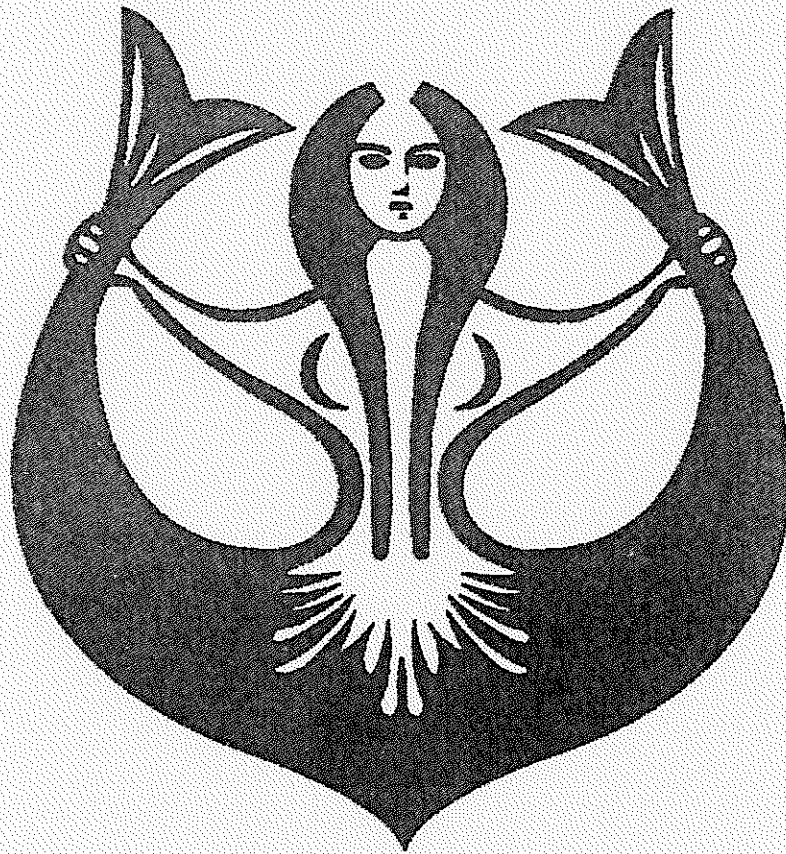


Confédération Mondiale des Activités Subaquatiques
World Underwater Federation



SEARCH & RECOVERY
STANDARDS

**CMAS SEARCH & RECOVERY
SPECIALITY COURSE**

PART I (Standards & Requirements)

PART II (Training program)



PART I (Standards & Requirements)

Table of Contents

	page
I. Course classification (Type & Level)	3
II. Aims & Objectives of course	3
III. Entry requirements (prerequisites)	3
IV. Maximum student/instructor ratios	3
V. Instructor/assistants requirements	3
VI. Special course requirements	4
VII. Student performance objectives	6
VIII. Minimum course duration	6
IX. Quality control / assurance	7
X. Overview of complete training system	7



I. Course classification (Type & Level)

The SEARCH & RECOVERY SPECIALITY course is considered as a BASIC level speciality course.

That means that the required minimum entry level certificate is CMAS ONE-star DIVER OR EQUIVALENT.

II. Aim(s) & Objectives of course

- * To interest and introduce divers in a safe and competent way to the planning, preparation and the performing of search & recovery techniques and diving under close supervision.
- * To familiarise interested divers with the skills, techniques and possible problems for this type of diving.
- * To serve as a prerequisite for higher-level specialty courses
- * To form another important link in the chain of continuing training and education within the CMAS system.

III. Entry requirements

1. student's min. age : 15 years
2. certification level : ONE star CMAS OR EQUIVALENT
3. min. number of dives : 15 (at least 2 of these performed within 2 weeks prior to the course)
4. other : medical approval for diving: not older than 1 year

NOTE: prior attendance, a NAVIGATION SPECIALITY course (for training in low-visibility water) and an EQUIPMENT SPECIALITY course is strongly recommended, but not mandatory.

IV. Maximum student/instructor ratios

1. excellent visibility (tropical waters) : 6 : 1
2. normal visibility (inland waters) : 2 : 1
3. poor conditions (any area) : 1 : 1 (also for assistants)

NOTE: Assistants may be used on a 2:1 base (2 additional students per 1 assistant) under conditions as mentioned under § 1+2.

V. Instructor / assistants requirements

1. instructor/course director:
 - a) certificate level : nat.fed./CMAS ONE-star instructor
 - b) proof of experience : * instructor must be in active teaching status as required by his national federation
 - * must be of proven ability and practical experience
 - * must have assisted another instructor on at least 1 course before conducting their own course
 - * must have submitted his own course outline which has been approved the federation's Technical Committee or must use a standard outline proposed by the federation itself.



* must have approved and valid training in diving rescue techniques, medical 1st aid and accident management by a recognized training organisation

2. assistants:

- a) generally : * as required to the satisfaction of the course director
- medical approval for diving not older than 1 year
- b) certificate level : * must held at least nat.fed./CMAS 2-star diver certificate
OR EQUIVALENT
- c) proof of experience : * participated himself successfully at a SEARCH & RECOVERY SPECIALITY Course, an EQUIPMENT SPECIALITY Course and a NIGHT DIVING SPECIALITY Course (or equivalent training)
* have attendended at least once this course as an inactive "observer" (without any tasks and responsibilities) to become familiar with the relevant procedures
* have at least 80 logged dives overall
* having attended a DIVE LEADERSHIP SPECIALITY Course (or equivalent training) is mandatory (as for all supervisory tasks)
- d) other : * must have approved and valid training in diving rescue techniques and medical 1st aid by a recognized training organisation

VI. Special course requirements

1. course approval : approval by national (or regional) technical committee (or by the national/regional training manager) required for the FIRST course of this type by this instructor
2. facilities : a) classroom : * adequate classroom, according to the needs of the course and the students
b) water : * confined open water area (sheltered area); no area with current, beach easily accessible from land AND from water (no heavy surf zone)
* time and site chosen as to insure adequate natural light and visibility
3. diving equipment : - diving flag
- ropes, lines, reels
- lifting devices, bags
- objects to be lifted (caution: DO NOT touch any protected underwater artefacts!)
- objects to be lifted should weight between 10 to 20kp.
- ev. strong u/v-lamps for each diver
- adequate thermal protection



- otherwise, standard scuba diving equipment
- * instructor(s) AND assistant(s) MUST be equipped with alternate air source (2 regulators; at least octopus system)

This requirement applies, of course, only to specialty courses with open water lessons.

- * It is strongly recommended that in waters with temperatures of less than 10 deg. C and depths deeper than 20m, all involved instructors, assistants and participants should carry TWO completely INDEPENDANT regulator systems.
- * during any kind of scuba diving activities, ALL involved instructors, assistants and participants MUST carry some form of buoyancy device (BC, ABLJ) with power inflator (direct feed).
- * ALL involved instructors, assistants and participants MUST be equipped with pressure gauges

4. other equipment / material : - ev. buoy(s), markers for entry / exit
 - emergency medical kit with oxygen
 - communications (phone, walky-talky) nearby
 - corresponding recognition material (C-card, badge, wall certificate)

5. other restrictions : - entry / exit must be from land, at same place, clearly marked and well visible from the water
 * drift dives are prohibited during training
 * minimum duration of one dive is 15 minutes
 - duration must be restricted to a maximum of 0.5 hr (in fresh water) and to 1.0 hr in tropical water
 * depth limits according to certificate level of each participant (as a maximum under best conditions) and according to local circumstances; however 20m should never be exceeded during this course.
 NOTE: dive duration must be planned so as not to reach the reserve (normally 40-50 bar).
 * all diving is made within the no-decompression limits of officially used tables or dive computers, adequate for this dive site (altitude !)
 * first dive should start at beginning of sunset with enough natural light for kitting-up

6. supervision : - During the complete course, at least one authorised course director (instructor as outlined above) must always be present.
 - Classroom lectures may be delegated to a qualified assistant who performs the lesson under supervision by the course director.
 - During practical training at the surface, a course director must be either in the water with the students, or in a cover boat, or on land as close as possible.



- During practical training underwater, the course director must always be present in the water and as close as possible to the site of activity.
- Under no circumstances are students allowed to be unattended in the water without supervision.
A qualified assistant may perform such supervisory tasks.

7. emergencies

- : - detailed emergency plan for the chosen site must be made and explained to all staff and participants
- at least one trained staff member, familiar with the dive site, first aid and relevant equipment must remain on the beach for coordination, supervision and emergencies

VII. Student performance objectives

By the end of the course, students should be able to:

1. explain and demonstrate proper planning, preparation and techniques for search & recovery activities and dives
2. explain at least 4 different search patterns, their advantages/disadvantages and application under various circumstances
3. identify and explain possible problems and hazards associated with search & recovery activities and dives and their prevention
4. pass successfully all oral and/or written forms of evaluations
5. explain and demonstrate at least four different knots and proper rigging methods
6. explain and demonstrate the correct use, handling and care of special search & recovery equipment in recreational diving, including lifting bags
7. demonstrate the successful lift of a suitable object from bottom to surface including surface transport to land
8. demonstrate underwater navigation techniques while diving
9. perform proper buoyancy control while diving
10. demonstrate the correct use of the buddy system before, during and after diving activities
11. perform all required exercises and assessments as requested without stress and pass successfully all forms of evaluation

VIII. Minimum course duration

1. recommended number of sessions: 3 (check dive NOT included)
2. minimum duration:
 - a) classroom : 3-3.5 hrs (1 session)
 - b) open water : 8-9 hrs (2 sessions; check-dive NOT included)
3. minimum number of dives : 3 (checkout dive NOT included)

Note: * Normally, no more than 2 dives should be made per day. However, for this speciality course, a maximum of 3 dives may be allowed on the same day, provided that

- a) depths and durations of dives have been chosen accordingly
- b) the surface interval between the 1st and the 2nd dive is at least 1.5 hour and the interval between 2nd and 3rd dive at least 2.5 hours

* In fresh water, a 4th dive might be recommended (not same day !).



IX. Quality control / assurance

CMAS strongly recommends and encourages all federations to use an adequate system for quality control and -assurance. A system in widespread use and of proven effectiveness is to send questionnaires to the students, followed by an analysis of the feedback.

Questionable cases should be further investigated and measures taken to avoid similar situations in the future.

X. Overview of complete Training System

For a complete overview of the CMAS Training- and Certificate System, please refer to the document "The new CMAS Training- and Certificate System (a general introduction) "



PART II (Training Program)

Table of Contents

	page
I. Course schedule	9
II. Minimum course content (syllabus)	10
III. Knowledge review & skills assessment	14
IV. Issuing of recognition material	14



I. Course schedule

1. recommended number of sessions: 3 (overall)
2. minimum duration:
 - a) classroom : 3-3.5 hrs (1 session)
 - b) confined open water : 0 hrs (0 session)
 - b) open water : 6-7 hrs (2 sessions)
3. minimum number of dives: 3
4. lessons & topics (brief overview):

<ol style="list-style-type: none"> a) theory <ul style="list-style-type: none"> TH1: Course administration navigation techniques search patterns lifting devices and -techniques hazards, problems and prevention emergency management orientation for PR1 assignments 	<ol style="list-style-type: none"> b) practical <ul style="list-style-type: none"> PR1a: first familiarisation with dive site and equipment basic navigation, knots, rope-work search patterns, marking objects (ev. spec. assignments) PR1b: building up confidence repetition of skills from dive #1 basic lifting and towing techniques (ev. spec. assignments) PR2: re-enforcing confidence repetition of skills from dive #2 controlled sinking of objects complete task-cycle to carry out (ev. spec. assignments) (certification)
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5. recommended schedule:
 - a) theory
 - 1 session of approx. 3 hrs during week (e.g. on an evening)
 - b) practical
 - 2 sessions of approx. 3 hrs each, on 2 successive days /e.g. weekend) which gives best results or scattered during week according to students' desire
 - day 1: dives #1 and #2 (session PR1a/1b)
 - day 2: dive #2 (plus ev. an additional dive for a weak student; session PR2)
 - certification
6. support material for students:
 - a) used during classroom sessions: handout
 - b) used for home study: s. above (*a list with further recommended literature may be given to the students*)
7. support material for instructor:
 - text as developed by his federation
 - other recommended literature
 - own / federation supplied video / slides
 - "real" equipment used for search & recovery (such as ropes, lifting bags etc.)



II. Minimum course content (syllabus)

1. THEORY LESSONS (Classroom)

1.1 TH1 (classroom; approx. 3.5 hrs.)

a) Introduction, course administration

- b) topics: - main topic 1 general introduction to search & recovery
(catching students attention)
* subtopic 1.1 students' expectations
* subtopic 1.2 what is special with this type of activity ?
- main topic 2 navigation techniques
* subtopic 2.1 using natural navigation aids:
natural references: ripples, bottom contours,
life patterns, depth, light
* subtopic 2.2 using instruments (compass):
magnetic fields, construction, correct method
of holding and using
* subtopic 2.3 other methods:
distance estimation: tank pressure, watch, kick,
cycles, arm spans
- main topic 3 site relocation techniques:
* subtopic 3.1 site relocation with a "fix"
* subtopic 3.2 visual bearings, photographic methods, with
charts
* subtopic 3.3 use of markers, buoys
- **** *BREAK* ****
- main topic 4 search & recovery equipment and material
* subtopic 4.1 ropes
* subtopic 4.2 lift bags: how they work, various types in use,
hazards
* subtopic 4.3 marker, buoys
* subtopic 4.4 lamps
* subtopic 4.5 signals
- main topic 5 search & recovery tasks and skills
* subtopic 5.1 lifting: theoretical background
(Archimedes theory, some calculations)
* subtopic 5.2 different lifting methods
* subtopic 5.3 lines (ropes), knots (4-5), simple methods
of rigging
* subtopic 5.4 cleaning and preservation of recovered objects
(metal, wood, other)
- main topic 6 search patterns and -methods
* subtopic 6.1 jack stay, circular, semi-circular, canal search,
swimmer tow search, river crossing, vertical
(on walls, drop-offs)
* subtopic 6.2 search with technical aids such as:
boat sled, tow bar, aqua-plane
- main topic 7 LEGAL considerations (salvage laws, other state & federal
regulations, war remains, artefacts)

**** *BREAK* ****



- main topic 8 dive planning and preparation including all relevant safety considerations
 - * subtopic 8.1 site evaluation and selection
 - * subtopic 8.2 special dive procedures
- main topic 9 the buddy system
 - * subtopic 9.1 equipment check
 - * subtopic 9.2 regular buddy checks underwater
 - * subtopic 9.3 air supply checks !
 - * subtopic 9.4 communications
- **** **BREAK** ****
- main topic 10 problems and hazards / prevention
 - * subtopic 10.1 fear and panic, breathing rate
 - * subtopic 10.2 lost of orientation
 - * subtopic 10.3 low-air situation
 - * subtopic 10.4 buoyancy control
 - * subtopic 10.5 reduced visibility, no light
- main topic 11 emergency planning
(what should be included in the plan etc.)
- main topic 12 accident management
 - * subtopic 12.1 types of accidents
 - * subtopic 12.2 prevention, countermeasures
 - * subtopic 12.3 1st aid on site
 - * subtopic 12.4 calling for help
 - * subtopic 12.5 other actions
- main topic 13 site orientation for open water dives #1 (and ev. #2)
specific assignements: students carefully review, check
and adjust their equipment for
practical session

c) training aids used:

- text as developed by federation / diving school / OCC
- other recommended literature
- own / federation supplied video / slides
- "real" equipment used for search and recovery (ropes, bags ...)

2. PRACTICAL LESSONS (Confined- and Open Water)

2.1 PR1a (open water, dive #1; approx. 3-3.5 hrs.)

Note: This dive should take place in sheltered open water area (no current, no heavy surf zone).

- a) site orientation, review of important points from theory session
- b) pre-dive briefing, equipment & buddy checks, student dive objectives and dive plan presentation



- c) open water dive #1; objectives: *
- * analysis of different environmental conditions
 - * equipment familiarisation
 - * communication, signals
 - * first trials with simple knots and rigging
 - * basic navigation
 - * search patterns (4-5 methods)
 - * mark sunken objects
 - * buddy techniques
- d) spec. materials: *
- * diving flag, lamps, spare equipment.
 - * ropes, buoys, markable objects to sink
 - * 1st aid equipment
 - * food, refreshments
- e) post-dive review (debriefing) :
- * review of conditions and observations
 - * discussion of any problems
 - * tips and hints for solving these problems
 - * logbook entries
 - * entry training records
 - * stow equipment
 - * refreshments
 - * (other)
- f) pre-information on next dive site location (if not the same) and special equipment needs for further dive #2 and special assignments (if any)

This formal part of the event can be followed by social gathering (e.g. barbecue).

g) training aids used: (none specifically)

- h) safety measures:
- 1st aid equipment easily accessible, position known to everyone
 - lamps, if low visibility
 - position of nearby communications (e.g. payphone) known to everyone
 - detailed emergency plan explained, laid down on paper and positioned near emergency equipment
 - thorough briefing of staff
 - "divemaster" on land for complete duration; controls entries and exits of all dive teams (book-keeping)
 - thorough buddy check before entry (supervised)

2.2 PR1b (open water, dive #2; approx. 3 hrs.)

a) site orientation, review of experiences from dive #1

b) pre-dive briefing, equipment & buddy checks, student dive objectives and dive plan presentation



- c) open water dive #2; objectives: * generally: enhanced self-confidence and sense of accomplishment, basic techniques
 * analysis of different environment conditions
 * basic training of knots, rigging methods (partial repetition)
 * marking objects (repetition)
 * familiarization with lifting equipm. (bags etc.)
 * first lifting trials (different methods & devices)
 * communication, signals
 * application of navigational & buddy techniques

d) spec. materials: * same as with dive #1 plus specific objects for working

- e) post-dive review (debriefing): * review of conditions and observations
 * discussion of any problems
 * tips and hints for solving these problems
 * logbook entries
 * enter training records
 * stow equipment
 * refreshments

f) pre-information on next dive site location (if not the same) and special equipment needs for further dive #3 and special assignments (if any)

This formal part of the event can be followed by social gathering (e.g. barbecue).

g) training aids used: (none specifically)

h) safety measures: same as with dive #1

2.3 PR2 (open water, dive #3; approx. 3 hrs.)

a) site orientation, review of experiences from dive #1 and #2

b) pre-dive briefing, equipment & buddy checks, student dive objectives and dive plan presentation

- c) open water dive #3; objectives: * generally: re-enforce confidence, perform. tasks
 * further training with knots, rigging methods
 * further training with lifting devices and different methods
 * towing lifted object at/or near surface (diff. meth.)
 * sinking object at another place in certain distance (for next group)
 * application of navigational & buddy techniques (finding sunken object with 2 diff. methods)
 * u/w communication, signals, final: complete cycle (finding, marking, rigging, lifting, towing, sinking)



- d) spec. materials: * same as with dive #1 and #2
 - * recognition material (cards, diplomas, etc.)
- e) post-dive review (debriefing) : * same as for dive #1 and #2
- f) pre-information on next dive site location: none (except for weak students requiring another dive to pass.
- g) training aids used: (none specifically)
- h) safety measures: same as with dive #1 and #2

2.4 at END of course (after PR2 / dive #3):

- * administrative work
- * distribution of recognition material in an appropriate manner
- * social gathering, promotion of other speciality courses

III. Knowledge review & skills assessment

1. theoretical knowledge:

An assessment may be made in written or in oral form at end of TH1, but is not mandatory. If made in written form, a multiple choice QUIZ should be used. The wording "examination" should be avoided.

2. practical skills:

a) at start of course:

If there is any reasonable doubt about the student's entry-skills, a check-out dive may be performed PRIOR to the course.

b) during course : no formal test required; see below

c) at end of course : no formal test required; see below

Comments for b) and c):

The 2nd and 3rd dive may be used to observe and eventually assess the behaviour and the competence of the student without telling this to him. In case of unsatisfactory performance, the student should be invited to follow the next SEARCH & RECOVERY course and to improve his skills in the mentioned area (or an extra 4th training dive may be offered).

IV. Issuing of recognition material

May be given to the students at end of lesson #2 (PR3) or at a separate meeting. Only students who have attended the whole course (and/or successfully passed any required assessment / evaluation) may receive the corresponding recognition material:

- * C-CARD
- * BADGE (CHEVRON)
- * WALL CERTIFICATE

sample certificate: s. next page



Confédération Mondiale des Activités Subaquatiques

The World Underwater Federation

This is to certify that

Mr.

Mrs.

JOE DIVER

Ms.

has successfully participated at a CMAS
sanctioned **Speciality Course** in

SEARCH & RECOVERY

and is hereby awarded this certificate in
appreciation of the competence demonstrated.

Place of issue : _____

Date of issue : _____

Instructor name : _____

Instructor number : _____

Federation / OCC : _____

The President of the CMAS
Certificate Commission

The President of the CMAS
Technical Committee

