

The Diving Medical Advisory Committee

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Approval of Diving Medicine Courses

DMAC 29 Rev. 2 – January 2014

Supersedes DMAC 29 Rev. 1 which is withdrawn

1 Objective

This guidance is for those who seek international approval for the recognition of courses in diving medicine for physicians. At present this recognition is available for only two specific types of courses that have been selected as now needed in relation to medical support more specific for working divers.

It is important to note that 'working divers' would include some recreational diving instructors and diving guides, the needs of doctors who are associated only with recreational diving have not been specifically addressed by this committee. Some course organisers may wish to add extra lectures and/or practical sessions on recreational diving at their discretion. However, such modifications must not affect the integrity of the accredited/approved course and would not be assessed by DMAC/EDTCmed.

This note has been reissued now and is based on the 2011 revision of the EDTC Training Standards. Some chapters of this guidance have therefore been modified since revision 1.

2 Background

Legal regulations and industrial standards concerning training of doctors involved in examination and treatment of working divers and the medical consultants to diving contractors vary throughout the world. Many professional divers work in different nations as a part of their employment and, even though the guidance on medical standards for fitness to dive is reasonably well established internationally, the training of doctors to conduct those examinations and to provide competent support for diving emergencies appears patchy.

Accreditation or approval of courses in diving medicine would probably best be achieved if multi-national agencies (such as bodies within WHO, ILO, UEMS or EU) or well-reputed academic institutions with international connections would accept such a responsibility. However, in spite of agreement for many years on the need for approval, little or nothing has happened.

In 2004 the European Diving Technology Committee (EDTC) produced its guidance on the "*Medical Assessment of Working Divers*". This has been published by the International Marine Contractors Association (IMCA) and is available on the EDTC website.

Previously, a joint committee of the European Committee for Hyperbaric Medicine (ECHM) and EDTC developed "*Educational and Training Standards for Physicians in Diving and Hyperbaric Medicine*". At present, this remains the best recognised international standard for such training. However, no organisation has accepted responsibility for administering an approval procedure for these basic courses. Until another recognised body takes on this responsibility, DMAC has accepted the obligation to assess selected courses in diving medicine together with a representative of the EDTC Medical Subcommittee; this alliance is to be referred to as 'DMAC/EDTCmed'.

It is emphasised that DMAC/EDTCmed will approve only the courses and not the competence of those who have attended them. DMAC is not constituted to be in a regulatory position and have a procedure for assessing the training record, experience and competence of individual doctors. That needs to be done in conjunction with other aspects of professional qualifications and accreditations overseen by legislative bodies at a national level.

2.1 Course Scope

To be considered for approval the course should be compliant with the ECHM-EDTC "*Educational and Training Standards for Physicians in Diving and Hyperbaric Medicine*". A copy of this document, which is for all health professionals in hyperbaric and diving medicine, can be downloaded from www.edtc.org. When any proposed changes to the sections concerning diving doctors have been approved by EDTC, an amended version of that section will be added to the EDTC website.

The application for course approval should demonstrate compliance with the attached "*Curriculum Checklist*" in Appendix A.

The application form should clearly state for which of these two categories (or both) approval is sought:

- “ Level 1 Medical assessment of divers (Medical Examiner of Divers);
- “ Level 2D Medical management of diving accidents and illnesses (Diving Medicine Physician).

2.2 Organisation and Responsibilities, Course Faculty

The application must clearly show how responsibilities are shared. As a minimum, the application must identify the administrative aspects (legal, economic, personnel) as well as professional responsibilities of the faculty members (including a description of their relevant professional background). The application must identify the person(s) having overall administrative and professional responsibility of the course. The application should list how many times the course has been arranged and, unless new, the number of students who have previously attended.

2.3 Students

The course programme should clearly state the acceptance requirements (professional skills/training) for candidates.

2.4 Curriculum

The detailed curriculum should be attached to the application. The curriculum should define contact hours, main topic and training objective of each lesson (theoretical or practical) and identify the teacher or trainer responsible. The curriculum should demonstrate compliance with Appendix C.

A course will usually be approved for *either* a Level 1 or a Level 2D approval. If the applicant would apply for dual approval (Level 1 *and* Level 2D) the application must clearly describe the extent and progression of training as well as examination for each course/level.

The checklist demonstrating compliance with "*Contents of Modules*" should be attached. If any non-compliance is identified, the reason for this should be explained or details offered of corrective actions to be instituted. Applicants are advised to use the "*Training Objectives for a Diving Medicine Physician*" (available on the DMAC website at www.dmac-diving.org/guidance/DMAC29-EDTC.pdf and also available from the EDTC website) and the ECHM-EDTC "*Educational and Training Standards for Physicians in Diving and Hyperbaric Medicine*" as a guideline for actual course contents for Level 2D courses, though these training objectives are not considered a normative standard by DMAC.

The applicant may be required to submit the following documentation (in part or full) to be considered for review of approval of the course by DMAC/EDTCmed:

- “ PowerPoint presentations of selected lectures or other lecture material which allows the reviewers to adequately evaluate the content as such of the course for its relevance to commercial;
- “ List of cases presented on the course: type of diver, type of industry, problem discussed;
- “ Exam questions (see point 2.7).

2.5 Computer Based Training/e-Learning

DMAC/EDTCmed acknowledges the potential for computer based training (CBT)/internet based training. As long as the training objectives are reached, the applicant may include such training as part of the course. Due to the requirement for practical training, DMAC/EDTCmed will not recognise basic Level 1 and Level 2D courses based on CBT alone (this may be considered for some refresher courses of a Level 1). Further it is a requirement that the final examination includes tests related to CBT to ensure that the individual student actually has sufficient knowledge of those topics covered by CBT. When CBT is included as part of the course, the applicant must ensure compliance with these requirements:

- “ Detailed curriculum of the CBT identical to paragraph 2.4 above/Appendix C must be submitted;
- “ The application must describe how the students are tested/training objectives are measured during the CBT session(s);
- “ The application must describe how the course ensures that the training objectives of the CBT are tested at the end of the course.

2.6 Video Documentation

When a course is approved, the DMAC/EDTC working group may require the applicant to provide video documentation of a maximum of 3 contact hours of training from the next course (not necessarily in the English language) on DVD for review by the working group (any other format should be agreed in writing between the applicant and DMAC/EDTCmed). Based on the course curriculum, the DMAC/EDTCmed working group will decide at least 14 days before the course starts which contact hours the applicant is to video. Failure to provide video documentation will normally cause withdrawal of DMAC/EDTCmed recognition. If the video demonstrates some unsatisfactory teaching standards, the course director will be asked for a statement which should include his plans to revise the programme in the future.

2.7 Examination

Students receiving a course certificate or diploma should demonstrate sufficient knowledge according to the scope of the course. The application should detail how the students will be examined and the pass/fail criteria. A written examination is mandatory. The application should detail whether and how a student failing to meet the training standard could undergo re-examination. The applicant is requested to forward a representative sample (approximately 25%) of the exam questions (i.e. if the students are given 20 questions in the final exam, 5 representative questions should be forwarded).

2.8 Course Certificate

An approved course is eligible to state in the diploma or course certificate that the course has been approved by DMAC/EDTCmed for training, as appropriate, of:

- “ Level 1 Medical assessment of divers (Medical Examiner of Divers);
- “ Level 2D Medical management of diving accidents and illnesses (Diving Medicine Physician).

DMAC/EDTCmed does not approve training of other categories of personnel and any non-physicians who participate in the course must not receive certificates or diplomas that indicate DMAC/EDTCmed approval of training.

2.9 Secrecy/Confidentiality

DMAC/EDTCmed may contact any member of the applicant's faculty for further information and/or review. When the application has been approved, DMAC/EDTCmed's final conclusion concerning that course will be made available on the EDTC, DMAC and IMCA websites. However, no information concerning course content or other details will be disclosed (see paragraph 4). DMAC/EDTCmed may later contact students completing the course to verify that the course actually complies with the guidelines. The applicant will be informed before any such student contact is established.

2.10 Attachments

These attachments should follow the application. They are all to be submitted in an electronic format:

- “ General information letter/invitation for participation, or text of any advertisement;
- “ Detailed course curriculum;
- “ Completed checklists (two: both “*Administrative*” and “*Curriculum*”);
- “ Course faculty members with CV, address, telephone/telefax numbers and e-mail addresses;
- “ Sample diploma/certificate for physicians and non-physicians.

2.11 Cost

Application fee is to be decided by DMAC/EDTCmed. Applicants should contact the DMAC Secretary for further information concerning cost and payment.

2.12 Period of Validity

Unless course content is changed, the approval period is three years. After this, the course must be reviewed by DMAC/EDTCmed.

If any faculty members or the course curriculum are changed, the applicant is obliged to forward information on this to ensure that the course remains DMAC/EDTCmed-approved. Unless changes are significant, DMAC/EDTCmed will not request further fees for recognition of minor changes.

3 DMAC/EDTCmed Internal Procedure for Reviewing Applications of Approval

3.1 DMAC/EDTCmed

DMAC will nominate a working group consisting of two or more persons who shall be responsible for reviewing the applications. One of them shall be a representative of the EDTC Medical Subcommittee (or a third member could be co-opted from the EDTC). Additionally a reserve DMAC member is nominated if any member of the initial group could be considered as biased or is unavailable. An assessment group member would be considered biased if he/she is a member of the faculty seeking approval or if he/she is employed or working within the institution arranging the course. Any cases of doubt concerning bias should be referred to the DMAC Chairman for final decision. He/she may refer to the EDTC National Co-ordinator where appropriate. If a working group member is considered to be biased, he/she should be replaced by a reserve DMAC member.

The members of a working group are not remunerated for the significant work involved in reviewing applications for approval and are conducting this work on a voluntary basis.

3.2 Administrative Remarks

The DMAC Secretary will acknowledge receipt of applications, advise the applicant if any critical documentation is missing and forward an invoice. The Secretary will inform the applicant of the identity of the two persons in the working group. The applicant may dispute the composition of the working group (within seven days) if he/she finds the working group biased or otherwise inappropriate. Such complaints should be addressed in writing to the Secretary and forwarded to the DMAC Chairman for final decision.

3.3 Application Review

The working group will review the application. The initial review should reach a conclusion within three months unless further documentation/information is needed. Re-assessments should reach a conclusion within two months unless further documentation is needed. The conclusion is forwarded to the DMAC Secretary for approval and issuing of a letter of approval/refusal. Recommendation of approval is based on the contents of forwarded information. In letters of refusal the major points of criticism should be outlined. If the members of the working group disagree, a final decision will be made by the DMAC Chairman.

3.4 Complaints/Appeal

If the applicant contests the decision, an appeal procedure is initiated through the DMAC Chairman. In this case the complaint is initially considered by the DMAC Chairman. He/she can reconsider the decision in co-operation with the working group. If the decision remains unchanged, a final decision should be given by DMAC in plenary with the EDTC Medical Subcommittee as appropriate.

4 DMAC Website

DMAC will update a list of approved courses with such contents:

- u Course organiser (name or institution);
- u Class of course (1 or 2D);
- u DMAC approval period;
- u Practical details (contact names, e-mail addresses, scheduled courses and similar, etc.) (*optional*).

There is a link to this information from the IMCA website.

Practical Application Procedure

To ensure compliance with DMAC/EDTCmed requirements, two checklists for applicants have been developed. The applicant should complete these carefully and must send them in an electronic format. All the information asked for must be documented, e.g. in course curricula, lecture objectives, enclosed CVs, course information folders, etc. It is not acceptable simply to state that "this will be covered". DMAC/EDTCmed strongly endorses development of a course manual compiling this information.

The applicant should consider focusing on three areas considered essential to receive DMAC/EDTCmed approval:

- “ The course should have a well reputed faculty and all teachers should demonstrate a high level of appropriate and relevant professional skills;
- “ Though some flexibility in timing and order of lessons may be necessary and sometimes even beneficial, the course should have a stringent and well defined structure and well defined contents of its different modules. The contents of a course should contain clear and sufficient subject material covering the many aspects of professional and industrial diving activities.
- “ A demonstration of the acquired skills (examination) should be clearly defined.

DMAC/EDTCmed requires that a student receiving a diploma or course certificate indicating that DMAC/EDTCmed has approved the course must attend at least 80% of course lessons and that they must have demonstrated to the course director the level of skill achieved. However, DMAC/EDTCmed accepts that a number of students may want to attend some part(s) of the course and/or not present for a final exam. The applicant may issue diplomas or course certificates to such students, but such certificates must not indicate that the course is DMAC/EDTCmed approved and these students will not be accepted for listing as having attended a DMAC/EDTCmed approved course.

Two checklists have been prepared. The first is directed mainly towards course formalities and the second identifies required course content.

Administrative Checklist

Fill in columns "Applicant's reference and comments" and "Complies Yes/No".

		Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
1	Is an application letter enclosed, explaining course general background, previous courses, contents, etc.?			
2	Does the application letter state which category course is approval sought for? (Ref. section 2.1)			
3	Is this letter signed by both the professional and the administrative personnel responsible for the course?			
4	Does the application letter list and number all attachments?			
5	Is the organisation of the course, including faculty, clearly described?			
6	Are all faculty members listed by name, address, telephone and e-mail?			
7	Are CVs for all teachers attached?			
8	Is a detailed time schedule for the course attached?			
9	Is a tabulated list of total contact hours attached, divided into classroom lectures and practical exercises? (The time schedule is not considered a tabulated list – this should be a separate document or table within the application listing lectures and contact time.)			
10	Is the course curriculum (describing the training objectives of each lesson) attached? (Please ensure compliancy with Appendix C.)			
11	Is a sample of 25% of exam questions included?			
12	Does the application describe in detail how the students will be tested after the finished course?			
13	Does the application describe pass/fail criteria and the possible way of re-examining failed students?			
14	Does the application describe the requirement for attendance in order to receive a diploma/course certificate at the end of the course?			
15	Does the application describe how this attendance will be monitored?			
16	Does the application describe course literature given to the student or required by the course faculty?			
17	Does the application describe, in reasonable detail, how practical exercises and training will be completed (<i>to a level assuring DMAC that sufficient equipment, space and planning will ensure success</i>)?			
18	Does the application describe the need for and availability of AV equipment?			
19	Does the application describe access to basic logistic support functions (e.g. photocopying, meals, etc.)? <i>DMAC/EDTCmed does not question details in this matter, but wants to avoid that neglect of practical issues may disturb the professional outcome of the course.</i>			
20	Has the course been recognised by any national or other international authority or organisation?			
21	Is a sample of a course diploma/course certificate enclosed?			
22	Is a sample of a course diploma/course certificate for students not passing the exam or failing the attendance requirement enclosed?			
23	Has the applicant confirmed willingness to provide video documentation of a maximum of three contact hours for post-course review?			
24	Are both checklists filled in and enclosed with the application?			
25	Are all documents in an electronic format?			

Curriculum Checklist

The topics of this table represent the corresponding chapters in the training objectives (Appendix 2 of the ECHM-EDTC "Educational and Training Standards for Physicians in Diving and Hyperbaric Medicine" 2011). Fill in columns "Applicant's reference and comments" and "Complies Yes/No". Yes means that the teaching module of the applicants course complies with all the items in the "training objectives". For a Level 2D course, a "No" compliance should be given if the amount of training for a certain subject is less than stipulated in the ECHM-EDTC training standard. If a course is considered qualified as a combined Level I and Level 2D course, care should be given to describe how topics are taught and training progressed for each module/level.

Topic	1	2D	Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
1 Physiology and pathology of diving and hyperbaric exposure					
1.1 Hyperbaric physics	B	C			
1.2 Diving related physiology (functional anatomy, respiration, hearing and equilibrium control, thermoregulation)	B	C			
1.3 Hyperbaric physiology of immersion	B	C			
1.4 Pathophysiology of decompression	B	C			
1.5 Acute dysbaric disorders: a brief introductory section	B	C			
1.6 Chronic dysbaric disorders (long term health effects)	B	C			
1.7 HBO basics – physiology and pathology	-	B			
1.8 Oxygen toxicity	A	C			
1.9 Pressure and inert gas-effects	A	C			
1.10 Medication under pressure	B	C			
1.11 Non-dysbaric diving pathologies	A	C			
2 Diving technology and safety					
2.1 Basic safety planning	B	B			
2.2 Compressed air work	B	B			
2.3 Diving procedures	B	C			
2.4 Characteristics of various divers	B	B			
2.5 Diving equipment	B	B			
2.6 Diving tables and computers	B	B			
2.7 Regulations and standards for diving	A	B			
2.8 Saturation diving	B	C			
3 Fitness to dive					
3.1 Fitness to dive criteria and contraindications (for divers, tunnel workers and HBOT patients and chamber personnel)	C	C			
3.2 Fitness to dive assessment	C	C			
3.3 Fitness to dive standards (professional and recreational)	C	C			
4 Diving accidents					
4.1 Diving incidents and accidents	A	C			
4.2 Emergency medical support (with no chamber on site)	-	C			
4.3 Decompression illness	A	C			
4.4 Immediate management of decompression illnesses: recompression tables and strategies	A	C			
4.5 Rehabilitation of disabled divers	-	A			
4.6 Diving accident investigation	-	A			

Topic	1	2D	Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
5 Clinical HBO					
5.1 Chamber technique (multiplace, monoplace, transport chambers, wet recompression)	-	B			
5.2 HBO: Mandatory indications	-	A			
5.3, HBO: Recommended indications	-	-			
5.4 HBO: Experimental and anecdotal indications	-	-			
5.5 Data collection/statistics/evaluation	-	B			
5.6 General basic treatment (nursing)	-	B			
5.7 Diagnostic, monitoring and therapeutic devices in chambers	-	C			
5.8 Risk assessment, incidents monitoring and safety plan in HBO chambers	-	B			
5.9 Safety regulations	-	C			
6 Miscellaneous					
6.1 Research standards	-	A			
6.2 Paramedics teaching programme	-	B			
6.3 Management/organisation of HBO facility	-	A			
7 Practical training					
7.1 Fitness of course participants	+	+			
7.2. Practical revision of examination skills	+	+			
7.3 Practice in HBO-T (including pressure test and experience of nitrogen narcosis)	-	+			
7.4a CPR	-	+			
7.4 Practice in field first aid (diving accidents)	-	+			
7.5 Underwater experience - (Level I) – recommended - (Level 2D) – exceptions possible, if important reasons or unfitness to dive	+	+			
7.6a Demo: Professional diving	+	+			
7.6b Demo: HBO-T	-	+			

Levels of competence:

- A Basic (Aware of subject)
- B Need to know (Familiar with subject)
- C Expert (Detailed understanding of subject)

Requirement:

- Optional
- + Required

ECHM-EDTC Standards for Course Organisation and Certification

Teaching Courses

The standards do not prescribe the status of the teaching institution, but it is strongly recommended that courses are university-based, are approved for such training courses by national health authorities, speciality training boards or are under the auspices of the national scientific society for diving medicine and/or hyperbaric medicine.

How a course is to be organised is not prescribed in these standards. Evenings, weekends or full weeks are possible. Distance and web-based learning can be considered. For clinical teaching, an internship or residency may be appropriate. The acknowledgement of a high teaching standard is based on a credible final test of the candidates.

Modules and Course Organisation

The actual organisation and conduct of the modules will be influenced by local factors and so it is proposed that these details can be decided on a national basis and probably left to the individual course directors. The following proposal indicates the total teaching hours considered necessary to achieve appropriate competencies in the following jobs.

Level 1	Medical examiner of divers	25 lecture hours + 3 hours practical
Level 2D	Diving medicine physician	80 learning hours*

* The 80 learning hours may be divided in contact hours (lectures) and individual study hours as e.g. web-based training

If a training programme is considered sufficient for a combined Level I and Level 2D approval, the amount of training should at least include the sum of hours listed above.

In order to take into account the development of modern educational techniques a credit system can be used with a conversion rule ensuring that all content of the DMAC/EDTCmed syllabus will be presented to the students regardless of the method.

The proposal serves as a guideline and is not mandatory. When one of these teaching programmes includes topics covered elsewhere a reduction in the number of lecture hours may be justifiable.

Certificate of competence as diving medicine physician or medical examiner of divers

The revised educational and training standards for physicians in diving and hyperbaric medicine of EDTC and ECHM have introduced a new type of certification. While the training course modules end with a diploma certifying that the candidate has successfully followed the course and passed the final assessment, the standards propose an advanced level certification called "Certificate of Competence" as either a "Medical Examiner of Divers" or "Diving Medicine Physician". The motivation to introduce that upgrade level was that the industry needs diving medical physicians with a certain amount of skills and experience. This however cannot be transferred by the usual academic training modules. However, an apprenticeship like the intern doctor in a hospital is not easily achievable in the practical world of diving operations or tunnelling. Therefore the amount of training necessary in order to apply for the certificate of competence has been defined and the candidates have the possibility to either get these skills through experience to be attested in a logbook, otherwise by participation to advanced practical training modules. To get the certificate of competence, the candidates further have to pass an examination organised by an examination board. This upgrade certification is not the responsibility of DMAC and therefore not part of the DMAC 29 Rev. 2 guidance.

[Note that DMAC only approves courses in diving medicine, and such approval will be given for a limited period, but does not limit the period of validity for individual diplomas awarded to the students. However, ECHM/EDTC has recommended such guidance for refresher training and continuing experience.]

Continuing Education

In most countries, the conditions for maintaining the active status of an individual are defined by a system of continuing medical education credits or professional development (CME or CPD). ECHM and EDTC defined the minimum requirement for this in a flexible way that provides enough freedom for other bodies to establish a more detailed system. The certificate for approved Medical Examiner of Divers (MED) and Diving Medicine Physician (DMP) have limited time of value, thus need renewal, while the diploma of the training course 1 and 2D do not require a refresher as they do not certify a competency.

The recommendations are the following:

Job 1 (MED)

A minimal activity of ten medical assessments of professional divers' fitness per year is expected from the MED plus attendance at one refresher course (usually two days) in no later than five years. Alternatively reactivation after a lapse needs participation in two two-day refresher courses or a repeat of the full basic course.

Job 2D (DMP)

Continuing experience in the field of professional diving (e.g. advising a professional diving contractor or some equivalent activity) and participation in a course or congress previously approved by the national co-ordinator. The various activities are validated according to an agreed score. The activities are therefore monitored in a logbook. Reactivation after a lapse should be on the basis of a specifically approved course. Where this cannot be achieved, the candidate should submit an alternative training programme to the national co-ordinator for approval.

The Joint Medical Subcommittee of ECHM and EDTC

This committee operates on the basis outlined at www.edtc.org. Each country interested in educational courses should be represented by a member who has been acknowledged by the national hyperbaric medicine authority (or of all such authorities if there are more than one such authority in a country). Normally this would be either the national member of ECHM or the national medical representative on the EDTC. If not the same individual, both could attend if appropriate. The EDTC and ECHM representatives of each country should nominate a national co-ordinator of teaching programmes, who could be the joint subcommittee member himself or who could delegate for that purpose (for instance to the national health and safety authority or any representative scientific body covering all aspects of hyperbaric medicine). The national co-ordinator will have the duty to supervise the national programmes, the certification procedures and to liaise with the Chairman of DMAC when appropriate.

Course Curriculum – Formatting Requirements

Description of Individual Lectures

DMAC/EDTCmed requires each lecture to be uniquely identified and contents to be described in sufficient detail to allow the assessors to review the content. For each lecture, the minimum description should include:

- u A unique identifier (e.g. a serial number);
- u Lecture title;
- u Objective (what is expected to be learnt);
- u A listing of the major topics to be discussed/presented/practised;
- u Cross reference to the relevant section of the curriculum checklist;
- u Training time (exact with pauses excluded);
- u Trainer/lecturer competency;
- u Location of training (e.g. classroom, medical office, recompression chamber) and particular requirements for equipment.

A sample of a theoretical training lecture and a practical demonstration is presented below. The order does not have to comply with the examples given, but the topics listed above should be included.

Example 1

Civilian occupational and recreational diving

Lecture unique ID#

2

Objective

Present training and operational application of civilian occupational and recreational diving

Trainer competency

Instructor with in-depth knowledge of civilian diving. Medical qualification not required

Time

40 min

DMAC/EDTC cross reference

2.1; 2.2; 2.3; 2.4; 2.5

Detailed content

Recreational diving:

Main training organisations (CMAS, NAUI, PADI)

Training levels

Diving equipment applicable for recreational diving

Annual certification number

Safety estimates: Mortality and DCS incidence

Occupational diving:

Training, training standards, training level (recreational diving instructors, archaeological divers, scientific divers, conventional occupational scuba and light surface supplied diving, hard hat diving, saturation diving)

Diving equipment and diving methods (scuba, surface supplied, SurD O₂, mixed gas, saturation)

Location/training equipment

Classroom training, conventional AV equipment. Video showing recreational and/or occupational diving optional.

Example 2

Demonstration – Diving equipment

Lecture unique ID#

3

Objective

Present (demonstration) basic diving equipment used in recreational, military and occupational diving

Trainer competency

Instructor with in-depth knowledge of occupational diving. Medical qualification not required

Time

40 min

DMAC/EDTC cross reference

2.5; 7.6

Detailed content

The students should be presented (hands-on training) conventional diving equipment including at least:

Mask, snorkel, fin

Diving suit

Tank, regulator

Full-face mask

KMB mask or similar

Diver communication

“Diving station” with gas distribution panel

Dive computer, hot-water suit and hard hat rig to be explained unless physically available on site

Location/training equipment

Preferably at a diving site, but equipment garage or classroom acceptable as long as the students get “hands-on” experience inspecting and possibility to try (dry) the equipment.

Specification of Training – Level 1 Courses

Background

The review/assessment of applications of Level 1 courses has identified limitations of the course curriculum specification as listed in the “curriculum checklist” above. Based on this DMAC has decided to further identify minimum theoretical and practical training in some areas considered essential for medical examiners of divers who are involved with working divers. DMAC would like to ensure that courses approved as Level 1 courses actually provide the training necessary to conduct a proper medical examination of professional diver. This Appendix focuses on the training related to the Fitness to Dive Examination.

Extent of Training

As for the theoretical part, DMAC requires the applicant to describe in detail how the training requirements in the curriculum checklist section 3 (“Fitness to dive”) are met. The applicant should describe the theoretical/classroom training in sufficient detail for DMAC to ensure that the student achieves detailed knowledge of the health requirements for professional diving.

An absolute minimum of 5 (five) contact hours related to fitness to dive examinations are required for a course to be approved. At least 3 (three) contact hours should be dedicated to the practical clinical aspects of such examination. To be approved as a Level 1 course the applicant should demonstrate how these parts of the training are provided:

- u Spirometry: Proper execution, common errors, interpretation of results (including flow-volume curves), follow-up procedures depending on results;
- u Audiometry: Proper execution, common errors, interpretation of results, follow-up routines, specialist referral criteria;
- u Neurological examination: Proper execution, interpretation of results, follow-up routines;
- u ECG: Proper execution, common errors, interpretation of results, follow-up procedures;
- u Ergometry: Assessment of work capacity through formal testing (indirect or direct assessment of maximum VO_2 or other standardised test).

Though it is a requirement to include these topics (listed in bullets above) in the training, it is not required that each student should practise the techniques during the course. However, the course provider should explain how such training is provided during the course.

Although valuable, time spent on visiting diving sites/schools, related videos and case presentations should not be to the detriment of teaching time which would ensure that the candidates are competent in the above clinical topics by the end of the course.

Case Studies

A minimum of one contact hour is expected to be composed by case discussions related to FTD examinations.

Occupational Medicine, Risk Assessment, Health Surveillance

The application should describe how the principles and concept of health risk assessment is presented and discussed with the students. The application should describe how students are taught the differences between risk-based fitness to dive examinations and long term health surveillance/monitoring, including possible legal implications for employers of divers.