safe use.</li> <li>4. emergency procedures and diving casualty management.</li> <li>5. the principles &amp; <i>practice</i> of dive planning &amp; <i>the selection and assessment of divers</i>.</li> <li>6. legal aspects &amp; responsibilities relevant to scientific diving in Europe and elsewhere.</li> <li>7. <i>dive project planning</i>.</li> </ol>
<p><b>- be fully competent with/in:</b></p> <ol style="list-style-type: none"> <li>1. diving first aid, including CPR and oxygen administration to diving casualties.</li> <li>2. SCUBA rescue techniques and management of casualties.</li> <li>3. the use and user maintenance of appropriate SCUBA diving equipment.</li> </ol>	<p><b>- be fully competent with/in:</b></p> <ol style="list-style-type: none"> <li>1. diving first aid, including CPR and oxygen administration to diving casualties.</li> <li>2. SCUBA rescue techniques and management of casualties.</li> <li>3. the use and user maintenance of appropriate SCUBA diving equipment, <i>including dry suits and full face masks</i>.</li> <li>4. <i>basic small boat handling, and electronic navigation</i>.</li> <li>5. <i>supervision of diving operations</i>.</li> </ol>
<p><b>- be fully competent with:</b></p> <ol style="list-style-type: none"> <li>1. search methods.</li> <li>2. survey methods, both surface and sub-surface, capable of accurately locating and marking objects and sites.</li> <li>3. the basic use of airbags &amp; airlifts for controlled lifts, excavations &amp; sampling.</li> <li>4. basic rigging and rope work, including the construction and deployment of transacts and search grids.</li> <li>5. underwater navigation methods using suitable techniques.</li> <li>6. recording techniques.</li> <li>7. <i>acting as surface tender for a roped diver</i>.</li> <li>8. sampling techniques appropriate to the scientific discipline being pursued.</li> </ol>	<p><b>- be fully competent with:</b></p> <ol style="list-style-type: none"> <li>1. search methods, <i>such as those utilizing free swimming &amp; towed divers together with remote methods suitable for a various range of surface &amp; sub-surface situations</i>.</li> <li>2. survey methods, both surface &amp; sub-surface, capable of accurately locating &amp; marking objects &amp; sites.</li> <li>3. the basic use of airbags and airlifts for controlled lifts, excavations and sampling.</li> <li>4. basic rigging &amp; rope work, including the construction &amp; deployment of transacts &amp; search grids.</li> <li>5. underwater navigation methods using suitable techniques.</li> <li>6. recording techniques.</li> <li>7. <i>roped/tethered diver techniques and various types of underwater communication systems such as those utilising visual, aural, physical and electronic methods</i>.</li> <li>8. sampling techniques appropriate to the scientific discipline being pursued.</li> </ol>
<p><b>-show proof of having undertaken 70 open water dives, to include at least:</b></p> <ol style="list-style-type: none"> <li>1. <b>20</b> dives with a scientific task of work, such as listed above.</li> <li>2. 10 dives between <b>15m and 24m</b>.</li> <li>3. <b>5</b> dives <i>greater than 25m</i>.</li> <li>4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.</li> </ol>	<p><b>-show proof of having undertaken 100 open water dives, to include at least:</b></p> <ol style="list-style-type: none"> <li>1. <b>50</b> dives with a scientific task of work, such as listed above.</li> <li>2. 10 dives between <b>20m and 29m</b>.</li> <li>3. <b>10</b> dives <i>between 29m and the national limit</i>.</li> <li>4. 12 dives in the last 12 months, including at least 6 with a scientific task of work.</li> <li>5. <b>20 dives in adverse conditions, such as currents, cold water, or moving water</b>.</li> <li>6. <b>20 dives as an in-water dive leader</b>.</li> </ol>



**APPLICATION FOR EUROPEAN SCIENTIFIC DIVER CERTIFICATE.**

FULL NAME

ADDRESS

DATE OF BIRTH

DAYTIME CONTACT No.

SIGNATURE OF COMPETENT PERSON FROM SUPPORTING INSTITUTION (Chief Diver/Diving Officer/Head of Department/Chief Technician etc.).

PRINT NAME

INSTITUTE STAMP

Send :-

COMPLETED FORM;  
2 PASSPORT SIZE PHOTOGRAPHS;  
CHEQUE FOR £10 (administration fee - payable to the "University Marine Biological Station Millport");  
SUITABLE WRITTEN PROOF OF DIVING EXPERIENCE AS LISTED OVERLEAF (Photocopies acceptable);  
SUITABLE WRITTEN PROOF OF CPR AND OXYGEN ADMINISTRATION (Photocopies acceptable);  
SUITABLE WRITTEN PROOF OF CMAS 2\* OR EQUIVALENT AS  
CURRENTLY LISTED BY THE HSE (Photocopies acceptable);

to:-

P.J.Lonsdale. UMBSM, Isle of Cumbrae, Scotland. KA28 0EG.  
tel.++44(0)1475 530 581 fax.++44(0)1475 530704

-----  
Office use only.

Date application received.

Date dispatched.

Approved/refused

Date of expiry of certificate (valid 5 years)



**APPLICATION FOR ADVANCED EUROPEAN SCIENTIFIC DIVER CERTIFICATE.**

FULL NAME

ADDRESS

DATE OF BIRTH

DAYTIME CONTACT No.

SIGNATURE OF COMPETENT PERSON FROM SUPPORTING INSTITUTION (Chief Diver/Diving Officer/Head of Department/Chief Technician etc.).

PRINT NAME

INSTITUTE STAMP

Send :-

COMPLETED FORM;  
2 PASSPORT SIZE PHOTOGRAPHS;  
CHEQUE FOR £10 (administration fee - payable to the "University Marine Biological Station Millport");  
SUITABLE WRITTEN PROOF OF DIVING EXPERIENCE AS LISTED OVERLEAF (Photocopies acceptable);  
SUITABLE WRITTEN PROOF OF CPR AND OXYGEN ADMINISTRATION(Photocopies acceptable);  
SUITABLE WRITTEN PROOF OF CMAS 3\* OR EQUIVALENT AS  
CURRENTLY LISTED BY THE HSE (Photocopies acceptable);

to:-

P.J.Lonsdale. UMBSM, Isle of Cumbrae, Scotland. KA28 0EG.  
tel.++44(0)1475 530 581 fax.++44(0)1475 530704

-----  
Office use only.

Date application received.

Date dispatched

Approved/refused

Date of expiry of certificate (valid 5 years)