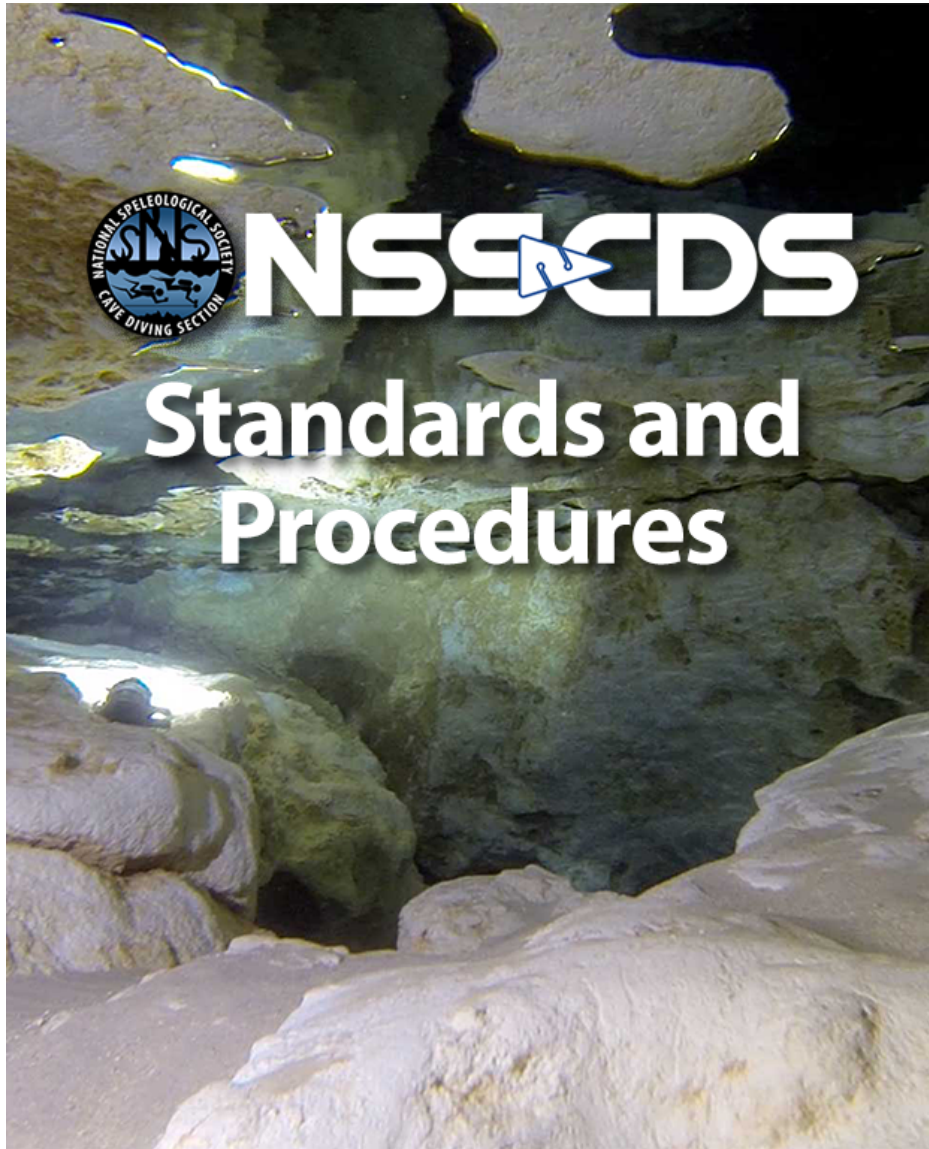




NSS-CDS

Standards and

Procedures

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Section 1: General Standards and Procedures



1.1 NSS-CDS Training Program: Purposes and Goals

The primary purposes of the Cave Diving Section of the National Speleological Society (NSS-CDS) are to educate the general public in the proper procedures and techniques for participating in cavern or cave diving while simultaneously protecting the cave(rn)s from harm. Formal training stresses the importance of cave conservation in addition to safe diving practices and procedures.

The NSS-CDS is committed to the safe and proper enjoyment of the cave environment. The NSS-CDS believes that with proper training and guided experiences one can visit underwater caves in a safe manner. Further, we believe that a properly trained cave diver will significantly reduce the damage that can be caused to the cave environment and its unique features.

A. The goals of the NSS-CDS Training Program include:

1. Establish and maintain standards and procedures for the training of scuba divers in cavern and cave diving.
2. Establish and maintain standards and procedures for the development of cavern and cave diving instructors.
3. Develop and make available outlines and other educational support materials for cavern and cave diving training.

1.1.1 NSS-CDS Training Program: Disclaimer

The NSS-CDS, NSS-CDS Board of Directors, NSS-CDS Training Chairman, NSS-CDS Training Committee and any associated party or committee cannot accept responsibility for any injury or accident resulting in the use or misuse of the information contained in the NSS-CDS Standards and Procedures, NSS-CDS Student Workbook or any other NSS-CDS course, program or training materials.

The NSS-CDS, NSS-CDS Board of Directors, NSS-CDS Training Chairman, NSS-CDS Training Committee and any associated party or committee cannot accept responsibility for any injury or accident resulting from scuba diving and, in particular, cavern and cave diving. Scuba diving has been deemed to be an activity with inherent risks that proper training and education can minimize but cannot eliminate due to variations in human physiology, physical fitness and personal behavior. Participants in these activities shall bear personal responsibility in their decision to train and participate in these activities.

1.2 NSS Policy for Cave Conservation

The National Speleological Society believes that: caves have unique scientific, recreational, and scenic value; these values are endangered by both carelessness and intentional vandalism; these values, once gone, cannot be recovered and the responsibility for protecting caves must be assumed by those who study and enjoy them.

Accordingly, the intention of the Society is to work for the preservation of caves with a realistic policy supported by effective programs for the encouragement of self-discipline among cavers, education and research concerning the cause and prevention of cave damage and special projects, including cooperation with other groups similarly dedicated to the conservation of natural areas. Specifically:

- A. All contents of a cave, formations, life and loose deposits are significant for its enjoyment and interpretation. Therefore, cave teams should leave a cave as they find it. They should provide means for the removal of waste, limit marking to a few small and removable signs as are needed for surveys and, in particular, exercise extreme care not to accidentally break or damage formations, disturb life forms or unnecessarily increase the number of disfiguring paths through an area. Scientific collection is professional, selective and minimal. The collecting of mineral or biological material for display purposes, including previously broken or dead specimens, is never justified as it encourages others to collect and destroy the natural state of the cave.
- B. The Society encourages projects such as establishing cave preserves, placing entrance gates where appropriate, opposing the sale of speleothems, supporting effective protective measures, cleaning and restoring over-used caves, cooperating with private cave owners by providing knowledge about their cave and assisting them in protecting their cave and property from damage during cave visits and encouraging commercial cave owners to make use of their opportunity to aid the public in understanding caves and the importance of conservation.
- C. When there is reason to believe that publication of cave locations will lead to vandalism before adequate protection can be established, the Society will oppose such publication.
- D. It is the duty of every Society member to take personal responsibility for spreading an awareness of cave conservation to each potential user of caves. Without this, the beauty and value of our caves will not long remain with us.

1.3 NSS-CDS Training Program: Structure, Organization, Course Levels

1.3.1 Structure and organization

As stated in the Bylaws of the NSS-CDS:

- A. One of the seven members of the NSS-CDS Board of Directors is the Training Chairman, who is elected biennially (two-year term) by Active Status NSS- CDS Cavern and Cave Diver Instructors.
- B. The Training Chairman shall appoint and chair a Training Committee of not less than five (5) Active Status NSS-CDS Cave Diver Instructors.
- C. The Training Chairman, with the assistance of the Training Committee, prepares and brings to the BOD for approval:
 - 1. Criteria and procedures for cavern and cave diving courses.
 - 2. Criteria for certification of cavern and cave diving instructors.
 - 3. Criteria and procedures for instructor evaluation institutes.
 - 4. Administrative matters related to the Training program.
- D. The Training Chairman, with the assistance of the Training Committee, will schedule at least one instructor evaluation institute each year for each level of training and authorize those institutes conducted by others.
- E. The Training Chairman will review the performance of NSS-CDS Instructors and bring any matters concerning such performance to the attention of the BOD for action as is appropriate.
- F. The Training Chairman will oversee the issuance of training completion materials to divers successfully completing NSS-CDS approved courses.

In addition to the bylaw-mandated items above:

- G. The Training Chairman, with the assistance of the Training Committee, will oversee the development of NSS- CDS instructors through a program of mentoring and peer-review.
- H. The Training Chairman, with the assistance of the Training Committee, will handle all issues of quality assurance, standards and procedures violations, ethics matters and make related decisions and pronouncements.

1.3.2 NSS-CDS Training Course Levels

Current NSS-CDS training courses levels include:

- A. *Cavern Single Tank Diver*: The NSS-CDS Single Tank Cavern Diver course is a safety and awareness course aimed at open-water sport divers. It is not a prerequisite for, nor does it count toward, any level of cave diver training and certification. They may not use sidemount, backmounted doubles or CCRs.
- B. *Cavern Tech Diver*: The NSS-CDS Cavern Tech course is intended to prepare a student for NSS-CDS Cave training. Because this course is preparatory for cave training, students may use sidemount, backmounted doubles or CCRs.
- C. *CDS Basics Orientation*: To enroll in NSS-CDS Apprentice Cave Diver training, students must:
 - 1. Have prior training in sidemount or backmounted doubles, or be able to document equivalent experience.
 - 2. Demonstrate adequate mastery of buoyancy control, trim and propulsion for cave diving.

The CDS Basics orientation provides students the opportunity to gain this training while working within the framework of the NSS-CDS Training Program.

- D. *Apprentice Cave Diver*: The NSS-CDS Apprentice Cave Diver course is the first step in a two-step process leading to full NSS-CDS Cave Diver certification. It takes the place of the old Cavern, Basic and Intro-to-Cave Diver courses.
 - 1. The Apprentice Cave Diver course focuses primarily on limited penetration along the main line. It is also where students learn and master critical emergency skills.
 - 2. The Apprentice course also provides students with the opportunity to gain limited experience and practice fundamental cave diving skills prior to completing the requirements for full Cave Diver certification.
- E. *Cave Diver*: This course is the second step leading to full NSS-CDS Cave Diver certification. It builds on the knowledge, skills and experience students gain during the Apprentice Cave Diver course. In addition to ensuring students have maintained knowledge and skill proficiency from the Apprentice course, the Cave Diver course focuses on:
 - 1. Cave navigation involving jumps and gaps and, at a minimum, the theory behind complex circuits and traverses (those requiring establishment of a halfway or “point of no return”).
 - 2. If applicable, how students can apply their open-water decompression training to caves.

- F. *Advanced Cave Diver*: This course provides an alternative to the NSS-CDS Cave Diver course. It includes all the academic and skill development from the full Cave course, plus all the content and training of the NSS-CDS Stage Diving specialty course and the content and training of the First Responder program.
- G. *CCR Cave Diver*: This course is the closed-circuit equivalent of the Apprentice and full Cave Diver courses combined. It covers largely the same knowledge and skills. The chief difference is the fact students learn using closed-circuit rebreathers rather than open-circuit sidemount or backmount.
- H. *CCR Cave Diver Upgrade*: This course qualifies students who already possess open-circuit Cave Diver certification to cave dive using closed-circuit rebreathers (CCRs).
- I. *Stage Cave Diver* is a specialty course level. The purpose of the Stage Diving Specialty course is to expose the trained cave diver to the fundamentals of the safe use of stage cylinders for extended penetration diving in underwater caves while under the direct supervision of a qualified Stage Diving Specialty Instructor. The student is able to build practical experience in the field under controlled conditions. Safety and conservation practices, procedures and techniques common while stage diving the unique environment of a cave are covered to help develop the participant's skills and knowledge in extended penetration diving with the use of a stage cylinder. Longer decompression obligations and more complex navigation concerns are covered.
- J. *DPV Pilot* is a specialty course level. The purpose of the DPV (Diver Propulsion Vehicle) Pilot specialty course is to expose the trained cave diver to the fundamentals of the safe operation of diver propulsion vehicles in underwater caves while under the direct supervision of a DPV Pilot Specialty Instructor. The student is able to build practical experience in the field under controlled conditions. Safety practices, procedures and techniques common to most DPVs used in the unique environment of a cave are covered. Conservation considerations such as low-impact operation are emphasized and potential emergency situations are simulated and practiced.
- K. *Advanced Sidemount Cave Diver* is a specialty course level. The purpose of this course is to expose the trained sidemount cave diver to the use of stage cylinders, how to ride a DPV and in sidemount configuration, how to deal with restrictions advanced gas management techniques and smaller areas where real sidemount techniques are required under the direct supervision of a qualified Advanced Sidemount Diving Specialty Instructor.

- L. *Underwater Cave Surveying* is a specialty course level. The purpose of the Underwater Cave Surveying specialty course is to expose the trained cave diver to the fundamentals of surveying underwater caves while under the direct supervision of a qualified Underwater Cave Surveying Specialty Instructor. It is intended to motivate more divers to survey caves, to encourage the use of cave maps in dive planning and to increase the quantity of published cave maps. Additionally, this program is intended to promote standardization for all survey projects.
- M. *Cartography* is a specialty program. This is a data management-oriented program and is designed to introduce the basics of underwater cave map presentations. The goal of this program is to develop the ability to complete the surveying and map-making process and produce a map.
- N. *First Responder* is an accident scene management-oriented program and it may also be taught as a required part of the Advanced Cave diver program.
- O. *Trimix Cave Diver* is a specialty course level. The purpose of the Trimix Cave Diver specialty course is to provide the Cave Diver training for the safe planning and execution of mixed gas diving in caves to depths not exceeding 90 m/300 ft while under the direct supervision of a Trimix Cave Diver Specialty Instructor. The diver will be introduced to the proper and safe use of helium as a breathing gas, along with oxygen and nitrox for staged decompression. This course will emphasize precision and accuracy in all aspects of the dive beginning with advanced pre-dive planning. Safety will be a primary focus of this course due to the depths to which dives will be made.
- P. *Tech Nitrox and Cave Decompression Diver*: The NSS-CDS Cave Decompression course is intended to train divers in decompression strategies, emergency management, and proper procedures for utilizing EAN-21 through 100% oxygen while conducting cave dives requiring staged decompression.
- Q. *Nitrox Diver*: The NSS-CDS Nitrox Diver course is intended to train divers to utilize Enriched Air Nitrox mixtures up to 40% as a breathing medium with the aid of a programmable nitrox computer.

1.4 General Training Standards and Policies

These general standards apply to all NSS-CDS courses and special programs.

1.4.1 Student Registrations and Releases

- A. Students must complete (but not sign) an NSS-CDS *NSS Student Enrollment and Training Completion* form prior to the start of training.
- B. Students must complete and sign an NSS-CDS *Assumption of Risk, Waiver of Claims, Release of Liability and Indemnification Agreement* before the start of training. A person other than the instructor who is at least 18 years old must witness this form.

- C. Student must submit an RSTC-compliant Medical History form before start of training. If a student answers Yes to any question, he must also secure a physician's approval on page 2 of this form. A physician's approval secured no more than twelve months prior to the start of the course is acceptable *provided* there has been no change in the student's medical history.
- D. Upon successful course completions, both students and instructors must review and sign the NSS-CDS NSS *Student Enrollment and Training Completion* form. Instructors must provide students with a signed copy of this form and keep a signed copy for their records.
- E. Instructors must register students with the Section within 15 days of successful course completion.
- F. If asked, instructors must provide the Training Chairman with copies of student waivers, medical histories, written exams or eLearning student records, training completion forms and all other paperwork.

1.4.2 Quality Assurance/Incident Reporting

- A. NSS-CDS approved courses are subject to evaluation for quality assurance. Standardized methods of evaluation are to be determined by the Training Committee.
- B. NSS-CDS Instructors shall notify the NSS-CDS Training Chairman immediately if an NSS-CDS Instructor becomes aware of any instructor in violation of these Standards and Procedures or an instructor related accident. An "accident" as referred to by this section refers only to dives conducted during training and has no applicability to any individual's personal, recreational or non-training dives.

1.4.3 General Training Waivers

Instructors may apply to the Training Chairman for waivers for particular courses if the instructor deems it necessary. The waiver may pertain to class size, ratios, equipment needs, course minimum site requirements and particular site locations.

Waivers, if granted, may be for a specific course and specific time only. Waivers shall be noted on the student's registration form. Waivers are not in effect until the instructor has received written confirmation from the Training Chairman. Instructors may request permanent waivers. These waivers shall be in writing and presented to the Training Chairman.

1.5 NSS-CDS Ethics Policies and Procedures

1.5.1 Ethical Standards for Instructors

- A. Every NSS-CDS Instructor shall adhere strictly to all NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards and safe and professional teaching practices in all instructional and guided cavern and cave dives.

Comment: Safe and effective training of students and safe cavern and cave diving are particularly at the heart of the NSS-CDS training and NSS-CDS relationships with the public. In all matters, the highest professional teaching standards shall be practiced in every training activity in order to guarantee the safest and most fulfilling training experience and to set proper examples of safe cavern and cave diving practices. There may be some unique commercial contexts and some exploration diving that require careful deviation from NSS-CDS Standards and Procedures, but in all other instances NSS-CDS Instructors shall adhere strictly to these Standards and Procedures. Instructors in the classroom and in the water are the frontline representatives of the NSS-CDS and their conduct and behavior shall always represent the best interests of the NSS-CDS.

- B. No NSS-CDS Instructor shall participate in any activity, or accept any benefit, that creates a personal conflict of interests with implementing safe and effective NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices, or generally accepted dive industry standards.

Comment: An NSS-CDS Instructor is entitled to receive reasonable compensation for training students. A “conflict of interest” exists when an NSS-CDS Instructor’s private interest interferes in any way with the creation or application of NSS-CDS Standards and Procedures or when an NSS-CDS Instructor allows an ulterior interest or benefit to alter or interfere with either safe and complete application of the NSS-CDS Standards and Procedures or safe and professional teaching practices. That “private interest” includes gratuities or benefits bestowed upon the immediate family (spouse, parents, children and sibling) of the instructor. A conflict situation may arise when an instructor takes actions or has interests that may make it difficult to perform NSS-CDS instruction objectively and effectively. A conflict situation also arises when an instructor receives improper personal benefits because of his or her position with the NSS-CDS, especially as an Instructor Trainer or Evaluator, Board member, committee member or officer of NSS-CDS.

The overall dive industry has a generalized set of standard standards and practices that is practiced worldwide. These standard practices are set and adhered to in order to better protect the diving public. NSS-CDS Instructors who are in the dive business are expected to adhere to these generally accepted safe practices.

- C. NSS-CDS Instructors shall always avoid even the appearance of impropriety and shall disclose to the Training Chairman for review and decision every anticipated or potential future transaction or relationship that reasonably might give rise to a conflict of interest described in subsection B above.

Comment: Legal, ethical and professional conduct by instructors is fundamental to the credibility of NSS-CDS with the public and to the effectiveness of the NSS- CDS training program. Any time an instructor questions whether anticipated conduct complies with NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices, s/he shall consult with the Training Chairman and either abide by the decision of the Training Chairman or appeal the decision of the Training Chairman to the full Training Committee for review.

- D. No instructor shall disclose confidential NSS-CDS business information provided, however, that NSS-CDS Instructors shall disclose in an appropriate forum all information required by law or permitted by law in an appropriate official session of the NSS-CDS Training Committee or the NSS-CDS Board of Directors; and provided further that NSS-CDS Instructors shall promptly report to the Training Chairman any known or observed violation of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices by another NSS-CDS Instructor.

Comment: Legal and professional conduct requires that an NSS-CDS Instructor respect the privacy rights of others and that NSS-CDS Instructors safeguard sensitive corporate, financial, legal and personnel matters pertaining to NSS-CDS business and instructional programs. "Confidential NSS-CDS business information" includes personal health information about another person obtained while conducting NSS-CDS business and instructional programs, private information of a personal nature obtained while conducting NSS-CDS business and instructional programs, NSS-CDS personnel matters, pending and unpublished NSS-CDS quality assurance inquiries, sensitive NSS-CDS corporate legal or financial matters or other confidential information pertaining to NSS-CDS or arising from NSS-CDS instructional contexts. This provision is not intended to discourage instructors from reporting discreetly to the Training Chairman observed or justified beliefs of violations of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices by another NSS-CDS Instructor. This provision also is not intended to hamper legitimate formal proceedings, either in law or in NSS-CDS corporate affairs. Rather, this provision limits disclosures of confidential information to forums and contexts where a legal right-to-know exists and where a corporate/business need-to-know exists. It prohibits NSS-CDS Instructors from disclosing protected personal and corporate information indiscreetly, informally or for personal advantage or profit.

- E. While conducting NSS-CDS instructional and business activities, instructors shall comply with all laws, ordinances and regulations of federal, state and local government and all lawful rules and restrictions of landowners.

Comment: Instructors are expected to comply fully with all laws affecting their instructional activities. Instructors are also expected to respect private property and avoid damage to property while conducting instructional activities. The consequences to the NSS-CDS and its directors or committees of any departure from this policy can be very serious. In addition, the effort, energy and expense required in responding to governmental investigations or to defend NSS-CDS Instructor actions in court diverts the talents and energy of the NSS-CDS from the pursuit of its mission. It is NSS-CDS policy to cooperate with all governmental investigations of possible unlawful conduct. If unlawful activity has occurred, the NSS-CDS will take appropriate steps to stop such conduct and to prevent such conduct from recurring.

- F. An instructor convicted of, or pleading guilty or no contest to, a felony offense or a criminal offense involving moral turpitude shall immediately and automatically be suspended from teaching NSS-CDS courses. If the offense involves moral turpitude, the instructor shall be terminated from teaching any NSS-CDS course immediately and automatically upon exhaustion or extinguishment of final appellate remedies that do not result in a reversal of the conviction. If the felony offense does not involve moral turpitude, the Training Chairman shall initiate a quality assurance inquiry pursuant to Section 1.5.1 below to determine whether the offense constitutes a violation of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices. A felon or a person convicted of a crime involving moral turpitude may become an NSS-CDS Instructor after fulfilling all terms and conditions of the sentence for that crime provided, however, that the Training Chairman may deny that application in the exercise of total and unfettered discretion.

Comment: This ethical standard embraces the fundamental proposition that a felon or a person convicted of a crime involving moral turpitude has, by that very fact, demonstrated an absence of the basic social morality and responsibility necessary to be entrusted with safeguarding the lives of others in circumstances involving heightened inherent risks. At the same time, this standard recognizes the possibility that a person who has paid the price of his crime to society may have been rehabilitated and deserves consideration for a fair chance to contribute honorably to the NSS-CDS and community.

- G. NSS-CDS Instructors shall conduct themselves and their diving courses in a professional manner whenever engaging in NSS-CDS business or programs and whenever engaging in interpersonal relationships with NSS-CDS board members, officers, staff, instructors, students or representatives of other certifying agencies.

Comment. A “professional” consciously strives to function at a high level of skill and learning. A “professional” is civil, respectful and courteous in the face of differences with others. A “professional” possesses integrity, is truthful and is trustworthy. NSS-CDS Instructors shall support the NSS-CDS programs, shall refrain from public or third-part criticism of, or discrimination against, any other NSS-CDS Instructor. NSS-CDS Instructors also shall refrain from disparaging any instructor or dive program including those of other certifying agencies. However, nothing in this section precludes courteous, private conversations offering constructive criticism to another instructor or reasonable statements made in the context of an official proceeding. This ethical standard applies to NSS-CDS business and programs and to interpersonal relationships among NSS-CDS members in instructional contexts. Other issues or conflicts between individuals are not the concern of the NSS-CDS and are beyond the scope of the NSS-CDS Training Chairman to investigate for quality assurance purposes.

- H. NSS-CDS Instructors shall demonstrate financial responsibility when transacting business with the NSS-CDS and with NSS-CDS students.
- I. NSS-CDS Instructors shall process all course registration forms within fifteen (15) days of course completion. Temporary student training completion cards will be issued at the completion of the course. Instructors shall assist promptly in resolving any training card issues.
- J. NSS-CDS Instructors shall respond in writing to an official quality assurance inquiry with accurate and complete information within 30 days of receipt of the inquiry from the Training Chairman.

Comment. In most instances, an instructor can and shall respond fully in a timely manner. Occasionally, an attorney may advise the instructor to withhold comment about an incident. In such instances, the NSS-CDS reserves the right to conduct its own preliminary investigation of incomplete information and make an interim determination as to whether the accusations warrant suspension of the instructor’s teaching status pending a complete written response from that instructor and final adjudication of the quality assurance inquiry.

1.5.2 Procedures for Hearings and Appeals

- A. A quality assurance inquiry may be initiated in the sole discretion of the Training Chairman whenever s/he learns of an alleged breach of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices by an NSS-CDS Instructor or whenever the Training Chairman determines in his or her sole discretion that a pattern of minor infractions by an NSS-CDS Instructor warrants further investigation and assessment.

- B. The Training Chairman shall receive all complaints reporting alleged breaches of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices by an NSS-CDS Instructor. The Training Chairman shall encourage the complainant to promptly provide a written report or a recording of an oral statement identifying known witnesses and describing the acts or omissions observed and the date, time and location of the alleged breaches. If a complainant insists upon remaining anonymous or refuses to provide recorded evidence supporting the accusation, the Training Chairman shall endeavor to establish independent evidence or testimony of a plausible complaint before carrying the inquiry any further.
- C. Upon receipt of a complaint, the Training Chairman shall either:
 - 1. Determine that the complaint is unfounded or lacks merit on its face; or
 - 2. Determine that the complaint merits further investigation.
- D. If the Training Chairman determines that the complaint is unfounded or lacks merit on its face, s/he shall retain the complaint in an appropriate NSS-CDS file, but not lodged in the accused instructor's record file.
- E. If the Training Chairman determines that the complaint merits further investigation, s/he shall:
 - 1. Inform the Training Committee that a complaint has been received which warrants a quality assurance inquiry; and
 - 2. Notify the accused instructor that a report of an alleged violation has been received:
 - a. Stating as precisely as possible the details of the allegation including date, time and place;
 - b. Advising him or her that a quality assurance inquiry is being initiated;
 - c. Advising him or her that s/he has 30 days from receipt of notice to respond in writing to the allegations (see 1.5.2.J); and...
 - d. Advising him or her that s/he will receive further written notice and an opportunity to be heard if the matter is presented for possible disciplinary action by the Training Chairman.
- F. Upon receipt of the responding report from the instructor, the Training Chairman may, in his or her discretion:
 - 1. Determine that the complaint is unfounded or lacks merit on its face;
 - 2. Immediately submit the matter for hearing and decision to the Training Chairman;

3. Pursue a more extensive inquiry into the matter through interviews and collection of additional documents including, but not limited to, soliciting supplemental materials, responses and refutations from the complainant or from the accused instructor and then submit the matter for hearing and decision to the Training Chairman; or
 4. Issue a verbal warning to the instructor, in which case no reference to the matter shall be placed in the instructor's record file. The Training Chairman shall, however, report this action to the NSS-CDS Committee. Issuance of a verbal warning is a final decision which does not require any further hearing by the Training Committee unless the instructor chooses to appeal that verbal warning to the Training Committee. If appealed, the Training Committee may affirm the verbal warning, rescind it, remand the matter for further investigation by the Training Chairman or immediately impose a higher level of disciplinary action against the instructor.
- G. At least fifteen (15) days prior to the hearing by the Training Committee, pursuant to subsections F.2. and F.3. above, the Training Chairman shall provide to the accused instructor and to each member of the Training Committee a packet containing the complaint, the report of the instructor, all supplemental documents, summaries of interviews, replies and refutations and possibly a disciplinary recommendation from the Training Chairman if s/he chooses to include one.
- H. The Training Committee shall convene a closed hearing at an appointed date and time. The accused instructor shall receive notice of the closed hearing at least fifteen (15) days before the hearing and may be present at all times during the proceeding including the deliberations and the vote on the recommended decision.
- I. The hearing shall be conducted in a courteous and professional manner designed to achieve full disclosure and a fair decision, but without being restricted by formal rules of evidence and testimony.
1. The Training Chairman shall present evidence developed during the quality assurance inquiry, question witnesses, if any, and answer the questions of the Training Committee. The Training Chairman may include in the presentation his or her opinion as to which allegations against the instructor are meritorious and the Training Chairman may include a recommendation for disciplinary action.
 2. The instructor may question any witness testifying at the hearing, may call his or her own witnesses and may address the Training Committee in his or her defense.
 3. The Training Committee shall receive and consider only evidence and testimony that was previously disclosed between the Training Chairman and the instructor and contained at least in summary form in the packet described in subsection F above, except that the Training Committee may hear and consider new and additional evidence or testimony in rebuttal of material contained in the packet.

4. Written summaries of statements from witnesses are admissible as are first-hand witnesses of the complaint, testimony of the Training Committee Chair, the affected instructor and the Training Committee members. Except for the Training Committee Chair, Training Committee members and affected instructor, all other such witnesses shall be admitted to the hearing only during the time of their testimony.
 5. Any member of the Training Committee may question the Training Committee Chair, the instructor or any witness appearing at the hearing.
 6. The Training Committee may recess the hearing to a future date if it determines that additional information or time is required before reaching a decision and recommendation.
- J. After receiving sufficient evidence and testimony, the Training Committee may decide to exonerate the instructor. This conclusion shall be reported to the NSS-CDS Chairman.
- K. After receiving sufficient evidence and testimony, if the Training Committee finds that the instructor has violated NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices or has exhibited a pattern of minor infractions warranting disciplinary action, the Training Chairman shall impose on the instructor disciplinary action which he determines appropriate in its discretion including, but not limited to, any among the following disciplinary actions:
1. The Training Chairman may order and immediately administer a verbal warning to the instructor with no reference to the matter placed in the instructor's record file. This course of action shall be reported to the NSS-CDS Chair.
 2. The Training Chairman shall write either a Letter of Warning (to be delivered to the instructor and placed in the instructor's record file for a period of no more than one year from the date of the event) or a Letter of Reprimand (to be delivered to the instructor and placed in the instructor's record file permanently).
 3. The Training Chairman may place the instructor on Probationary Status, which allows the instructor to maintain his or her credentials and to instruct, but instructional activities may be limited or conditioned in a manner ordered by the Training Chairman. An order of Probationary Status shall include the length of the period of probation, along with other requirements or conditions (co-teaching, institute re-attendance, etc.).

4. The Training Chairman may place the instructor on Suspended Status, which allows the instructor to maintain his or her credentials, but instructional activities shall not occur during the suspension. An order of Suspended Status shall include the length of the period of suspension, along with other requirements or conditions (co-teaching, institute re-attendance, etc.). This action does not affect the individual's general membership status with NSS or NSS-CDS. A suspended instructor, however, is not an instructor in good standing for NSS-CDS Training Chairman voting purposes.
5. The Training Chairman may order Revocation of Teaching Status and Credentials against the instructor. Revocation of Teaching Status and Credentials will terminate the ability of the instructor to teach NSS-CDS courses. This action does not affect the individual's general membership status with NSS or NSS-CDS. This action does terminate instructor-voting status in NSS-CDS. Any future re-activation of this individual as an NSS-CDS Instructor requires the approval of the Training Chairman.
- L. The Training Chairman shall provide a written statement of its conclusion and order to the instructor with a copy to the Chairman of the Board of Directors.
- M. Within 30 days of receipt of this written notice ordering disciplinary action, the instructor may appeal any decision, except a verbal warning by the Training Chairman, to the NSS-CDS Board of Directors by delivering to the Chairman of the Board of Directors a Statement on Appeal describing the alleged error or abuse of discretion by the Training Chairman. The Board of Directors shall hear oral statements from the instructor and from the Training Chairman or its designee in closed session. The Board of Directors shall consider on appeal only the evidence and testimony that was previously offered to the Training Chairman for decision.
- N. The NSS-CDS Board of Directors may affirm or reverse the decision and order of the Training Chairman or may remand the matter with a written statement of reasons for further consideration by the Training Chairman.
- O. Notwithstanding any other provision of this Section 1.5.2, the Training Chairman may impose immediate, temporary and preliminary disciplinary action on an instructor whenever the Training Chairman has reasonable cause to believe that acts or omissions of that instructor in violation of NSS-CDS Standards and Procedures, NSS-CDS Ethical Standards or safe and professional teaching practices, pose a risk of imminent harm to a diver, severe damage to property or serious damage to the reputation of the NSS-CDS.
 1. The Training Chairman shall immediately notify the Chairman of the NSS-CDS Board of Directors of the emergency disciplinary action taken and the reasons supporting his or her acting alone in this matter.
 2. The Training Chairman shall immediately initiate a full quality assurance inquiry pursuant to this Section 1.5.2.

3. To ensure that the educational mission and governance of the NSS-CDS is conducted safely for divers and the general public, in good faith and in the best interests of the membership, the Training Chairman may, in its discretion, continue, amend or rescind the emergency disciplinary decision of the Training Chairman pending a full quality assurance inquiry pursuant to this Section 1.5.2.

1.6 Representations, Advertising, Copyright, Media and Presentation Policies

1.6.1 Representation of the NSS-CDS

While NSS-CDS Instructors are representative of the NSS-CDS, they do not directly speak for or officially represent the NSS-CDS, its Board of Directors or its policies. Although NSS-CDS Instructors are considered to have expertise in cave diving activities, only the Board of Directors is authorized to directly speak for and officially represent the NSS-CDS organization. Except for direct quotations from this manual or other official releases from the Board of Directors or the Training Chairman, NSS-CDS Instructors should make it clear that any opinions expressed are their own and not necessarily those of the NSS-CDS. As the public will often assume that the actions or any opinions expressed by an NSS-CDS Instructor are those of the NSS-CDS, it is important that an NSS-CDS Instructor clarify these distinctions as necessary. Only active and renewed NSS-CDS Instructors may hold themselves out and advertise to be NSS-CDS Instructors. The Training Chairman maintains up to date records for determination of whether or not an instructor is an active status instructor.

This section applies to all representations including those made on electronic/internet postings on public forums.

1.6.2 Course Announcements

Placement of announcements or advertisements in publications or social media intended primarily for open water recreational divers should be undertaken only with extreme care so as not to conflict with the policies listed below. Announcements should not dwell on the attributes of caves or cave exploration so as to create an attraction for the reader. Rather, announcements should stress the safety orientation of the NSS-CDS program and the necessity of proper training to successfully participate in this activity.

1.6.3 Use of NSS-CDS Logo

Only active and renewed NSS-CDS Instructors may use the logo of the NSS-CDS in conjunction with personal business cards or course description advertising. However, the Section copyrights the logo of the NSS-CDS and reproduction or use of this logo is subject to the review and consent of the NSS-CDS Board of Directors.

1.6.4 Reproduction of NSS-CDS Materials

NSS-CDS Active Status Instructors may reproduce, at their own expense, limited quantities of material provided in this and other Section manuals (except for the required Student Workbook) for use by the instructor's students. However, no alterations or additions are permitted unless written permission is obtained from the NSS-CDS Board of Directors.

1.6.5 Media Coverage

The public perception that cave diving is a high-risk sport makes it highly vulnerable to sensationalistic media coverage. Exposure of the public to cave diving continues to expand as a result of media coverage of fatalities and applications of cave diving to scientific studies. Since everything an NSS-CDS Instructor says may be quoted, instructors shall exercise prudence and care when asked to comment and shall keep commentary at a professional level. When in doubt, refer the interested party to the NSS- CDS Board of Directors.

1.6.6 Presentations

- A. Presentations should clearly differentiate between cave and recreational open-water diving.
- B. The many safety aspects necessary for mitigating the hazards of cave diving should be clearly stressed.
- C. Presentations should not sensationalize underwater caves or cave diving nor should they challenge the reader's ego so as to motivate a non-participant to take up cave diving.
- D. Presentations should clearly differentiate between the nature and attributes of specific caves or regions containing caves.
- E. Presentations and visual or written depictions of cave diving should emphasize proper cave diving equipment and techniques. Depictions of improper equipment or techniques should be labeled as such and the potentially fatal results of such equipment or techniques should be clearly stated

1.7 Appendix A

1.7.1 Permanent Site Waivers for Instructional Purposes at Ginnie Springs, Florida.

The cavern located at Ginnie Springs, Gilchrist County, Florida is granted a permanent site waiver under normal diving conditions. This waiver applies only to the demonstration dive (typically dive number 1) of the Cavern Diver course. for this specific dive the student-to-instructor ratio may increase to 6:1. "Normal Diving Conditions" are defined as regular spring-type outflow and non-flood conditions. Should normal conditions change, the ratios will revert to the published standards. (Justification: The location described is an extremely roomy and well-defined cavern. Silt conditions are very light with the near-absence of either mud or clay. Flow within this cavern is well distinguished and constant and aid in rapid clearing should the sandy bottom become disturbed. This location offers an excellent area for students which is nearly free of silt and offers a large and easily differentiated entrance.)

1.7.2 Number of Sites

The numbers of different sites (locations) at each level of training will be 2, one of which shall be new to the student(s) for a total number of 5 for a where the number of sites needed are not available with-in 100 miles of the location of the first dive site this requirement is waived.

1.7.3 Recommended Areas for Zero-Visibility Drills

A. North Central Florida Area Caves.

1. *Cow Springs*: Downstream section with gold line. No training dives of any kind shall be made into the upstream section of this cave system.
2. *Devil's Ear/Eye*: Downstream of the Keyhole and only the first 200 ft/60 m of the Catacomb area.
3. *Little River Spring*: From Table Rock out.
4. *Madison Blue Spring*: The Blue Room (cavern), from the Monkey Room out and on the mainline up to the Martz Sink jump intersection (approximately 700 ft/213 m. in).
5. *Manatee Springs*: Sue Sink to Catfish Hotel.
6. *Orange Grove*: From the warning sign out.
7. *Peacock Springs*: The shallow tunnel no further in than the Breakdown Pile (approximate penetration of 500 ft/150 m).
8. *Telford Spring*: The first 500 ft/150 m of the main line.

B. Playa Del Carmen-Tulum Corridor Caves, Quintana Roo, Mexico

1. *Car Wash*: Downstream in Satan's silt Hole and upstream between the warning sign and Luke's Hope Cenote.
 2. *Chac Mol*: Downstream on the gold line for the first 200 ft/61 m.
 3. *Grand Cenote*: Absolutely no areas of this site are recommended for zero-visibility drills.
 4. *Mayan Blue*: Upstream in the A Tunnel between the entrance and the beginning of the A Line.
 5. *Naharon*: Upstream on the mainline between the entrance and the Halocline Room.
 6. *Ponderosa*: Upstream between the warning sign and Little Joe Cenote and upstream in the river run.
 7. *Taj Mahal*: Downstream on gold line between the entrance and the first dome.
- C. Missouri Area Cave.
1. *Roubidoux Springs*: first 300 ft/ 100 m of the upper tunnel.
- D. Florida Panhandle Caves:
1. Jackson Blue from the first tee out on the gold line, and Vortex Spring from the grate out are the only two areas to conduct lost line or zero visibility drills in Florida panhandle caves.
 2. The committee also recommends and requests you adhere to the following:
 - a. No DPV training in Twin caves.
 - b. No lights out/zero visibility or lost line drills in Hole in the Wall or Twin caves.

Section 2: NSS-CDS Cavern and Cave Diver Programs



2.1 Standards Applying to All NSS-CDS Training Programs

2.1.1 Overview

Unless otherwise noted in the standards for individual courses, the following requirements apply to all NSS-CDS training courses and orientation programs.

2.1.2 Prerequisites

To participate in any NSS-CDS training program, students must:

- A. Be at least 18 years old.
- B. Have logged at least 50 dives.
- C. Possess Advanced Open Water Diver or equivalent certification from a widely recognized diver training organization, or equivalent experience.
- D. Possess entry-level Nitrox Diver or equivalent certification from a widely recognized diver training organization. This training may take place concurrently with the NSS-CDS Basics orientation or Apprentice Cave.
- E. Students participating in any training program involving planned decompression must possess appropriate certification from a widely recognized diver training organization. This training must cover:
 - Use of pure oxygen or oxygen-rich decompression mixtures.
 - Procedures for decompression diving.
 - This training may take place concurrently with NSS-CDS Cave Diver training.
- F. The Density of the breathing gas may be no greater than 6.2 g/l

Additionally, instructors must screen and evaluate students to ensure they possess the necessary attitude, knowledge and skills before any further in-water training takes place. Instructors must refer students who cannot pass this screening process to opportunities where they can obtain remedial training, such as the NSS-CDS Basics Orientation. Only when students can pass the screening process may they continue their cavern/cave training.

2.1.3 Open-Circuit Equipment Requirements

For programs in which both students and instructors use open-circuit equipment, each participant must have:

- A. Mask and fins.

- B. Adequate exposure protection for depth, time and water temperature.
- C. Sidemount/backmount harness and air cell with sufficient lift to support cylinders used.
- D. Two sidemount cylinders or set of manifolded doubles capable of providing a starting gas volume of at least 4,200 L/150 ft³.
- E. Two regulator first-stages, each with a single second stage. At least one first stage must have a 2.0 m/7.0 ft second-stage hose.
- F. At least one dive computer capable of monitoring exposure to all gas mixtures used.
- G. At least two cutting tools capable of dealing with guideline entanglement.
- H. Primary dive light with a rated burn time of 150 percent of expect dive time.
- I. Two backup dive lights.
- J. One primary reel per team with minimum of 75 m/250 ft of guideline.
- K. Two safety reels/spools per diver, each with approximately 30 m/100 ft of guideline.
- L. At least two directional and two nondirectional line markers.

2.1.4 Rebreather Equipment Requirements

In lieu of sidemount/backmount cylinders and regulators, students and instructors using closed- rebreathers must have:

- A. A CCR or eCCR with sufficient absorbent, diluent and oxygen for 150 percent of the planned dive time.
- B. Open-circuit bailout cylinder(s) with at least 150 percent of the gas required to exit the cave from maximum point of penetration. This must be in the form of either two or more separate cylinders or a single cylinder with an H-valve.
- C. Additionally, both students and instructors must hold CCR Diver certification for the specific CCR they will use.

2.1.5 Sidemount Instructor Requirements

If students will be using sidemount, their instructor must possess Sidemount Instructor certification from a widely recognized diver training organization.

2.1.6 Knowledge Development

Knowledge development in NSS-CDS training programs may take place through any combination of:

- A. Self-study.

- B. E-Learning. Should the NSS-CDS have its own e-learning course available for student use in a specific course, students are required to use that content regardless if they have completed an e-learning course from another training agency.
- C. Classroom presentations.
- D. On-site discussion.
- E. Students must use at least one eLearning course approved by the Training Chairman for the specific course they are taking. A list of these materials appears on the NSS-CDS website. Requirements listed in NSS-CDS training standards supersede any information appearing in training materials. The Section also encourages students to download and read Sheck Exley's *Blueprint for Survival*.

2.1.7 Knowledge Assessment

Prior to certification, students must demonstrate mastery of the subject matter or learning objectives specified by individual course standards. This assessment may involve:

- A. Successful completion and remediation of a written test.
- B. Successful completion of the NSS-CDS Cave Diver eLearning program.

2.1.8 Control and Supervision

- A. An Active status NSS-CDS Instructor must be present and in control of all activities in any NSS-CDS training program.
- B. Instructors must be authorized by the NSS-CDS to conduct the level of training offered.
- C. The maximum student-to-instructor ratio for in-water activities is 3:1.
- D. Instructors may have a maximum of one certified assistant.
- E. Unless otherwise noted, any person who is part of the dive team counts against student ratios.
- F. Instructors may conduct guided dives one level beyond a diver's current level of certification *provided*:
 - 1. The students meet all requirements which apply to the first dive of the next level of training.
 - 2. The instructor is authorized to teach at this level. This, in essence, becomes a training dive and not a guided dive, even though instructors may elect to not include any skills.

- G. Students are to maintain a continuous guideline to a safe exit during all NSS-CDS training programs.
- H. All training dives must fall within the *Limits of Training* for the course being taught.
- I. Instructors must provide a dive-site briefing to students who are not already familiar with the site being used.

2.1.9 Pre-dive Requirements

Before every training dive, students are to:

- A. Assemble and test all personal dive equipment for function.
- B. **Instructor and Students must analyze all cylinders and label them for content.**
 - 1. Maximum Partial Pressure of Oxygen (PO₂) for any part of a dive, other than decompression, may not exceed 1.4 ATA.
 - 2. Maximum Partial Pressure of Oxygen (PO₂) during decompression may not exceed 1.6 ATA.
- C. Formulate a dive plan which includes, at a minimum:
 - 1. Team sequence.
 - 2. Gas turnarounds for each team member, allowing for dissimilar cylinder sizes if necessary.
 - 3. Anticipated and maximum allowable depths.
 - 4. Anticipated and maximum allowable dive time.
 - 5. Anticipated decompression, if any.
 - 6. Anticipated and maximum allowable penetration distance, if applicable.
 - 7. Intended navigation.
- D. Conduct the following pre-dive equipment checks either by themselves or with teammates:
 - 1. Ensure all necessary equipment is present and functioning.
 - 2. Ensure no straps are twisted nor is any equipment trapped under straps or other equipment in a way which interferes with its function.
 - 3. Ensure any long hoses are fully deployable and not trapped under other equipment.
 - 4. Ensure all dive computers are set to the correct gas mixtures.
 - 5. Inspect or have a fellow team member inspect all manifolds, valves, regulators and hoses for gas leakage (i.e., "bubble check").

6. Test breathe all regulator second stages underwater.
 7. Ensure all sidemount and manifold valves are turned on.
 8. Ensure all stage and deco cylinder regulators are pressurized but turned off. The sole exception being if divers will be starting a dive on a stage cylinder.
- E. Ensure all team members are prepared to deal with a loss of breathing gas. The best method for doing so may depend on several facts, with equipment configuration being chief among them.

2.1.10 Dive and Skill Conduct

- A. To be certified, students must demonstrate mastery of all required land, open-water and overhead-environment skills. The NSS-CDS defines mastery as the ability to perform, a skill:
1. On demand.
 2. Repeatedly.
 3. Without significant error.
 4. Without undue stress.
- B. At no point during a dive in overhead environments may an instructor:
1. Shut off a student's breathing gas.
 2. Pull a second stage out of a student's mouth.
 3. Flood or remove a student's mask.
 4. Forcibly remove any other equipment.
- C. The NSS-CDS defines *visibility* as the maximum distance at which divers can see one another's lighted hand signals.
1. Individual course standards may define a *minimum starting visibility*. **This is the visibility at the cave entrance at the start of a dive.**
 2. Visibility may deteriorate during a dive. Instructors must terminate a dive whenever they feel visibility is no longer at safe levels.
- D. Instructors may not conduct training dives or drills in caves or passages which:
1. Contain sensitive formations and structures.
 2. Are in relatively pristine condition.
 3. Contain sensitive biological or archeological resources.
- E. Instructors must choose sites which are appropriate for student skill levels and the level of training. Refer to *Section 1: Appendix* at the end of this section for a list of approved locations for zero visibility drills

- F. NSS-CDS Instructors may not require that students breathe from a second stage that has been in another diver's mouth. Students may do so if they choose; however, instructors may not compel them to do so. Instructors are to discuss this with students ahead of time.

2.1.11 Post-dive Debriefing

Following each dive, instructors must conduct a post-dive debriefing and critique

2.1.12 Decompression During Training Divers

It's common during training at the full Cave Diver level and above for students to exceed dive table and computer no-decompression limits. **Whenever dives exceed 80 percent of the no-decompression limits, instructors must follow these procedures:**

- A. Students and instructors must stage a decompression cylinder containing oxygen or an oxygen-rich decompression mixture for each diver at or near the cave entrance.
- B. Additionally, emergency oxygen must be available on the surface in case students or instructors manifest DCS symptoms following a dive.
- C. Rehydration liquids must be readily available on site.
- D. Instructors may not use sites which would require divers to descend following decompression in order to reach the exit.

2.2 NSS-CDS Single Tank Cavern Course

Unless otherwise noted, all requirements listed under 2.1 standards applying to all NSS-CDS training programs are to be met for this course.

2.2.1 Purpose

The NSS-CDS Single Tank Cavern Diver course is a safety and awareness course aimed at open-water sport divers. It is not a prerequisite for, nor does it count toward, any level of cave diver training and certification. The NSS-CDS Cavern Diver course is intended to allow students to:

- A. Avoid the mistakes which commonly lead to cavern and cave diving fatalities.
- B. Educate fellow divers about the risks and hazards inherent in cavern and cave diving.
- C. Improve critical diving skills such as buoyancy, trim, balance, and propulsion.
- D. Improve the functionality of single-tank, sport diving gear configuration.

- E. Better dive as a team with similarly trained teammates.
- F. Use dive lights in state parks and other sites where such use is limited to certified cavern and cave divers.
- G. Safely dive in overhead environments while remaining within clear sight of the entrance and daylight.
- H. Learn about cavern fauna and geology.
- I. Be a voice to promote conservation of fragile cavern and cave environments.
- J. Be better equipped to assess whether they possess the skills, time, and resources needed to pursue further overhead training.

2.2.2 Limits of Training

- A. Daylight zone of cavern and within clear sight of the entrance.
- B. Penetration volume:
 - 1. Limited to a gas volume of 1150 L/40 ft³ or one-third the available starting volume, whichever is less.
 - 2. Candidates must exit the overhead environment and be in open water with at least 80 bar/1200 psi regardless of cylinder volume.
- C. Minimum starting gas volume: 1450 L / 50 ft³.
- D. Maximum penetration distance: 60 m/200 ft from the cavern entrance.
- E. Maximum depth: 30 m/100 ft.
- F. Minimum starting visibility at the cavern entrance: 12 m/40 ft. If the visibility is less in open water, the instructor must run a safety line to clear water before the students enter the water.
- G. No planned decompression.
- H. No passing through restrictions (areas too small for two divers to pass through side-by-side).
- I. No solo diving or use of diver propulsion vehicles (DPV).

2.2.3 Equipment Requirements

Students in the Single Tank Cavern Diver course must use standard, single-tank sport diving equipment.

- A. Mask and fins.
- B. Adequate exposure protection for depth, time, and water temperature of site(s) used.
- C. Buoyancy compensator with power inflator.
- D. Single cylinder capable of providing a starting gas volume of at least 1850 L/65 ft³.

- E. Regulator system with primary and backup second stages. The primary second stage may have a standard octopus hose.
- F. At least one dive computer capable of monitoring exposure to the gas mixtures used. Students must be familiar with its use prior to the start of the course.
- G. At least one cutting tool designed to deal with guideline entanglement.
- H. Primary dive light with a rated burn time of at least 150 percent of the expected dive time.
- I. One battery operated or rechargeable backup dive light.
- J. One primary reel per team with approximately 60 m/200 ft of guideline
- K. At least one safety reel/spool per diver with approximately 30 m/100 ft of guideline.
- L. Wetnotes or equivalent and pencil.

2.2.4 Course Duration and Location

If need be, instructors may use a single dive site when teaching this course.

- A. This course generally takes two days.
- B. Students must make a minimum of four dives and accrue at least 90 minutes of bottom time in caverns.

2.2.5 Student Prerequisites

- A. Be at least 18 years old.
- B. Possess Open Water Diver or equivalent certification from a recognized diver training organization. There is no requirement for a minimum number of dives.
- C. NSS-CDS Nitrox certification is not required, but may be taken concurrently.

2.2.6 Student/Instructor Ratios

Maximum student-to-instructor ratio of 3:1.

2.2.7 Instructor Requirements

- A. An active status NSS-CDS Cavern Instructor or higher.
- B. Open Water instructor for at least 1 year.
- C. Intro to Tec Instructor or equivalent
- D. 150 non-training dives beyond full Cave certification.
- E. NSS-CDS Nitrox instructor or equivalent

2.2.8 Over all Skill Performance Objectives

To be certified as an NSS-CDS Cavern Single Tank diver, students must be able to:

- A. Formulate a dive plan, within Cavern Diver limits, which includes at a minimum:
 - 1. Objectives.
 - 2. Team sequencing
 - 3. Depth and time.
 - 4. Penetration distance.
 - 5. Gas management/Turn pressures.
- B. Correctly assemble, test and don/doff a complete set of cavern diving equipment.
- C. Enter and exit the water in a safe and efficient manner appropriate to the site.
- D. Conduct the following pre-dive equipment checks in the water with teammates:
 - 1. All valves open
 - 2. "Bubble check" to inspect valves, regulators, hoses, gauges, and buoyancy compensator for leaks.
 - 3. Test breathe all regulator second stages.
 - 4. "Head-to-toe" equipment check to confirm that all required is present and functional.
 - 5. Dive computers set to the correct gas.
 - 6. Cylinder pressures confirmed and sufficient.
 - 7. Ensure long second-stage regulator hose is deployable.
 - 8. S-drill.
 - 9. Gas match.
- E. Move efficiently using appropriate propulsion techniques, including modified flutter, frog kick, and pull and glide (Florida caverns).
- F. Effectively maintain neutral buoyancy and horizontal body position while swimming, resting, deploying reels/spools and guidelines, and other common cavern-diving-related tasks.
- G. Initiate and correctly respond to a variety of common cavern diving hand and light signals.
- H. Maintain team sequence and cohesion.
- I. Work effectively with teammates to accomplish a variety of common cavern diving-related task

2.2.9 Knowledge Development

- A. To be certified as NSS-CDS Single Tank Cavern Divers students must complete the NSS-CDS Cave Diver e-learning course covering the following topics:
1. The Cavern Environment.
 2. Accident Analysis.
 3. Psychological Factors in Cavern Diving
 4. Landowner Relations and Conservation.
 5. Cavern Formation and Environmental Hazards.
 6. Equipment
 7. Guidelines
 8. Cavern Dive Planning
 9. Site Assessment and Pre-Dive Checks
 10. Cavern Diving Skills and Procedures.

2.2.10 Dry Land Exercises

Before entering the water, students are to have the opportunity to practice these skills on land:

- A. Deploy and retrieve a primary reel while maintaining tension and making primary, secondary, and additional tie-offs and placements.
- B. Assist a teammate who is deploying and retrieving a primary reel.
- C. Follow a guideline with eyes closed.
- D. Follow a guideline with eyes closed while engaging in touch-contact/bump and go with a teammate. Repeat as both leader and follower.
- E. Follow a guideline with eyes closed while engaging in touch contact/bump and go while simulating sharing gas with a teammate. Repeat as both leader and follower.

2.2.11 Open-Water Exercises

Before entering the cavern, students are to conduct these exercises in open water:

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Remove / replace a mask underwater.
- C. Follow a guideline simulating zero visibility for approximately 15 m/50 ft.

- D. Follow a guideline simulating zero visibility while using touch-contact/bump and go with a teammate. Repeat as both leader and follower.
- E. Follow a guideline simulating zero visibility while using touch-contact with a teammate while simulating sharing gas. Repeat as both leader and follower.
- F. Respond to a diver signaling "out of gas" by passing the primary (long hose) second stage regulator and deploying the full length of its hose.
- G. Assume the proper position for sharing gas and travel with another diver, both as donor and receiver.
- H. Practice deploying a safety reel or spool.
- I. Maneuver through the water using:
 - 1. Modified flutter kick.
 - 2. Frog kick
 - 3. Pull and glide (Florida caves)
 - 4. Helicopter turn.
 - 5. Back kick introduction.
- J. Demonstrate trim, buoyancy, balance, and propulsion techniques that support streamlining and conservation of the environment.

2.2.12 Overhead Environment Exercises

Students are to conduct these exercises in a cavern:

- A. Install and retrieve primary reel while:
 - 1. Orienting and holding a reel/spool correctly.
 - 2. Maintaining guideline tension.
 - 3. Correctly making tie-offs and placements as needed.
- M. Avoiding situations which would inconvenience other dive teams or put them at risk to include disturbing the lines and gear or interfering with the safe exit of other divers. Avoiding damage to the cavern environment.
- N. Effectively assist a teammate who is deploying and retrieving a primary reel, providing light and removing tie-offs and placements when doing so is helpful.
- O. Simulate responding to a primary light failure by deploying a backup light and signaling team.
- P. Exit the cavern while simulating sharing gas with a teammate in good visibility with eyes open. Repeat as both donor and receiver.

- Q. Demonstrate trim, buoyancy, balance, and propulsion techniques that support streamlining and conservation of the environment.

2.3 NSS-CDS Cavern Tech Course

Unless otherwise noted, all requirements listed under 2.1 standards applying to all NSS-CDS training programs are to be met for this course.

2.3.1 Purpose

The NSS-CDS Cavern Tech course is a stand alone course that is intended to prepare a student for NSS-CDS Cave training and:

- A. Avoid the mistakes which commonly lead to cavern and cave diving fatalities.
- B. Educate fellow divers about the risks and hazards inherent in cavern and cave diving.
- C. Improve critical diving skills such as buoyancy, trim, balance, propulsion in a technical diving configuration.
- D. Improve the functionality of technical dive gear configuration.
- E. Better dive as a team with similarly trained teammates.
- F. Use dive lights in state parks and other sites where such use is limited to certified cavern and cave divers.
- G. Safely dive in overhead environments while remaining within clear sight of the entrance and daylight.
- H. Be better equipped to assess whether they possess the skills, time and resources needed for Apprentice training.

2.3.2 Limits of Training

- A. Daylight zone of cavern and within clear sight of the entrance.
- B. Penetration is to be based on open-circuit gas or rebreather consumables.
- C. Backmount or sidemount double tanks limited to a gas volume of 1160 L/50 ft³ or one-third the available starting volume, whichever is less.
- D. Minimum starting gas volume:
 - 1. Open-circuit: 2800 L/100 ft³.
 - 2. Rebreather: One bailout bottle with a minimum of 1100 L/40 ft³ (with a planned exit minimum of 80 bar/1200 psi).
- E. Maximum penetration distance: 60 m/200 ft from the cavern entrance.
- F. Maximum depth: 30 m/100 ft.

- G. Minimum starting visibility at the cavern entrance: 12 m/40 ft. If the visibility is less in open water, the instructor must run a safety line to clear water before the students enter the water.
- H. No planned decompression.
- I. No passing through restrictions (areas too small for two divers to pass through side-by-side).
- J. No solo diving or use of diver propulsion vehicles (DPV).
- K. If students are diving open circuit, then the instructor must dive open circuit as well

2.3.3 Equipment Requirements

- A. Mask and fins.
- B. Adequate exposure protection for depth, time, and water temperature for site(s) used.
- C. Configuration must provide buoyancy, harness and backplate if required for configuration or by the instructor.
- D. Backmount or sidemount double cylinders capable of providing a starting gas volume of at least 2800 L/100 ft³ or a rebreather with a minimum of 40 ft³ bailout.
- E. Regulator system with primary and backup second stages. One second stage must have a 2 m/7.0 ft or longer hose.
- F. At least one dive computer capable of monitoring exposure to the gas mixtures used. Students must be familiar with its use prior to the start of the course.
- G. At least one cutting tool designed to deal with guideline entanglement.
- H. Primary dive light with a rated burn time of at least 150 percent of the expected dive time.
- I. Two battery operated or rechargeable backup dive lights.
- J. One primary reel per team with approximately 60 m/200 ft of guideline.
- K. At least one safety reel/spool per diver with approximately 30 m/100 ft of guideline.
- L. Wetnotes or equivalent and pencil.

2.3.4 Course Duration and Location

- A. This course generally takes two days.
- B. Students must make a minimum of four dives and accrue at least 120 minutes of bottom time in caverns.
- C. If need be, instructors may use a single dive site when teaching this course.
- D. If NSS-CDS Basics is taught in conjunction, add a minimum of at least one additional day.

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2.3.5 Student Prerequisites

- A. Be at least 18 years old.
- B. 25 logged dives beyond open water certification.
- C. Students may use backmount or sidemount doubles or a rebreather.
- D. If diving sidemount doubles or a rebreather, students must have the appropriate certification from a recognized training agency before the start of this course.
- E. NSS-CDS Nitrox or equivalent certification from a recognized diver training organization. May be taken concurrently.
- F. The NSS-CDS Single Tank Cavern course is not a prerequisite for this course.

2.3.6 Student/Instructor Ratios

- A. Maximum student-to-instructor ratio of 3:1.

2.3.7 Instructor Requirements

- A. An active status NSS-CDS Cavern instructor or higher
- B. Open Water Instructor for at least one year.
- C. 150 non-training dives beyond full Cave certification.
- D. Intro to Tec or equivalent instructor.
- E. Technical Sidemount Instructor (if teaching in sidemount).
- F. NSS-CDS Nitrox instructor or equivalent.
- G. Rebreather Mod 1 instructor if teaching students on a rebreather. Must conduct a familiarity briefing with the rebreather the student is diving.
- H. NSS-CDS Cave CCR diver (if teaching on a rebreather).

2.3.8 Overall Skill Performance Objectives

To be certified as NSS-CDS Cavern Tech, students must be able to:

- A. Formulate a dive plan, within Cavern Tech diver limits, which includes at a minimum:
 - 1. Objectives.
 - 2. Team sequencing.
 - 3. Depth and time.
 - 4. Penetration distance.

5. Gas management/Turn pressures.
- B. Correctly assemble, test, and don/doff a complete set of Cavern Tech diving equipment.
- C. Enter and exit the water in a safe and efficient manner appropriate to the site.
- D. Conduct the following pre-dive equipment checks in the water with teammates:
 1. All valves open.
 2. "Bubble check" to inspect manifold, valves, regulators, hoses, gauges, buoyancy compensator, rebreather for leaks.
 3. Test breathe all regulator second stages.
 4. "Head-to-toe" equipment check to confirm that all required is present and functional.
 5. Dive computers set to correct gas/PO₂.
 6. Cylinder pressures confirmed and sufficient.
 7. Ensure long hose second stage regulator hose is deployable.
 8. S-drill.
 9. Gas match.
- E. Move efficiently using appropriate propulsion techniques, including modified flutter, modified frog, back kick introduction, and pull and glide (Florida caverns).
- F. Effectively maintain neutral buoyancy and horizontal body position while swimming, resting, deploying reels/spools and guidelines, and other common cavern diving-related tasks.
- G. Initiate and correctly respond to a variety of common cavern diving hand and light signals.
- H. Maintain team sequence and cohesion.
- I. Work effectively with teammates to accomplish a variety of common cavern diving-related tasks.
- J. Can manage the rebreather in an overhead environment. Calculate bailout range using 1.0 RMV and a swim speed of 33 feet per minute.
- K. Can perform effective valve drills appropriate for the configuration.

2.3.9 Knowledge Development

- A. To be certified as NSS-CDS Cavern Tech divers, students must complete the NSS-CDS Cave Diver e-learning course covering the following topics at a minimum:

1. The Cavern Environment.
2. Accident Analysis.
3. Psychological Factors in Cavern Diving
4. Landowner Relations and Conservation.
5. Cavern Formation and Environmental Hazards.
6. Equipment
7. Guidelines
8. Cavern Dive Planning
9. Site Assessment and Pre-Dive Checks
10. Cavern Diving Skills and Procedures.

2.3.10 Dry Land Exercises

Before entering the water, students are to have the opportunity to practice these skills on land:

- A. Deploy and retrieve a primary reel while maintaining tension and making primary, secondary, and additional tie-offs and placements.
- B. Assist a teammate who is deploying and retrieving a primary reel.
- C. Follow a guideline with eyes closed.
- D. Follow a guideline with eyes closed while engaging in touch-contact / bump and go with a teammate. Repeat as both leader and follower.
- E. Follow a guideline with eyes closed while engaging in touch contact / bump and go while simulating sharing gas with a teammate. Repeat as both leader and follower.
- F. Deploy a safety reel or spool.
- G. Overview of the rebreather and bailout systems.

2.3.11 Open-Water Exercises

Before entering the cavern, students are to conduct these exercises in open water:

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Remove / replace a mask underwater.
- C. Follow a guideline simulating zero visibility for approximately 15 m/50 ft.

- D. Follow a guideline simulating zero visibility while using touch-contact/bump and go with a teammate. Repeat as both leader and follower.
- E. Follow a guideline simulating zero visibility while using touch-contact with a teammate while simulating sharing gas. Repeat as both leader and follower.
- F. Respond to a diver signaling "out of gas" by passing the primary (long hose) second stage regulator and deploying the full length of its hose.
- G. Assume the proper position for sharing gas and travel with another diver, both as donor and receiver.
- H. While simulating total loss of visibility, follow a guideline while simulating sharing gas. Rebreather users must be on open circuit.
- I. Practice deploying a safety reel or spool.
- J. Maneuver through the water using:
 - 1. Modified flutter kick.
 - 2. Frog kick.
 - 3. Pull and glide (Florida caves).
 - 4. Helicopter turn.
 - 5. Back kick introduction.
- K. Rebreather bailout exercise.
- L. Demonstrate trim, buoyancy, balance, and propulsion techniques that support streamlining and conservation of the environment.

2.3.12 Overhead Environment Exercises

Students are to conduct these exercises in a cavern:

- A. Install and retrieve primary reel while:
 - 1. Orienting and holding a reel/spool correctly.
 - 2. Maintaining guideline tension.
 - 3. Correctly making tie-offs and placements as needed.
 - 4. Avoiding situations which would inconvenience other dive teams or put them at risk to include disturbing the lines and gear or interfering with the safe exit of other divers.
 - 5. Avoiding damage to the cavern environment.
- B. Effectively assist a teammate who is deploying and retrieving a primary reel, providing light and removing tie-offs and placements when doing so is helpful.

- C. Simulate responding to a primary light failure by deploying a backup light and signaling team.
- D. Exit the cavern while simulating sharing gas with a teammate in good visibility with eyes open. Repeat as both donor and receiver.
- E. While simulating total loss of visibility, follow a guideline engaging in touch contact while simulating sharing gas

2.4 NSS-CDS Basics Orientation

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.4.1 Purpose

To enroll in NSS-CDS Apprentice Cave Diver training, students must:

- A. Have prior training in sidemount or backmounted doubles or be able to document equivalent experience.
- B. Demonstrate adequate mastery of buoyancy control, trim and propulsion for cave diving. This includes modified flutter kick, frog kick, pulling and helicopter turns.

The CDS Basics orientation provides students the opportunity to gain this training while working within the framework of the NSS-CDS Training Program. These standards define minimum program content. Instructors may add additional information and skills, or to teach this program concurrently with other non-overhead courses, such as NSS-CDS Nitrox Diver and Sidemount Diver.

2.4.2 Course Location

The CDS Basics orientation may take place in any body of water similar in size and depth to a spring basin. This may include swimming pools and training tanks of sufficient size.

Skill demonstration and practice must take place in water too deep to stand.

2.4.3 Duration

Students must accrue at least 120 minutes of bottom time.

2.4.4 Knowledge Development

- A. Students learning sidemount must complete the Sidemount Diver academic learning materials provided by a widely recognized diver training organization.
- B. Instructors must present students learning to dive backmounted doubles with information on:

1. Double cylinder features and configuration.
 2. Dual-orifice isolation manifold operation.
 3. Options and configuration of double-tank harnesses and air cells.
- C. Students must also learn the *why* behind the specialized buoyancy, trim and propulsion techniques cave divers use.

2.4.5 Dry-Land Exercises

Before entering the water, students are to practice guideline deployment and retrieval while maintaining tension on the line.

2.4.6 In-Water Exercises

To be successfully complete the CDS Basics orientation, students must be able to:

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Correctly assemble, test and don a sidemount or doubles system, including harness, air cell, cylinders and regulators.
- C. Enter and exit the water in a manner consistent with ease and safety.
- D. Perform a variety of common in-water, pre-dive checks, including:
1. Checking for the presence of all necessary equipment.
 2. Ensuring all manifold and/or main gas valves are turned all the way on.
 3. Testing all regulators for function underwater.
 4. Checking pressure in all cylinders.
 5. Checking to ensure no hoses, cords, straps, gauges, reels or attachment hardware are accidentally trapped under other equipment.
 6. Testing fellow team members' primary (long hose) second stages for breathability and function.
 8. Inspecting fellow team members for signs of equipment problems.
 9. Performing a bubble check on fellow team members.
- E. Deploy and retrieve a reel or spool over a distance of at least 15 m/50 ft while maintaining tension on the guideline.
- F. Move efficiently using appropriate propulsion techniques, including modified flutter and frog kicks and pulling.

- G. Effortlessly maintain neutral buoyancy and horizontal body position while swimming, resting, deploying reels/spools and guidelines, and other common cave-diving-related tasks. Students must be able to hover with minimal movement for at least one minute while maintaining horizontal trim.
- H. Initiate and correctly respond to a variety of common hand signals.
- I. Respond to a diver signaling *Out of Air!* by passing the primary (long hose) second stage and deploying the full length of its hose.
- J. Assume the proper position for sharing gas with another diver, both as donor and receiver.
- K. Share air with a fellow team member for a distance of at least 15 m/50 ft. Repeat as both donor and receiver.

2.4.7 Limits of Training

- A. Successful completion of this program qualifies students for entry into the NSS-CDS Apprentice Cave Diver course.
- B. It does not qualify students for any other activity unless taught in conjunction with another non-overhead course, such as Sidemount Diver or NSS-CDS Nitrox Diver.
- C. Instructors may issue successful course graduates with a Certificate of Completion. There is no certification card for this experience.
- D. Students have three months following successful completion of CDS Basics to enroll in an NSS-CDS Apprentice Cave Diver course. Should they fail to do so, students must re-take this program.

2.5 Apprentice Cave Diver

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.5.1 Purpose

The NSS-CDS Apprentice Cave Diver course is the first step in a two-step process leading to full NSS-CDS Cave Diver certification. It takes the place of the old Cavern, Basic and Intro-to-Cave Diver courses.

- A. The Apprentice Cave Diver course focuses primarily on limited penetration along the main line. It is also where students learn and master critical emergency skills.
- B. The Apprentice course also provides students with the opportunity to gain limited experience and practice fundamental cave diving skills prior to completing the requirements for full Cave Diver certification.

2.5.2 Limits of Training

The Apprentice Cave Diver course prepares students to dive within the following limits:

- A. Penetration is limited to a gas volume of 1,400 L/50 ft³ or one-third the available starting volume, whichever is less.
- C. Minimum starting volume of 2,100 L/75 ft³ and a minimum penetration gas volume of 700 L/25 ft³. The minimum starting volume does not apply if, during training, the instructor is having students practice skills within the daylight zone.
- D. Penetration distance of no more than 300 m/1,000 ft from the surface.
- E. Depth of no more than 30 m/100 ft.
- F. Minimum starting visibility of at least 10 m/30 ft.
- H. Divers may navigate off the main line using a single reel or spool. However, no jumps or gaps to offshoot or continuation lines.
- I. No planned decompression.
- J. No use of stage bottles or DPVs.
- K. No original exploration.

2.5.3 Extending the Limits of Training

By spending additional time with their instructor, students may extend the limits of training for Apprentice Cave Diver. To do this, they must make at least one additional dive beyond the eight required for Apprentice Cave. This dive must include at least one jump to an offshoot line. Instructors who take advantage of this option must be authorized to teach to the full Cave Diver level.

If students perform to the instructor's satisfaction, the instructor may issue an NSS-CDS *Apprentice Cave Diver Statement of Understanding*. This form clearly outlines four areas in which students may or may not exceed the normal Apprentice Cave Diver limits. The instructor can use the form to specify which limits these are and by how much students may exceed them. These limits include:

- A. *Usable Gas*: Removes the 1,400 L/50 ft³ restriction and allows students to use a full third of their starting volume.
- B. *Distance*: Removes the 300 m/1,000 ft restriction. The instructor may list a specific number of meters or feet to which students may go.
- C. *Limited Decompression*: Allows students to make planned decompression dives using pure oxygen or oxygen-rich decompression mixture. Students must hold certification in the use of such deco mixtures and in decompression procedures by a widely recognized technical diver training organization. Decompression is limited by the fact students may not use stage bottles or dive below 30 m/100 ft.

D. *Navigation*: Students may make limited jumps to offshoot lines. The number of jumps is not specified, but is limited by the total distance students may penetrate.

We encourage all instructors to use this form, even if students may not exceed the normal Apprentice Cave Diver limits. It clearly defines students' limits and secures their agreement, in writing, to follow them. Instructors are to give one signed copy to their students and keep a second copy for their records.

The *Statement of Understanding* form also carries an expiration date. This helps encourage students to complete their full Cave Diver training in a timely manner. Should the form expire before students do so, their Limits of Training revert to the minimums normally associated with Apprentice Cave Diver certification.

2.5.4 Course Duration and Location

- A. This course generally takes four days. Students must accrue at least 240 minutes of bottom time over at least eight dives.
- B. Training must take place at two or more different sites. Caves with two or more distinct entrances or which have two main lines leading from a single entrance may count as different sites.
- C. The requirements for multiple sites do not apply if there are no other sites available within 200 km/75 miles.

2.5.5 Student Prerequisites

In addition to the prerequisites outlined in *Standards Applying to all NSS-CDS Training Programs*, students must either:

- A. Provides proof of certification in Technical Sidemount or some form of Basics/Fundamentals/Essentials from a widely recognized technical diver training organization, or...
- B. Provide proof of equivalent experience in sidemount or backmounted doubles.
- C. Additionally, instructors must screen and evaluate students to ensure they possess adequate buoyancy, trim and propulsion skills. If they do not, students may take part in the CDS Basics orientation to acquire the necessary skill levels.

2.5.6 Instructor Prerequisites

Any NSS-CDS Instructor previously authorized to teach at the Basic or Intro-to-Cave Diver level, as well as those currently authorized to teach to the Apprentice level, may teach this course. **Only those instructors authorized to teach to the full Cave Diver level may take advantage of the option to extend the Limits of Training beyond those normally associated with Apprentice Cave Diver.**

2.5.7 Knowledge Development

- A. To be certified as NSS-CDS Apprentice Cave divers, students must complete the NSS-CDS Cave Diver e-learning course covering the following topics at a minimum:
1. The Cave Environment.
 2. Accident Analysis.
 3. Psychological Factors in Cave Diving
 4. Landowner Relations and Conservation.
 5. Cave Formation and Environmental Hazards.
 6. Equipment
 7. Guidelines
 8. Cave Dive Planning
 9. Site Assessment and Pre-Dive Checks
 10. Cave Diving Skills and Procedures.

2.5.8 Dry Land Exercises

Before entering the water, students are to practice these exercises on land:

- A. Deploy and retrieve a primary reel while maintaining tension and making primary, secondary and additional tie-offs and placements.
- B. Assist a teammate who is deploying and retrieving a primary reel.
- C. Follow a guideline with eyes closed.
- D. Follow a guideline with eyes closed while engaging in touch-contact with a teammate. Repeat as both leader and follower.
- E. Follow a guideline with eyes closed while engaging in bump-and-go with a teammate. Repeat as both leader and follower.
- F. Simulate searching for a lost teammate while using a safety reel or spool.
- G. Use a safety reel or spool to search for a lost guideline with eyes closed.

2.5.9 Overall Skill Performance Objectives

To be certified as NSS-CDS Apprentice Cave Divers, students must be able to:

- A. Develop and follow a dive plan which encompasses *Sequence, Air, Depth, Duration, Distance* and *Direction*, and any other activities unique to the dive.
- B. Correctly assemble, test and don a complete set of cave diving equipment.

- C. Enter and exit the water in a manner consistent with ease and safety.
- D. Perform a variety of common in-water, pre-dive checks, including:
 - 1. Checking for the presence of all necessary equipment.
 - 2. Ensuring all manifold and/or main gas valves are turned all the way on.
 - 3. Testing all regulators for function underwater.
 - 4. Checking pressure in all cylinders.
 - 5. If on open circuit, checking to ensure all long hoses are fully deployable.
 - 6. Checking to ensure no hoses, cords, straps, gauges, reels or attachment hardware are accidentally trapped under other equipment.
 - 7. If so equipped, testing fellow team members' primary (long hose) second stages for breathability and function.
 - 8. Inspecting fellow team members for signs of equipment problems.
 - 9. Performing a bubble check on fellow team members.

2.5.10 Open-Water Exercises

Before entering the overhead, students are to practice these exercises in open water:

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Follow a guideline with eyes closed.
- C. Follow a guideline with eyes closed while engaging in touch-contact with a teammate. Repeat as both leader and follower.
- D. Follow a guideline with eyes closed while engaging in bump-and-go with a teammate. Repeat as both leader and follower.
- E. Follow a guideline with eyes closed while simulating sharing gas with a teammate. Repeat as both donor and receiver.
- F. Follow a guideline for a distance of at least 15 m/50 ft without a mask.
- G. Deploy a safety reel or spool.
- H. Maneuver through the water using:
 - 1. Modified flutter kick.
 - 2. Frog kick.
 - 3. Pulling.
 - 4. Helicopter turn.

2.5.11 Overhead Environment Exercises

Students must initiate and demonstrate mastery of the following skills beyond sight of daylight.

General skills

- A. Move efficiently using appropriate propulsion techniques, including modified flutter and frog kicks and pulling.
- B. Effortlessly maintain neutral buoyancy and horizontal body position while swimming, resting, deploying reels/spools and guidelines, and other common cave-diving-related tasks.
- C. Initiate and correctly respond to a variety of common cave diving hand and light signals.
- D. Maintain team sequence and cohesion while communicating effectively with fellow team members.
- E. Work effectively with fellow team members to accomplish a variety of common cave-diving-related tasks.

Guideline and reel use

- F. Install and retrieve both reels and spools while:
 - 1. Orienting and holding the reel/spool correctly.
 - 2. Maintaining guideline tension.
 - 3. Correctly making tie offs and placements as needed.
 - 4. Avoiding situations which would inconvenience other dive teams or put them at risk.
 - 5. Avoiding damage to the cave environment.
- G. On at least two occasions, install and retrieve a primary reel while:
 - 1. Making primary and secondary tie offs.
 - 2. Making placements or additional tie offs as needed.
 - 3. Correctly tying into a permanent guideline.
- H. Effectively assist a teammate who is deploying and retrieving a primary reel, providing light and removing tie-offs and placements when doing so is helpful.
- I. Correctly install and remove directional and nondirectional line markers.

Loss of visibility/loss of teammate/loss of light

- J. Follow a guideline with a teammate for a distance of at least 30 m/100 ft while simulating loss of visibility, using a combination of touch-contact and bump-and-go. If using touch-contact, complete line crossings within five seconds. Repeat as both leader and follower.
- K. Simulate searching for a lost teammate while using a safety reel or spool over a distance of at least 20 m/65 ft.
- L. Use a safety reel or spool to search for a lost guideline with eyes closed over a distance of at least 10 m/30 ft.
- M. Simulate primary light failure by deploying a backup light and swimming for a distance of at least 20 m/65 ft with all team members on backup lights.

Loss of breathing gas

- N. Respond within ten seconds to a diver signaling *Out of Air!* by passing the primary (long hose) second stage and deploying the full length of its hose.
- O. Assume the proper position for sharing gas with another diver, both as donor and receiver.
- P. Simulate sharing gas with a teammate for a distance of at least 30 m/100 ft in good visibility with eyes open. Repeat as both donor and receiver.
- Q. While simulating total loss of visibility, follow a guideline for a distance of at least 30 m/100 ft while simulating sharing air. If using touch-contact, complete line crossings within five seconds. Repeat as both donor and receiver.
- R. Shut down and re-open both outboard regulator valves, one at a time, taking no more than a total of 90 seconds. Include the isolation valve, if so equipped.

2.6 Cave Diver

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.6.1 Purpose

This course is the second step leading to full NSS-CDS Cave Diver certification. It builds on the knowledge, skills and experience students gain during the Apprentice Cave Diver course.

In addition to ensuring students have maintained knowledge and skill proficiency from the Apprentice course, the Cave Diver course focuses on:

- A. Cave navigation involving jumps and gaps and, at a minimum, the theory behind complex circuits and traverses (those requiring establishment of a halfway or “point of no return”).

- B. If applicable, how students can apply their open-water decompression training to caves.

2.6.2 Limits of Training

The Cave Diver course prepares students to dive within the following limits:

- A. Penetration is limited to one-third the available starting gas volume.
- B. Minimum starting volume of 2,100 L/75 ft³ and a minimum penetration gas volume of 700 L/25 ft³. The minimum starting volume does not apply if, during training, the instructor is having students practice skills within the daylight zone.
- C. Depth of no more than 40 m/130 ft.
- D. Minimum starting visibility of at least 6 m/20 ft.
- E. No use of stage bottles or DPVs.

2.6.3 Course Duration and Location

- A. This course generally takes four days. Students must accrue at least 360 minutes of bottom time over at least eight dives.
- B. Training must take place at two or more different sites. Caves with two or more distinct entrances or which have two main lines leading from a single entrance may count as different sites.
- C. At least two of the sites used during training must be different from those used during the Apprentice Cave Diver course.
- D. The requirements listed under *B* and *C* do not apply if there are no other sites available within 120 km/75 miles.

2.6.4 Student Prerequisites

NSS-CDS Apprentice Cave Diver or equivalent.

2.6.5 Instructor Prerequisites

Instructors must be authorized to teach at the full Cave Diver level.

2.6.6 Knowledge Development

- A. To be certified as NSS-CDS Apprentice Cave divers, students must complete the NSS-CDS Cave Diver e-learning course covering the following topics at a minimum:
 - 1. The Cave Environment.
 - 2. Accident Analysis.
 - 3. Psychological Factors in Cave Diving

4. Landowner Relations and Conservation.
 5. Cave Formation and Environmental Hazards.
 6. Equipment
 7. Guidelines
 8. Cave Dive Planning
 9. Site Assessment and Pre-Dive Checks
 10. Cave Diving Skills and Procedures.
- B. Unless students are entering this course in combination with the NSS-CDS Apprentice Cave Diver course, instructors must ensure students are still able to meet the academic and performance objectives listed in the Apprentice Cave Diver course standards.

2.6.7 Dry Land Exercises

If necessary, instructors may demonstrate and have students practice the procedures for making jumps to offshoot lines.

2.6.8 Overhead Environment Exercises

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Unless students are taking this course in combination with the NSS-CDS Apprentice Cave Diver course, instructors must ensure students are still able to meet the skill performance objectives listed in the Apprentice Cave Diver course standards.
- C. Regardless of the recency of students' Apprentice Cave Diver training, instructors are to have students repeat these exercises from the Apprentice course:
1. Follow a guideline with a teammate for a distance of at least 30 m/100 ft while simulating loss of visibility, using a combination of touch-contact and bump-and-go. If using touch-contact, complete line crossings within five seconds. Repeat as both leader and follower.
 2. Simulate searching for a lost teammate while using a safety reel or spool over a distance of at least 20 m/65 ft.
 3. Use a safety reel or spool to search for a lost guideline with eyes closed over a distance of at least 10 m/30 ft.
 4. Simulate primary light failure by deploying a backup light and swimming for a distance of at least 20 m/65 ft with all team members on backup lights.
 5. Respond within ten seconds to a diver signaling Out of Air! by passing the primary (long hose) second stage and deploying the full length of its hose.

6. Assume the proper position for sharing gas with another diver, both as donor and receiver.
 7. Simulate sharing gas with a teammate for a distance of at least 30 m/100 ft in good visibility with eyes open. Repeat as both donor and receiver.
 8. While simulating total loss of visibility, follow a guideline for a distance of at least 30 m/100 ft while simulating sharing air. If using touch-contact, complete line crossings within five seconds. Repeat as both donor and receiver.
- D. Additionally, students must demonstrate the ability to:
1. Correctly install and retrieve a jump reel or spool.
 2. If typical of the local cave environment, plan for and execute decompression using either back (main) gas or one or more decompression cylinders; follow correct procedure when doing so.

2.7 Advanced Cave Diver

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.7.1 Purpose

This course provides an alternative to the NSS-CDS Cave Diver course. It includes all the academic and skill development from the full Cave course, plus all the content and training of the NSS-CDS Stage Diving specialty course and the content and training of the NSS-CDS First Responder program.

2.7.2 Limits of Training

The *Limits of Training* for the Advanced Cave Diver course are largely the same as those for the NSS-CDS Cave Diver course. The exception is students with Advanced Cave Diver certification may use stage bottles to extend range.

Instructors must remind students of the importance of building experience slowly. Just because students are theoretically qualified to use stage cylinders, they will be wise not to do so until they gain additional experience.

2.7.3 Course Duration and Location

These are largely the same as for the full Cave Diver course. The difference is students in this program must log at least 500 minutes of bottom time as opposed to the 360 required for NSS-CDS Cave Diver certification. This will most likely necessitate additional days and dives beyond those needed for the full Cave Diver course

2.7.4 Student Prerequisites

NSS-CDS Apprentice Cave Diver or equivalent.

2.7.5 Instructor Prerequisites

To teach this course, instructors must be authorized to conduct the:

- A. NSS-CDS Cave Diver course.
- B. NSS-CDS Stage Cave Diver course.

2.7.6 Equipment Requirements

In addition to the equipment requirements listed for all NSS-CDS courses, students and instructors are to have and use the specialized equipment listed for the Stage Cave Diver course.

2.7.7 Knowledge Development

- A. To be certified as NSS-CDS Apprentice Cave divers, students must complete the NSS-CDS Cave Diver e-learning course covering the following topics at a minimum:
 - 1. The Cave Environment.
 - 2. Accident Analysis.
 - 3. Psychological Factors in Cave Diving
 - 4. Landowner Relations and Conservation.
 - 5. Cave Formation and Environmental Hazards.
 - 6. Equipment
 - 7. Guidelines
 - 8. Cave Dive Planning
 - 9. Site Assessment and Pre-Dive Checks
 - 10. Cave Diving Skills and Procedures.
- B. Additionally, students must demonstrate mastery of all of the academic learning objectives listed for the:
 - 1. NSS-CDS Stage Cave Diver course.
 - 2. NSS-CDS First Responder course.

2.7.8 Skill Development

To be certified as NSS-CDS Advanced Cave Divers, students must demonstrate mastery of all the skill performance objectives listed for the:

- A. NSS-CDS Cave Diver course.
- B. NSS-CDS Stage Cave Diver course.

Note the fact only the academic portion of the NSS-CDS First Responder course is included in this course. There are no water skill requirements for this.

2.8 CCR Cave Diver

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.8.1 Purpose

The NSS-CDS CCR Cave Diver course is the closed-circuit equivalent of the Apprentice and full Cave Diver courses combined. Divers using a CCR in an overhead environment should adhere to rules and guidelines to execute dives in a safe manner and develop the skill set to deal with issues within the environment that may arise. This course is designed to develop the physical and mental discipline for cave diving on a CCR.

2.8.2 Limits of Training

The Limits of Training for CCR Cave Diver are largely the same as those for the open-circuit Cave Diver course. Additionally:

- A. At any point during a CCR cave dive, divers must have twice the oxygen, diluent, and absorbent to exit the cave.
- B. Divers must have no less than 1.5 times the open-circuit bailout gas needed to exit the cave based on a 21.25 L/0.75 ft³ per minute SAC rate and a 10m/33 ft per minute swim speed. The consumption rate may be adjusted to the student's actual consumption rate upon gathering the necessary data on a CCR Cave dive.
- C. The team member with the least capable CCR (i.e. scrubber duration) sets the limits for the entire team.
- D. PO₂ levels must not exceed 1.3 ATA during any portion of the dive, other than decompression. PO₂ levels during decompression must not exceed 1.5 ATA, excepting for an O₂ flush at 6 m/20 ft for cell validation at the end of a cave dive.
- E. Divers must not remove primary life-support equipment during a dive.
- F. Minimum starting bailout gas volume of 3,400 L/120 ft³. Bailout gas should have redundant first stages, either through use of a twin-cylinder or H-valve configuration.

- G. Each diver's open-circuit bailout cylinders should have a minimum of one 2 m/7 ft hose.
- H. Open-circuit bailout should not cause divers to exceed a PO_2 of 1.4 ATA, except for decompression gas, which may have a PO_2 of 1.6 ATA.
- I. Students will begin each day with a fresh scrubber.
- J. CCR Cave Diver training does not qualify divers to use open-circuit equipment in caves.
- K. **Students wishing to earn qualification for both open-circuit and closed-circuit cave diving may complete the requirements for the NSS-CDS Apprentice Cave Diver program on open-circuit during this course, but must complete the Cave Diver portion of the course on CCR**
- L. *At no point during training may instructors do anything which prevents students from monitoring PO_2 levels while the student is on the loop.*

2.8.3 Course Duration and Location

- A. This course requires a minimum of six days to complete. Students must log at least 600 minutes of bottom time under direct instructor supervision.
- B. Training must take place at five or more different sites. Caves with two or more distinct entrances or which have two main lines leading from a single entrance may count as different sites.
- C. The requirements for multiple sites do not apply if there are no other sites available within 200 km/75 miles.

2.8.4 Student Prerequisites

In addition to meeting the normal prerequisites for NSS-CDS Apprentice Cave Diver training, students must:

- A. Hold Rebreather Diver certification from a widely recognized training organization.
- B. Have logged at least 25 dives and 35 hours of bottom time using the same rebreather as they will use during this course.

2.8.5 Instructor Prerequisites

Instructors must be authorized to teach the NSS-CDS CCR Cave Diver course. Additionally, instructors wishing to issue dual qualification for both open-circuit and closed-circuit cave diving must be authorized to teach the open-circuit NSS-CDS Cave Diver program.

2.8.6 Knowledge Development

Students in the CCR Cave Diver course must complete the NSS-CDS Cave Diver eLearning course and be able to answer the same questions as students taking the Apprentice and Cave Diver courses on open circuit. Additional CCR-specific subject matter instructors must cover during this course includes:

- A. Rebreather operation
 - 1. Rule of thirds for oxygen, diluent and scrubber duration.
 - 2. Calculating oxygen duration based on metabolic need/workload.
 - 3. PO₂ setpoint selection based on dive duration and oxygen exposure.
 - 4. Review of Hypoxia, Hyperoxia, and Hypercapnia.
- B. Equipment configuration, including:
 - 1. Bailout configuration options, cylinder selection, and mounting.
 - 2. Bailout volume calculations and considerations for CCR team and mixed open-circuit team diving
 - a. Each diver must maintain at least 1.5 times the open-circuit bailout gas needed, based on a 21.25 L/0.75 ft³ per minute SAC rate and a 10 m/33 ft per minute swim speed.
 - b. Mixed teams must maintain at least twice the open-circuit bailout needed, or the open-circuit divers must maintain their own sufficient reserve.
 - 3. Offboard plug-ins, selection and options.
- C. Complex dive planning:
 - 1. Jumps, circuits, and traverses on a CCR.
 - 2. Spoke diving – multiple penetrations based on a bailout range.
 - 3. Sawtooth Profile Diving – PO₂ and DIL/ O₂ management.
 - 4. Complexities of extended bottom time dives, including:
 - a. Decompression stress
 - b. Thermal and nutritional stress
 - c. Physical fitness
 - d. Mental fitness
 - e. Primary and backup light burn times.

2.8.7 Land Drills

Instructors must cover the same dry-land exercises as outlined in the Apprentice and Cave Diver course standards with an emphasis on bailing out to open circuit if there is no way to monitor PO₂.

2.8.8 Open Water Drills

These are the same as those outlined in the Apprentice Cave Diver and Cave Diver course standards but with an emphasis on bailing out to open circuit when divers cannot monitor PO_2 .

2.8.9 Overhead Environment Exercises

These are the same as those outlined in the Apprentice Cave Diver and Cave Diver course standards but with an emphasis on bailing out to open circuit when divers cannot monitor PO_2 . Additionally, students must perform the following CCR-specific skills:

- A. SCR Mode, simulating the loss of oxygen, developing breathing rhythms for SCR operation, breathing and flushing. At no time must PO_2 drop below 0.5 ATA. This must include exiting:
 - 1. For at least 300 m/1,000 ft at depths exceeding 27 m/90 ft.
 - 2. For at least 450 m/1,485 ft exit at depths shallower than 27 m/90 ft.
- B. O/C Bailout, stabilizing the loop, adjusting the set point, and disabling oxygen as needed. Managing buoyancy as necessary. This must include exiting:
 - 1. For at least 225m/750 ft at depths exceeding 27 m/90 ft.
 - 2. For at least 300 m/1,000 ft at depths shallower than 27 m/90 ft.

At no point during training may instructors do anything which prevents students from monitoring PO_2 levels while the student is on the loop.

2.9 CCR Cave Diver Upgrade

Unless otherwise noted, all requirements listed under 2.1 *Standards Applying to all NSS-CDS Training Programs* apply to the course.

2.9.1 Purpose

This course qualifies students who already possess open-circuit Cave Diver certification to cave dive using closed-circuit rebreathers (CCRs). This course is designed to develop the physical and mental discipline for cave diving on a CCR.

2.9.2 Limits of Training

The Limits of Training for this course are the same as they are for the CCR Cave Diver course. Additionally, students enter this course already qualified to dive open-circuit equipment in caves. *At no point during training may instructors do anything which prevents students from monitoring PO_2 levels while the student is on the loop.*

2.9.3 Course Duration and Location

- A. This course usually takes three days to complete. Students must log at least 300 minutes of bottom time under direct instructor supervision.
- B. Training must take place at two or more different sites. Caves with two or more distinct entrances or which have two main lines leading from a single entrance may count as different sites.
- C. The requirements for multiple sites do not apply if there are no other sites available within 200 km/75 miles.

2.9.4 Student Prerequisites

- A. Students must hold NSS-CDS open-circuit Cave Diver certification, or equivalent.
- B. Students must also meet the prerequisites for the CCR Cave Diver course.

2.9.5 Instructor Prerequisites

Instructors must be authorized to teach the NSS-CDS CCR Cave Diver course.

2.9.6 Knowledge Development

- A. Instructors must review and ensure student mastery of the academic learning objectives listed for the NSS-CDS Apprentice and Cave Diver courses.
- B. Instructors must also cover the additional CCR-related subject matter listed in the CCR Cave Diver course standards.

2.9.7 Land Drills

Instructors must review guideline/reel techniques.

2.9.8 Open Water Drills

Instructors must conduct an open-water evaluation dive prior to any cave dives.

2.9.9 Overhead Environment Exercises

Instructors must cover the CCR-related skills as outlined in the CCR Cave Diver course standards. Additionally, at their discretion, instructors may include any skills from the Apprentice and Cave Diver courses to ensure student mastery of the material.

Section 3: NSS-CDS Special Programs and Specialty Courses



3.1 Stage Cave Diver

Unless otherwise noted, all requirements listed under 2.1 Training Programs apply to the course.

3.1.1 Purpose

The Stage Diving Specialty course exposes trained cave divers to the fundamentals of safe stage cylinders use for extended penetration of underwater caves. Students build practical experience in planning dives that may incorporate:

- A. Longer bottom times.
- B. Longer decompression obligations.
- C. Complex dive planning.
- D. Multiple methods of gas management while under controlled conditions.

This course covers safety and conservation practices along with procedures and techniques common while stage diving. Instructors teaching the NSS-CDS Cave 2 course are to integrate these requirements into it.

3.1.2 Limits of Training

- A. Penetration limited to one-third or less of twin diving cylinders, having a minimum starting volume of 2,100 L/75 ft³ for consideration of skills development on short dives, and one third or less of total gas volume with at least 6,400 L/225 ft³ for penetration dives.
- B. Depths not to exceed 40 m/130 ft.
- C. 6 m/20 ft minimum starting visibility.
- D. No equipment removal in caves except for decompression and stage cylinders.
- E. No diver propulsion vehicle use in caves.

3.1.3 Equipment Requirements

Suitably rigged stage cylinder(s) with regulator and team compatibility.

3.1.4 Course Duration and Location

- A. This course generally takes two days. Students must accrue at least 240 minutes of bottom time over at least four dives.
- B. Training must take place at two or more different sites. Caves with two or more distinct entrances or which have two main lines leading from a single entrance may count as different sites.

3.1.5 Student Prerequisites

To be taught as a stand-alone course students must have NSS-CDS Cave 2 level of training or equivalent.

3.1.6 Student Ratios and Instructor Requirements

- A. Maximum student-to-instructor ratio of 3:1.
- B. To conduct this level of training an NSS-CDS Instructor shall be an Active status NSS-CDS Cave 2 Instructor for at least one year and have:
 - 1. Taught at least four complete NSS-CDS Cave 2 courses.
 - 2. Made at least 25 logged non-training related stage dives.
 - 3. Logged at least 200 cave dives.
 - 4. Co-taught at least one Stage Diving course with an NSS-CDS Stage Diving Specialty Instructor.
 - 5. Approval of Training Chairman.
- C. Please refer to Section 4 of Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.

3.1.7 Knowledge Development

- A. When teaching as a stand-alone course, Instructors must ensure students are still able to meet the academic performance objectives listed in the NSS-CDS Cave 2 course standards.
- B. Additionally, the following topics must be covered during the course:
 - 1. Motivations for extended time and penetration
 - 2. Task loading
 - 3. Equipment considerations:
 - 4. Cylinder sizes
 - 5. Rigging for backmount and/or sidemount configuration
 - 6. Streamlining
 - 7. Gas planning and gas management techniques
 - 8. Total Gas planning
 - 9. Different mixes
 - 10. Bottle marking and depth considerations
 - 11. Dive planning and decompression obligations
 - 12. Stage diving techniques suitable for the cave environment
 - 13. Dropping and retrieving stage cylinders

- 14. Team drop or individual drop considerations
- 15. Preset drop point
- 16. Cave conservation
- 17. Gas volume drop

3.1.8 Open Water Drills or Practice

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Open water or in-cavern practice of dropping and recovering stage cylinders while maintaining neutral buoyancy and horizontal body position.

3.1.9 Overhead Environment Exercises

- A. While carrying one or more stage bottles, move efficiently using appropriate propulsion techniques, including modified flutter, frog kicks and pulling.
- B. While carrying one or more stage bottles, effortlessly maintain neutral buoyancy and horizontal body position while swimming, resting and deploying reels/spools and guidelines.
- C. Demonstrate the ability to safely drop and recover stage cylinders on all dives without making contact with the cave.
- D. While carrying one or more stage bottles, respond to a diver signaling out of gas by swapping stage bottles.
- E. Students must demonstrate the ability to drop, then locate, identify and properly attach a stage in simulated zero visibility while maintaining neutral buoyancy and horizontal body position.

3.2 Cave DPV Pilot

Unless otherwise noted, all requirements listed under 2.1 Standards Applying to all NSS-CDS Training Programs apply to the course.

3.2.1 Purpose

The purpose of the DPV (Diver Propulsion Vehicle) Pilot specialty course is to prepare the trained cave diver to demonstrate the safe operation of DPVs in underwater caves while under the direct supervision of a qualified Cave DPV Pilot Instructor.

- A. The student can build practical experience in the field under controlled conditions.

- B. Safety practices, procedures and techniques common to most DPVs used in this unique environment are covered.
- C. Conservation considerations such as low-impact operation are emphasized.
- D. Potential emergency situations are simulated, practiced in open water and after mastery, practiced in the cave.
- E. This class may also be taken on closed circuit rebreather (CCR) provided the diver meets all the requirements.

3.2.2 Course Duration and Requirements

- A. At least three days.
- B. A minimum of four DPV cave dives
- C. At least one open water session
- D. At least one DPV dive carrying a stage bottle.

3.2.3 Prerequisites

- A. NSS-CDS Stage Cave Diver level of training or equivalent
- B. At least 50 logged cave dives beyond the Cave Diver level (not including training dives).

3.2.4 Knowledge Development

- A. Safety procedures including run-away DPV, towing a disabled DPV, gas sharing while operating a DPV, operating a DPV while exiting on a backup light.
- B. Knowledge of components of the DPV being used in the class including batteries, control mechanisms, weighting/balancing.
- C. DPV Technique - Prop wash, balancing, runaway, diver position, leash lengths.
- D. Gas management
 - 1. Gas planning should be based on each diver having sufficient gas necessary to share with a teammate on exit. Strategies may include: Having 1.5x the amount of gas to swim out from furthest penetration based on Respiratory Minute Volume (RMV) and swim speed,
 - a. Use of safety scooters
 - b. Use of stage bottles as safety bottles, etc.
 - 2. If gas consumption and swim speed are unknown, a swim dive must be made to calculate these. Essentially, the instructor and student must plan a full mission dive based on the identification of all the variables discussed above.

E. Advantages, hazards and challenges of DPV cave diving.

1. Advantages

- a. Speed
- b. Decreased exertion
- c. Less CO₂ buildup
- d. Lower gas consumption
- e. Further penetration

2. Hazards

- a. Impact with the cave, damaging equipment or yourself, (especially head)
- b. Running out of gas at great penetration
- c. Losing gas through free-flowing regulators or snagging hoses
- d. Running out of battery power
- e. Losing sight of the guideline
- f. Silt outs
- g. Entanglement in the guideline
- h. Guideline or debris fouling the prop

3. Challenges:

- a. Running a reel / spool
- b. Management of resources
 - i. Deploying a backup light
 - ii. Gas management (checking gauges)
 - iii. Switching regulators (sidemount, stage, failures)
- c. Communication
- d. Gas sharing
- e. Mission specific (photo, survey, etc.)

3.2.5 Open Water Drills or Practice

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Proper use and rigging of DPV.
- C. Tow harness and simulated towing technique and associated rescue techniques.
- D. Students must practice

1. Towing
 2. Gas sharing both in donor and recipient position,
 3. Staging the DPV,
 4. Runaway DPV,
 5. Avoidance maneuvers and speed matching in an appropriate open water environment that is a minimum of 15m/50 feet in linear, continuous length prior to entering a cave environment.
- D. This training must be practiced until mastery is achieved.

3.2.6 Cave Dives and Skills

- A. At least four cave dives using a DPV with a minimum of 150 minutes "On the Trigger". These four dives do not include the open water practice session(s).
- B. Prior to each dive
1. S-drill
 2. Confirmation of long hose deployment,
 3. Regulator breathing checks underwater
 4. Bubble checks
 5. Equipment checks
- C. Unless performed before the start of the course, Instructors must complete one dive exiting while swimming with a student carrying a stage in order to:
1. Define Surface Air Consumption (SAC) rates and swim speeds
 2. Ensure the student is carrying the stage bottle correctly
- D. Exit the cave while simulating gas sharing and using DPVs in simulated limited visibility while maintaining visual/touch contact with the guideline as appropriate. Divers shall not be hard linked to one another during gas sharing.
1. Divers should practice gas sharing where in one scenario the Out of Air (OOA) diver is in front and the next scenario OOA diver in back.
 2. Divers in back must be able to immediately unlink from the diver in front.
 3. Instructors must discuss and define exactly how far divers with a disabled DPV can swim out of the cave.
- E. Simulate the removal of a disabled DPV from the cave, both by utilizing DPV towing procedures with one active DPV and by swimming the disabled DPV for a distance within the cave.
- F. Demonstrate anti-silting techniques and guideline referencing.

- G. Simulate total loss of visibility.
- H. Discuss restriction negotiation.
- I. Demonstrate deployment of primary and jump reels.
- J. Discuss staging DPV, depending on the cave and the situation.
- K. Demonstrate towing. The dead scooter will be clipped to the scooter D-ring, and the one being towed holding the crotch strap of his buddy.
- L. Gas sharing. Two options: out of gas diver in front and at the back.
- M. Demonstrate managing a runaway scooter.
- N. Demonstrate swimming with staged DPVs in touch contact in a simulated zero vis situation.
- O. Discuss management techniques for flooded DPV, both leaving and carrying out of the cave.
- P. Complete at least one dive carrying a stage bottle to extend penetration distance
 - 1. Must not be done on dive #1 or dive #2.
 - 2. Proof of adequate multi-stage diving in a cave is also acceptable.
- Q. Discuss team management of stages, including dropping at the same spot, dropping at different spots, never dropping.
- R. Record speeds while on DPV, swimming with staged DPV and towing a diver with a dead scooter.
- S. Discuss Complex Navigation

3.2.7 Equipment Requirements

All equipment listed in the Cave Diver course with the following additions:

- A. Dive cylinder configuration may consist of any twin cylinder configuration agreed to by the instructor and student(s).
- B. Suitably outfitted diver propulsion vehicle. DPV type should be compatible with the cave systems chosen for dives.

3.2.8 Limits of Training

- A. Each diver must reserve enough gas to get two divers out of the cave while swimming.
- B. Minimum starting gas volume of 4530L/160 cubic feet.
- C. Depths not to exceed 40 m/130 ft.
- D. 6 m/20 ft minimum starting visibility.

- E. equipment removal in the cave (except for decompression cylinders, stage cylinders and/or DPV).

3.2.9 Student Ratios and Instructor Requirements

- A. Maximum student-to-instructor ratio of 2:1; an instructor intern or certified cave dive master does not count against this ratio.
- B. To conduct this level of training, an NSS-CDS Instructor shall be an Active Status Cave Diver Instructor for at least one year
 - 1. Be a stage cave diver instructor
 - 2. Taught at least four complete Cave Diver courses.
 - 3. Have at least 50 logged non-training related DPV dives.
 - 4. Have at least 200 logged cave dives.
 - 5. Co-taught at least two DPV pilot training courses with an NSS-CDS DPV Pilot Specialty Instructor and one course with an NSS-CDS Instructor Evaluator who is also a DPV Pilot Specialty Instructor.
 - 6. Approval of Training Chairman based on approved Standards and Procedures requirements.
- C. Please refer to Section 4 of Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.

3.3 Advanced Sidemount Diving

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

3.3.1 Purpose

This course is entitled advanced sidemount since sidemount is used in all levels of overhead environment training. This course covers the use of stage cylinders, how to ride a DPV in sidemount configuration, how to deal with restrictions advanced gas management techniques and smaller areas where real sidemount techniques are required under the direct supervision of a qualified Advanced Sidemount Diving Specialty Instructor.

3.3.2 Course Duration

At least two days.

3.3.3 Prerequisites

NSS-CDS Cave Diver level of training or equivalent. Cave DPV Pilot Sidemount experience

3.3.4 Knowledge Development

- A. Analysis of the limitations of back-mounted cylinder configurations.
- B. Sidemount cylinders as an alternative considering such factors as steep climbs, the need to lower equipment, limited gas fills, remote sites, long walks to the site and rough terrain.
- C. Equipment setup including outfitting of cylinders with rings and snaps as required, regulators and hoses, lights, use of reels and buoyancy compensator.
- D. Physical aspects including tunnel size, visibility, line traps, restrictions and independent team members.
- E. Gas management including low visibility and balancing reserve in cylinders.
- F. Dive team relations.
- G. Conservation including small cave passage and damage avoidance, avoiding unusual formations and route selection.

3.3.5 Land/Open Water Drills or Practice

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. None required. A sidemount familiarization dive may be performed in open water or the cavern zone at the discretion of the instructor.

3.3.6 Cave Dives and Skills

At least three sidemount cave dives will be made.

3.3.7 Equipment Requirements

All equipment listed in the Cave Diver course with the following additions:

- A. Suitably rigged sidemount harness and buoyancy compensator or jacket BC rigged for sidemount.
- B. Two single cylinders with regulators suitably rigged for sidemount diving.
- C. A variety of snaps, clips, rings and any optional special mounting plates or devices as required.
- D. Note a 5 foot/1.5 m intermediate-pressure hose is not required.

3.3.8 Limits of Training

- A. Penetration limited to one-third or less of twin diving cylinders and one-third or less of stage cylinders.
- B. Minimum starting gas volume of 3,100 L/110 ft³.
- C. Depths not to exceed 40 m/130 ft.
- D. No training will be conducted in those sites in which visibility is expected to drop below 3 m/10 ft.

Note: The nature of sidemount diving could expose the student(s) to situations in which low visibility may be encountered. Therefore, visibility during training shall never be allowed to deteriorate beyond the point in which the student(s) can clearly see and identify the instructor or the instructor can clearly see and identify the student(s). Should visibility deteriorate, the dive shall end at once.

3.3.9 Student Ratios and Instructor Requirements

- A. Maximum student-to-instructor ratio of 2:1 with at least 6 m/20 ft of visibility and 1:1 with visibility of less than 6 m/20 ft but more than 3 m/10 ft.
- B. To conduct this level of training an NSS-CDS Instructor shall be an Active Status Cave Diver Instructor for at least one year and meet the following criteria:
 - 1. The instructor shall have completed teaching at least four complete Cave Diver courses.
 - 2. The instructor shall have logged at least 50 non-training related sidemount dives.
 - 3. Have at least 200 logged cave dives.
 - 4. Co-taught at least one Sidemount Diving Specialty course with an NSS-CDS Sidemount Diving Specialty Instructor.
 - 5. The instructor shall have sidemount experience with more than one type or size of sidemount cylinders.
 - 6. Approval of Training Chairman based on approved Standards and Procedures requirements.
- C. Please refer to Section 4 of NSS-CDS Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.

3.4 Underwater Cave Surveying

3.4.1 Purpose

The purpose of the Underwater Cave Surveying specialty course is to introduce the trained cave diver to the basic fundamentals of surveying underwater caves while under the direct supervision of a qualified Underwater Cave Surveying Specialty Instructor.

This course is intended to motivate more divers to survey caves, encourage the use of cave maps in dive planning and increase the quantity and quality of published cave maps. Additionally, this program is designed to assist in promoting standardization for all survey projects.

The course material reviews early surveys and the development of standards and procedures. The seven phases of the survey process, from conception to completion of a survey, are discussed. Topics covered in full detail include accuracy standards, composition of the survey team, use and fabrication of special tools, survey techniques and methodology, safety considerations, data manipulation and mathematical calculations, symbology, cartography, copyright and publication.

3.4.2 Program Duration

Approximately two days.

3.4.3 Prerequisites

NSS-CDS Cave Diver level of training or equivalent.

3.4.4 Knowledge Development

- A. History of surveys.
- B. Motivations to survey.
- C. The survey process, including dive planning and survey dives.
- D. Accuracy.
- E. The survey team including communications.
- F. Special tools, equipment and techniques including compass reading and compass errors.
- G. Techniques including tie-off/station selection, vertical surveying, large chambers, long passages, radial surveys and sketching.
- H. Safety.
- I. Reducing data including verification and data preparation.
- J. Cartography including single line maps and higher-grade maps.
- K. Copyright and publication.

3.4.5 Land Drills

Practical application of the techniques and mathematical procedures presented in the classroom will be conducted on dry land.

3.4.6 Cave Dives and Skills

- A. At least two cave survey dives are required. The instructor may require more than two cave survey dives.
- B. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**

3.4.7 Equipment Requirements

- A. Note pad, pen and pencils.
- B. Graph paper.
- C. Scaling ruler.
- D. Circular protractor.
- E. Basic calculator (can square and extract square roots) or scientific calculator.

3.4.8 Course Texts and References

Basic Underwater Cave Surveying by John Burge, NSS-CDS, 1989.

3.4.9 Limits of Training

- A. Penetration limited to one-third or less of twin diving cylinders and one-third or less of stage cylinders.
- B. Minimum starting gas volume of 3,100 L/110 ft³.
- C. Depths not to exceed 40 m/130 ft.
- D. 20 ft/6 m. minimum starting visibility.
- E. No equipment removal in cave (except for decompression cylinder).
- F. No diver propulsion vehicles in caves.

3.4.10 Instructor Requirements

- A. To conduct this level of training an NSS-CDS Instructor shall be an Active Status Cave Diver Instructor for at least one year and meet the following criteria:
 - 1. The instructor shall have completed teaching at least four complete Cave Diver courses.
 - 2. The instructor shall have logged at least 20 non-training related survey dives.
 - 3. Have at least 200 logged cave dives.

4. Been a principal or key individual with at least one underwater cave survey project (name should be listed on final map), having displayed the resulting cave map at an NSS-CDS Workshop, published it in "Underwater Speleology," donated it to the NSS-CDS or entered it in competition at the national NSS Cartography Salon.
- B. Approval of Training Chairman based on approved Standards and Procedures requirements.
- C. Please refer to Section 4 of Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.

3.5 Cartography

3.5.1 Purpose

This NSS-CDS Special Program is data management-oriented and is designed to introduce the basics of underwater cave map presentations. The program's goal is to develop the ability to complete the surveying and map-making process and actually produce a map.

This program includes a brief review of surveying technique, manual and computer-aided data reduction, verifying data and correcting for errors, necessary materials and supplies and transforming data into the finished map.

Participation is open to anyone with an interest in underwater cave mapping. Participants are expected to have knowledge of cave diving and underwater surveying. While underwater activities and techniques are discussed, no underwater skill training or evaluation is provided.

3.5.2 Program Duration

At least one day.

3.5.3 Prerequisites

- A. None required.

3.5.4 Knowledge Development

- A. Safety, conservation, educational and scientific roles of maps.
- B. Analysis of current cave maps.
- C. Planning for map making.
- D. Materials selection.
- E. Data reduction.

- F. The basic rough plot and draft.
- G. Error detection and loop closure.
- H. Proportionality, style, labeling and map symbology.
- I. Adding data to the rough draft.
- J. Finalizing the map.
- K. Publishing.

3.5.5 Land/Open Water Drills or Practice

None required.

3.5.6 Cave Dives and Skills

None required.

3.5.7 Equipment Requirements

- A. Student provided materials:
 - 1. Note pad, pen and pencils.
 - 2. Graph paper.
 - 3. Scientific calculator.
 - 4. Other materials as specified by program instructor. Data reduction, drafting and inking supplies may be required for program use.
- B. Instructor provided materials:
 - 1. Program outline.
 - 2. Sample maps, references to survey grades and symbols. Supplemental reference list, data collection form and specifications for drawing supplies and media.

3.5.8 Course Texts and References

Basic Underwater Cave Surveying by John Burge, NSS-CDS, 1989.

3.5.9 Instructor Requirements

- A. To conduct the NSS-CDS Cartography Special Program, the Program Instructor shall be:

1. Active Status Cavern, Basic Cave, or Cave Diving Instructor. The NSS-CDS Instructor shall have completed teaching at least four complete NSS-CDS courses and have at least 20 logged survey dives and have completed the Underwater Cave Surveying Course. (Please refer to Section 4 of Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.), or...
 2. An active NSS-CDS member who has been approved by the NSS-CDS Cartography Committee Chairman and Training Chairman. The NSS-CDS member shall be trained to at least the Cave Diver level, possess the Abe Davis Award and have at least 20 logged survey dives.
- B. In addition to the above, the Program Instructor shall have:
1. Completed and published an underwater cave map for which he/she was the single or a principal cartographer.
 2. Displayed an underwater cave map at an NSS-CDS Workshop, published a map in *Underwater Speleology* or entered competition in the national NSS Cartography Salon for which they were the single or a principal cartographer.
- C. An NSS-CDS Cartography Program Instructor who is not a regular "Active Instructor" shall renew with the Training Chairman annually. There are no fees for this renewal.

3.6 First Responder

3.6.1 Purpose

First Responder Program is a Management-oriented program designed to introduce cave divers to the fundamentals of conducting, investigating and managing cave-diving related fatalities and recovery. NSS-CDS Instructor Trainers/Evaluators will be trained to conduct this program initially. Trainers/Evaluators will then be tasked to provide this coursework to the instructors that they sponsored.

Instructors may also be qualified by working with approved IUCRR representatives. Notification to the training chairman that the coursework has been completed is required so as to update the instructor training database.

3.6.2 Program Duration

A. Classroom presentations.

3.6.3 Instructor Requirements

Must be an Advanced Cave Instructor.

3.7 Trimix Cave Diver: Open Circuit or Closed-Circuit Rebreather Course

The purpose of the Trimix Cave Diver course is to provide the Cave Diver training for the safe planning and execution of mixed gas diving in caves to depths not exceeding 90 m/300 ft. The diver will be introduced to the proper and safe use of helium as a breathing gas, along with oxygen and nitrox for staged decompression. This course will emphasize precision and accuracy in all aspects of the dive beginning with advanced pre-dive planning. Safety will be a primary focus of this course due to the depths to which dives will be made.

3.7.1 Course Duration

Course duration shall be a minimum of four days.

3.7.2 Prerequisites

- A. Minimum of 21 years of age.
- B. NSS-CDS Cave Diver or the equivalent.
- C. Minimum of 50 logged non-training cave dives after completion of Cave Diver.
- D. Must be trimix certified from a recognized training agency or taking this course in conjunction with a trimix course.
- E. Rebreather option: Must be qualified as a Normoxic Rebreather Diver, or if entering the Program based on equivalent experience, must be qualified as either open circuit Normoxic Trimix Diver or open circuit Trimix Diver or must be taking the Normoxic Rebreather Diver and Trimix Diver course on an approved Rebreather for mixed gas diving, with all dives other than confined water made on Trimix or Heliox. Note all Rebreather Trimix Divers must have completed the Normoxic Rebreather knowledge development program and skills.
- F. Rebreather option: 50 hours of dive time, post rebreather certification is required on the specific Rebreather for which the diver is being trained.

3.7.3 Knowledge Development

Class presentation with a field exercises and pre-dive planning and briefing including the following topics:

- A. Physics review
- B. Physiology, including:
 - 1. Equivalent Narcosis Depth
 - 2. Hypoxia
 - 3. Hyperoxia

4. Pulmonary (Whole Body) and Central Nervous System Toxicity
5. Anoxia
6. Narcosis (nitrogen, oxygen and helium)
7. Decompression Sickness
8. Nitrogen and helium absorption and elimination
9. Helium and nitrogen “bends”
10. Carbon dioxide
11. Sources, effects and prevention
12. Contributing factor to DCS, oxygen toxicity and nitrogen narcosis
13. Carbon monoxide- sources and effects
14. Helium
15. Properties
16. HPNS
17. Effects on respiration
18. Effectiveness as an insulator/alternatives
19. Inert gas isobaric counter-diffusion
20. Comparative rate of absorption and elimination
21. Purpose of use
22. Gas consumption while breathing helium-based gas mixtures
23. Hyperthermia
24. Hypothermia
- C. Psychological aspects
- D. Decompression gas options
 1. Oxygen
 2. Nitrox
 3. Air
 4. Helium
- E. Equipment considerations
 1. Equipment marking
 2. Gas analyzers
 3. Travel gas

4. Regulator performance and helium mixes
5. Suit inflation options
6. Dual buoyancy requirements
7. Rigging/configuration
8. Redundancy
- F. Dive computers, tables and available software
- G. Dive planning
 1. Dive plan
 2. Contingency planning
 3. Gas analysis and labeling
 4. Gas requirements
 5. Gas switches
 6. Oxygen and decompression cylinder placement
 7. Stage cylinder use, including gas contingency planning
 8. Oxygen limits
 9. Inert gas limits
- H. Emergency procedures
 1. Omitted decompression/DCS
 2. Regulator and other equipment failure
 3. Loss of gas
 4. Nitrogen narcosis
 5. Oxygen toxicity
 6. Psychological aspects
- I. Accident Analysis
- J. Specific hazards of deep cave diving
- K. Mixing and Blending (Optional)
 1. Optimal mixes
 2. Trimix, heliair and heliox
 3. Hypoxic, normoxic and hyperoxic gas mixes
 4. Blending options
 5. Stratification

6. Gas boosting with oxygen and/or helium
 7. Gas analysis
 8. Cylinder top-offs and calculations
- L. Rebreather option: For those who are already O/C Trimix Divers this class must include a confined water session and a minimum of 150 minutes of in water training time, using Trimix or Heliox, completed within at least two open-water or overhead-environment dives.

3.7.4 Land/Open Water Drills

Minimum of one open water dive during which designated drills will be conducted.

Prior to the execution of any cave dive, the student shall satisfactorily complete the following open water drills:

- I. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- J. Swim a measured line for ten minutes in full equipment- including staged decompression and oxygen cylinders.
- K. Execute a series of decompression and oxygen cylinder drops and retrievals along a measured line. This drill shall be performed both in good visibility conditions and in simulated zero visibility by use of a blacked-out mask or other technique.
- L. Initiate a gas share and swim a measured line in full equipment for a period of ten minutes.
- M. Simulate an out of gas ascent from a depth of no greater than 18 m/60 ft with simulated decompression stops. Under no circumstance shall this drill be performed at a point that any diver in the team has accumulated required decompression.
- N. Perform a timed valve shutdown. The diver should have the ability to complete this exercise in no more than 60 seconds.

3.7.5 Cave Dives and Skills

Minimum of one shallow (less than 40 m/130 ft) cave dive during which SAC and foot per minute travel rates are measured, cylinder drops and retrievals are executed and a gas share procedure is executed.

Minimum of three cave dives having a minimum depth of 55 m/180 ft and a maximum depth of 90 m/300 ft. Each member of the dive team shall:

- A. Prepare and precisely execute a dive plan.
- B. Participate in a complete detailed pre-dive briefing.
- C. Properly analyze and label all cylinders to be used for the dive.

- D. Properly calculate gas turns based on pressure and volume of all team members.
- E. Execute full and complete in-water pre-dive safety checks.
- F. Demonstrate the ability to safely and efficiently execute oxygen and decompression cylinder drops and retrievals.
- G. If stage cylinders are utilized, proper gas planning, cylinder drops and retrievals and contingency planning for cylinder placement for depths greater than the MOD of stage cylinder gas and gas use at higher than expected rates.
- H. Demonstrate the ability to safely and efficiently execute required gas switches.
- I. During the dive, demonstrate above-average execution of cave trim, technique and awareness.
- J. At the conclusion of each dive, convey to the instructor a level of awareness and confidence consistent with the advanced nature of the dive.

No emergency drills shall be conducted at any time during a deep cave dive and no equipment removal shall occur except for oxygen and decompression cylinders.

3.7.6 Equipment Requirements

In addition to all equipment required as a Cave Diver, the following:

- A. Properly rigged and labeled decompression cylinder(s) of a minimum rated volume of 11 L/80 ft³.
- B. Properly rigged and cleaned oxygen cylinder(s) of a minimum rated volume of 5.5 L/40 ft³.
- C. Trimix computer and backup bottom timer/depth gauge and backup tables appropriate for the planned dive or two bottom timer/depth gauges and tables appropriate for the planned dive.
- D. Spare mask.
- E. Oxygen and helium gas analyzers (may be provided by instructor).
- F. Text as prescribed by the NSS-CDS Trimix Cave Diver Specialty Instructor.
- G. Rebreather Option: The student being trained must own or have unlimited access to the rebreather on which they are being trained.

3.7.7 Limits of Training

- A. Equivalent Narcosis Depth (END) shall not exceed 100-130 ft/ 30-39 m.
- B. Pre-dive planning will provide for a PO₂ not to exceed 1.4 ATA for the working portion of the dive or 1.6 ATA for decompression purposes.

- C. Minimum starting visibility shall be 6 m/20 ft.
- D. Penetration shall be limited to not greater than one-third of doubles and one-third of stage cylinder(s) if used.
- E. Maximum depth shall not exceed 90 m/300 ft.
- F. One-third gas rule is the maximum rule for all cylinders- except for decompression cylinders- on all dives. This maximum rule may be reduced to less than one-third at the instructor's discretion. The dive plan shall provide for a 1.5 margin of reserve for decompression gas for the planned dives.
- F. No equipment removal in cave except for decompression and stage cylinders.
- G. No use of diver propulsion vehicles.
- H. Rebreather option: (CCR) Inspired oxygen partial pressure may not exceed 1.3 PO₂ on a dive or 1.4 PO₂ on decompression. At 6 m/20 ft a flush to 1.6 may be used to check cell performance.
- I. (CCR) If using a CCR dives must be conducted using an on-board diluent mixture containing not more than 1.1 PO₂.

3.7.8 Completion Requirements

- A. Completion of all requirements of the NSS-CDS Trimix Cave Diver course.
- B. Completion of the NSS-CDS Trimix Cave Diver written examination with a grade of 80% or higher.
- C. During the course, demonstration of a high proficiency level in all phases of dive planning and execution.
- D. Demonstration of a clear awareness and appreciation of the heightened level of risk involved in the activity of deep cave diving. A cavalier or otherwise disrespectful attitude is grounds for incompleteness of this course.
- E. Rebreather Option:
 - 1. Perform Leak test
 - 2. Perform Lost gas drill
 - 3. Perform simulated bailout procedures with OC and buddy OC
 - 4. Following a means of reference (pool wall, guideline, ship railing, etc.) with eyes closed, remove stage cylinders and swim a distance of at least 5 m/15 ft. Reverse direction, return to stage cylinders and replace them on correct sides, identifying each cylinder by feel.
 - 5. Simulate the rescue of a diver. Tow the diver on the surface for a distance of at least 12 m/40 ft while simulating mouth-to-mouth resuscitation.

6. Ascend or swim laterally using bailout for at least 9 m/30 ft from a depth of at least 60 m/200 ft. Record time lapsed and gas used.
7. Perform SCR bailout for a minimum of ten minutes on at least one dive.
8. Exchange bailout cylinders or deploy long hose to a buddy on at least one dive.

Note: The NSS-CDS Trimix Cave Instructor shall require rigorous precision and accuracy from the students at this level of training. Only those students who demonstrate high proficiency and awareness levels and the utmost respect for the deep cave environment will be issued a training completion card at this level.

3.7.9 Instructor Requirements

To teach Rebreather Trimix, the Instructor must be a Trimix Rebreather Instructor or higher. The instructor may teach only the category Rebreather CCR, SCR, or PSCR their Trimix rebreather instructor qualification is on. Once qualified as a Rebreather Trimix Instructor, the instructor may use any rebreather they are at least diver-qualified on to teach Trimix Rebreather Diver programs. For example: A Rebreather Trimix Instructor who trained as a Rebreather Trimix Instructor on a CCR O₂ptima may teach a Trimix Diver-level course while using any other CCR that the instructor, at minimum, is diver-qualified on. The Rebreather Trimix Instructor may teach students on all rebreathers the instructor is diver-qualified on, provided they are a Rebreather Trimix Instructor in that category; CCR, SCR.

- A. NSS-CDS Cave Instructor in current teaching status for a minimum of at least two years, have completed a minimum of eight (8) Cave courses, a minimum of six (6) TDI, IANTD or equivalent Advanced Trimix (or equivalent) courses and approved by the Training Chairman to teach the Trimix Cave Diver Specialty Course.
- B. IANTD or TDI Advanced Trimix Instructor or the equivalent.
- C. Proof, either by logbook, referral by a current teaching status NSS-CDS Trimix Cave Diver Instructor or approval on review of the Training Chairman, of a minimum of 50 cave dives to depths exceeding 60 m/200 ft, 20 of which shall have been to depths greater than 75 m/250 ft.
- D. Final approval by the Training Chairman to teach this course based on approved Standards and Procedures requirements.
- E. Maximum student to instructor ratios:
 1. Classroom: 6:1
 2. Open Water: 6:1
 3. Shallow cave drills: 3:1
 4. Deep cave dives: 3:1

- F. When emergency drills are conducted, the instructor shall be within easy and manageable swimming distance of the students.
- G. Instructor shall use cave configured equipment with double tanks and dual outlet manifold mandatory. Unless the rebreather option is being used. The instructor's gas supply- both as to quantity and content- in all cylinders, including decompression and stage cylinders, shall be consistent with that used by the students.
- H. Instructor shall have a first aid kit and oxygen available for surface support.
- I. Refer to Section 4 of Standards and Procedures for general procedures and requirements regarding NSS-CDS Specialty Instructor ratings.
- J. Rebreather option: A Trimix Instructor or higher may teach this course.

3.8 NSS-CDS Tech Nitrox and Cave Decompression

Unless otherwise noted, all requirements listed under 2.1 Training Programs apply to the course.

3.8.1 Purpose

The NSS-CDS Cave Decompression course is intended to train divers in decompression strategies, emergency management, and proper procedures for utilizing EAN-21 through 100% oxygen while conducting cave dives requiring staged decompression.

Graduates will be qualified to conduct decompression dives in the cave environment utilizing 50% to 100% oxygen to accelerate decompression provided:

- A. The diving activities approximate those of training
- B. The areas of activities approximate those of training
- C. Environmental conditions approximate those of training

3.8.2 Limits of Training

Penetration limited to one-third or less of twin diving cylinders, having a minimum starting volume of 2,100 L/75 ft³ for consideration of skills development on short dives, and one third or less of total gas volume with at least 4,200 L/150 ft³ for penetration dives.

- A. Depths not to exceed 40m/130 ft. If the student holds a certification allowing them to use helium-based gasses, the maximum training depth remains 40m/130 ft. with an END shallower than 30m/100ft.
- B. No equipment removal in caves except for decompression or stage cylinders.

3.8.3 Equipment Requirements

- A. Each diver must wear full cave diving equipment (backmount doubles or sidemount) with the addition of the following:
 - 1. Oxygen decompression cylinder clearly labeled “Oxygen 6” OR “Oxygen 20” on each side of the tank in approximately 2-inch (5 cm) lettering. The daily analysis sticker, labeled with the date, initials of the diver who analyzed the cylinder, fill pressure, and fraction of oxygen to one decimal place, should be placed where the diver can easily read it when performing a gas switch.
 - 2. 1 decompression regulator and SPG which is rated for oxygen service.
 - 3. Access to an oxygen analyzer which may be supplied by the instructor

3.8.4 Course Duration and Location

- A. 4 cave dives must be conducted over a minimum of 2 days.
- B. If combined with the NSS-CDS Apprentice Cave, Cave Diver, DPV Cave or Stage Cave Diver courses, only 2 additional dives must be completed, but a minimum of 4 decompression dives must be executed throughout the entirety of training.

3.8.5 Student Prerequisites

- A. Minimum age 18.
- B. Minimum certification of NSS-CDS Nitrox Diver, or equivalent.

3.8.6 Student Ratios and Instructor Requirements

- A. Maximum student-to-instructor ratio of 3:1 unless combined with NSS-CDS DPV Cave, in which case it is 2:1.
- B. To conduct this level of training an NSS-CDS Instructor shall be an Active status NSS-CDS Cave 1 Instructor as well as an NSS-CDS Cave Decompression Instructor.
- C. If combining this course with the NSS-CDS DPV Cave Diver or Stage Cave Diver courses, the instructor must be an instructor in the specialty being taught.

3.8.7 Knowledge Development

Instructors are permitted to use other agency e-learning materials, texts or reference materials in the presentation of these topics.

A. Overview of Decompression Safety Stops Compared to Required Stops

B. Physics

1. Pressure review

C. Physiology

1. Mechanics of bubble formation
2. Advantages of hyperoxic mixes for decompression
3. Oxygen Toxicity
 - a. Whole body oxygen toxicity unity (otu's)
 - b. Central Nervous system (cns)
4. Nitrogen absorption and elimination
5. Nitrogen Narcosis
6. Carbon dioxide toxicity
7. Carbon monoxide toxicity
8. Ascent / Descent rates
9. Hyperthermia
10. Hypothermia
11. Psychological aspects
12. Task loading
13. Stress
14. Panic
15. Time management v. Equipment

D. Equipment Considerations

1. Backmount doubles vs side mount
2. Stage cylinder rigging
3. Regulator configuration
4. Computer vs bottom timer

5. Less than 40% oxygen
 6. More than 40% oxygen
 7. Considerations for titanium first stage bodies
- E. Decompression Options
1. Enriched air Nitrox (EAN) used as a decompression gas i.e., 50% or 100%
 2. Oxygen for decompression
 3. Advantages/disadvantages of multiple gas switches
- F. Dive Tables vs Computers
1. Introduction and review of different models
 2. Use of dive planning software
 3. Use of decompression capable dive computers
 4. Adjusting decompression schedules
- G. Dive Planning
1. Best Mix computations
 2. Maximum operating depth (MOD) of mixture computations
 3. Estimating time, distance, and deco obligation based on available gas
 4. Gas volume requirements
 5. Oxygen limitations
 6. Nitrogen limitations
- H. Procedures
1. Analysis and Labeling of cylinders
 2. Dropping decompression cylinders
 3. Performing staged decompression ascents
 4. Retrieving Decompression cylinders
 5. Switching to a decompression gas
 6. Back Gas Breaks
- I. Emergency Procedures
1. Loss or theft of deco cylinder
 2. Regulator free flow
 3. Rescue toxing diver

3.8.8 Land Drills

- A. Analysis and labeling of decompression cylinders as previously described
- B. Dropping decompression cylinders
- C. Retrieving decompression cylinders
- D. Gas switches

3.8.9 Open Water Drills and Practice

- A. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**
- B. Open water or in-cavern practice of dropping and recovering decompression cylinders while maintaining neutral buoyancy and horizontal body position.

3.8.10 Overhead Environment Exercises

All Drills must be completed neutral and in horizontal trim (within approximately 20 degrees of horizontal) without touching the surrounding environment or losing position on the line.

- A. Properly demonstrate ability to drop decompression cylinders
- B. As a team, calculate and communicate decompression obligation before initiating ascent
- C. Perform staged decompression ascents
- D. Properly demonstrate ability to retrieve decompression cylinder
- E. Properly perform gas switches
 - 1. Check the Mix of the cylinder
 - 2. Open the valve
 - 3. Check the depth
 - a. Ensure a teammate OK's the switch prior to the diver breathing from the decompression regulator.
 - b. Change the dive computer
- F. Switching from decompression gas to back gas
- G. Properly Demonstrate Emergency Procedures
 - 1. Adjusting ascent profile on the fly
 - 2. Regulator free-flow

- a. Flutter valve if possible
 - b. Consider the gas lost
- 3. Lost decompression gas strategies
 - a. Share with teammate
 - b. Use of bottom gas for decompression
- 4. Adjust ascent schedule
 - a. Rotate available deco gas between team members at alternating stops
 - b. Increase last stop by 1.5 times, rotating decompression gas at reasonable interval based on remaining deco.
- 5. Simulated rescue of an incapacitated diver

3.9 NSS-CDS Nitrox Diver

Unless otherwise noted, all requirements listed under 2.1 Training Programs apply to the course.

3.9.1 Purpose

The NSS-CDS Nitrox Diver course is intended to train divers to utilize Enriched Air Nitrox mixtures up to 40% as a breathing medium with the aid of a programmable nitrox computer. The course may be taught as a stand-alone specialty course to certified divers or the knowledge and skills training may be integrated into other NSS-CDS certification courses.

Graduates will be qualified to conduct Enriched Air Nitrox dives with a single gas of no greater than 40% oxygen and not requiring mandatory in-water decompression stops or dives using more than one breathing gas and/or rebreathers provided:

- A. The diving activities approximate those of training
- B. The areas of activities approximate those of training
- C. Environmental conditions approximate those of training

3.9.2 Limits of Training

- A. Depths not to exceed 40m/130 ft.
- B. If the course is combined with those requiring dives, see Limits of Training for that specific course

3.9.3 Equipment Requirements

- A. The following equipment is required for student use:
- B. Nitrox Cylinder
 - 1. Cylinder with gas suitable for calibration
 - 2. Oxygen Analyzer which may be supplied by the instructor
 - 3. Stickers for marking cylinders
 - 4. Sample Nitrox log
 - 5. Nitrox Diving Computer
- C. If the course is combined with those requiring dives, see Equipment Requirements for that specific course.

3.9.4 Course Duration and Location

- A. Academic Presentation and Practical Application
- B. If combined with courses requiring dives, the maximum depth for any dive incorporating this course is 40m/130 ft. or 1.4 ATM with 1.6 ATM PO₂ as a contingency, whichever is less. No dives are to require actual staged decompression. However, simulated staged decompression may be added to the ascent of a no required-stop dive.
- C. If combined with other NSS-CDS courses, the dive requirements for those courses apply.

3.9.5 Student Prerequisites

- A. Minimum age 18.
- B. Minimum certification of Open Water Diver, or equivalent.
- C. If combined with other NSS-CDS courses, the Student Prerequisites for those courses apply.

3.9.6 Student Ratios and Instructor Requirements

- A. Maximum student-to-instructor ratio is unlimited as long as adequate facilities, supplies and time are available to ensure comprehensive and complete training of the subject matter. If the course is combined with a course requiring dives, then the ratios of that course apply.
- B. Any active NSS-CDS Instructor may teach this course.

- C. If combining this course with an NSS-CDS Specialty course, the instructor must be an instructor in the specialty being taught.

3.9.7 Knowledge Development

Instructors are permitted to use other agency e-learning materials, texts or reference materials in the presentation of these topics.

- A. History of Enriched Air Nitrox
- B. Physics
 - 1. Daltons Law of Partial Pressures
- C. Physiology
 - 1. Oxygen
 - 2. Nitrogen
- D. Advantages and Disadvantages
 - 1. Use of nitrox for physiological advantage with a nitrox programmable dive computer.
 - 2. Use to extend no-decompression time or shorten surface intervals
 - 3. Oxygen Toxicity
 - a. Whole body oxygen toxicity unity (OTU's)
 - b. Central Nervous system (CNS)
- E. Equipment Considerations
 - 1. Less than 40% oxygen
 - 2. More than 40% oxygen
- F. Dive Computers
 - 1. Mix adjustable
 - 2. Oxygen Integrated
 - 3. Nitrox programmable computer
- G. Dive Planning
 - 1. Best Mix computations
 - 2. Maximum operating depth (MOD) of mixture computations
 - 3. Calculate PO₂ of gas at depth – (Daltons Diamond/ Circle T)
 - 4. Oxygen limitations

- 5. Nitrogen limitations
- 6. Equivalent Air Depth for demonstration only
- H. Common Mixing Procedures
 - 1. Partial pressure blending
 - 2. Continuous blending
 - 3. Membrane system
- I. Procedures
 - 1. Use of oxygen analyzer
 - 2. Analysis and labeling of cylinders
 - a. Analysis tag to contain a minimum of the date, initials and Oxygen percentage to the .1 decimal.
 - 3. Complete and sign a fill station's EAN fill log, including MOD and oxygen content.
- J. Emergency Procedures
 - 1. Hazards and Procedures for handling oxygen

3.9.8 Land Drills

- A. Analyze at least 2 nitrox cylinders (to the .1 decimal) and label cylinders in accordance with local practices and/or regulations.
- B. Log at least 1 nitrox cylinder analysis to include: MOD and oxygen content.
- C. Program a nitrox computer to a mix between 22-40 percent oxygen.
- D. Complete written or online exam with a minimum score of 80% with final remediation to 100%

3.9.9 Integrating into Courses Requiring Dives

- O. When integrating into courses requiring dives, all team members must properly analyze and label all cylinders.
- P. **No dives may begin until the instructor and all team members have individually analyzed and properly labeled their cylinders.**

Section 4: NSS-CDS Instructor Status



4.1 Relationship of NSS-CDS Instructors to the NSS- CDS Board of Directors

All NSS-CDS Instructors serve at the reasonable discretion of the Board of Directors of the NSS-CDS. The status of any NSS-CDS Instructor is ultimately controlled by the NSS-CDS Board of Directors and could be subject to change at any time for appropriate reasons or concerns of the Board.

4.2 Active Status Instructor

To conduct NSS-CDS sanctioned training courses, instructors must be in Active status with the CDS. To do so, instructors must:

- A. Provide proof of being in Active/Teaching status with at least one widely recognized diver training organization other than the NSS-CDS.
- B. Be a current member of the CDS.

- C. If teaching in the United States or teaching US citizens or residents, provide a current liability insurance certificate listing the NSS-CDS as an additional insured. Policy coverage must include technical diving courses.
- D. Attend and pass an in-person or online NSS-CDS Instructor update for the current year.
- E. Have made at least twelve non-training-related cave dives in the past twelve months.
- F. Have done at least one of the following:
 - 1. Taught at least one NSS-CDS course with at least two students.
 - 2. Assisted at least one other NSS-CDS Instructor with at least two NSS-CDS courses with at least four students.
 - 3. Observe, assist with or staff at least one NSS-CDS Instructor Evaluation.

4.3 Inactive Status Instructor

- A. An instructor who fails to meet the requirements for Active Status will revert to Inactive Status. During the first year of Inactive Status, the instructor may apply to the Training Chairman for reinstatement. In addition to meeting all the regular requirements (and fees) for Active Status, the instructor shall provide proof of having all current training materials issued to date.
- B. Should the period of Inactive Status exceed one year, the inactive instructor shall meet all the requirements listed above plus:
 - 1. Provide proof of having co-taught a class (with an Instructor Trainer or Evaluator) at the level to which the inactive instructor wishes to be reinstated. The Instructor Trainer/Evaluator and Training Chairman have the right to request additional training and/or co-teaching on the part of the Inactive Status instructor. The Instructor Trainers/Evaluator will sign an Instructor Intern Application form only when satisfied that the Inactive Status instructor is ready to resume Active Status.
 - 2. Attend an administrative session to be updated on current Standards and Procedures.
- C. An instructor can renew as Inactive Status for a maximum of three years. If during the fourth year, the instructor does not reactivate to Active Status, he/she may be considered for Instructor Emeritus.
- D. Inactive Status instructors shall first be reinstated to Active Status before they may request any other change in their status.

4.4 Provisional Status Instructor

This denotes any instructor with a written provision to be completed in order to qualify for Active Status. The instructor has 90 days to complete such provisions or he/she shall apply to the Training Chairman for an extension. The application shall be in writing and explain why the extension should be granted.

4.5 Instructor Emeritus

Instructor Emeritus describes a retired instructor who has maintained a continuous and active interest in the NSS-CDS training program. An Instructor Emeritus may apply for reinstatement as an Active Status instructor. The Instructor Emeritus shall meet all normal requirements for Active Status plus co-teach, with an Instructor Trainers/Evaluators, at least three classes at each level of training at which the Instructor Emeritus retired. The Instructor Emeritus, his/her Instructor Trainers/Evaluators and the Training Chairman have the right to request additional training and/or co-teaching on the part of Instructor Emeritus. The Instructor Trainers/Evaluators shall sign an Instructor Intern Application indicating that he/she is satisfied and that the Instructor Emeritus is ready to resume Active Status.

Once all paperwork has been received by the Training Chairman, a new certification card will be issued to the Instructor Emeritus. The certification card issued will include original instructor number, certification dates and certifying instructor. There are no NSS-CDS reinstatement fees for the Instructor Emeritus.

4.7 Specialty Instructor

This denotes an Active Status Cave Diver Instructor who has taken an interest in teaching a specific area of cave diving activity. The Specialty Instructor will have developed and demonstrated special knowledge and skills and have an ongoing personal involvement regarding the specialty subject. The applicant should already possess a standard Training Completion Card for that particular specialty.

To obtain a Specialty Instructor rating for a Specialty Course, the Cave Diver Instructor shall:

- A. Meet the instructor requirements listed for that Specialty Course.
- B. Submit a completed NSS-CDS Specialty Instructor Application, with all requested supporting documentation, including course descriptions and outlines that will be used to teach the Specialty.
- C. Be approved by the NSS-CDS Training Chairman based on approved Standards and Procedures requirements.
- D. The ability to teach the Specialty Course will renew automatically with instructor renewal. If an instructor becomes inactive for more than one year, all Specialty Course teaching credentials will be subject to review by the Training Chairman.

4.8 Special Program Instructor

This denotes an Active Status Cave Diver Instructor or NSS-CDS member who has taken an interest in teaching a specific area of cave diving activity that does not involve the supervision of divers underwater during any training. The Program Instructor will have developed and demonstrated special knowledge and skills and have an ongoing personal involvement regarding the Program subject. to obtain a Program Instructor Rating for a Special Program, the Cave Diver Instructor or member shall:

- A. Meet the experience requirements listed for that Special Program. The applicant should already possess a standard Training Completion Card for the Special Program.
- B. Submit a completed NSS-CDS Specialty Instructor Application, with all requested supporting documentation, including course descriptions and outlines that will be used to teach the Special Program.
- C. Be approved by the NSS-CDS Training Chairman, or the appropriate NSS-CDS Committee Chairman. (NSS-CDS BOD approval is required for the Recovery Program).
- D. The ability to teach a Special Program will renew automatically with instructor renewal. Those NSS-CDS members and non-active instructors who are Program Instructors should renew with the Training Chairman annually. There is no fee for renewing solely as a Program Instructor – *Special programs include Cartography*

Section 5: Leadership Standards



Blue Descent

5.1 Standard Applying to all Leadership Training

Unless otherwise noted, requirements listed previously under *Standards Applying to all NSS-CDS Courses* apply equally to NSS-CDS leadership training.

5.1.1 Prerequisites

- A. Be certified to the full Cave Diver level, or equivalent with a widely recognized diver training organization.
- B. Candidates in NSS-CDS leadership training programs must be an instructor in Active/Teaching status with at least one other widely recognized diver training organization.
- B. Candidates must be current members of both the NSS and CDS.
- C. Candidates living in the United States of America must have current professional liability insurance naming the NSS-CDS as an additional insured.
- D. Candidates must complete and sign an NSS-CDS Leadership Application prior to the start of training.

5.2 Apprentice Cave Instructor

This is the first step in NSS-CDS leadership development. At its completion, successful candidates may begin to teach a range of NSS-CDS courses.

5.2.1 Limits of Graduates

Candidates who successfully complete the requirements for NSS-CDS Apprentice Cave Instructor may:

- A. Independently conduct the following NSS-CDS programs:
 - 1. Cavern Diver.
 - 2. CDS Basics orientation.
 - 3. Apprentice Cave Diver

5.2.2 Course Duration and Location

The need to teach the equivalent of two complete NSS-CDS Apprentice Cave Diver course under Instructor Trainer/Evaluator supervision dictates the length of this program.

5.2.3 Candidate Prerequisite

- A. In addition to the requirements outlined under *Standards Applying to all Leadership Training*, candidates must meet all requirements for NSS-CDS Assistant Cave Instructor certification.
- B. Prior to their final evaluation, candidates must present a letter from either an NSS-CDS Instructor Trainer or Instructor Evaluator who is acting as their sponsor, attesting to their readiness to take part in the final part of this program.

5.2.4 Instructor Prerequisites

NSS-CDS Apprentice Cave Instructor evaluations must be staffed by at least one NSS-CDS Cave Instructor Trainer and one Cave Instructor Evaluator, or two Cave Instructor Evaluators.

5.2.5 Program Content

The Apprentice Cave Instructor program consists of two parts: Internship and Evaluation.

- A. *Internship*: During this part of the program, candidates conduct all land- and in-water skills from the NSS-CDS Apprentice Cave Diver course under the direct supervision of at least one Instructor Trainer or Evaluator. This may take place over the course of one or more such courses.
 - 1. The supervising instructor must record candidate performance on the NSS-CDS Apprentice Cave Instructor Training Record.
 - 2. This phase of the program is not over until the candidate can teach all skills to the supervising instructor's satisfaction.
 - 3. Upon completing this phase of the program, the candidate's sponsor is to write a letter attesting to the candidate's readiness to attend the final evaluation. This letter will go to the Instructor Evaluator conducting the final evaluation and become part of the candidate's permanent record.
- B. *Evaluation*: Final NSS-CDS Apprentice Cave Instructor evaluations involve having candidates teach all phases of an NSS-CDS Apprentice Cave Diver course under direct Instructor Trainer/Evaluator supervision. The candidate is to take the lead in all course activities. The evaluators will intercede only if necessary to ensure student learning and safety.
 - 1. The course will ideally involve actual students recruited by the instructor candidate.
 - 2. Candidates are responsible for ensuring their evaluators are compensated for their time and expenses.
 - 3. To pass the evaluation, candidates must teach all skills successfully.

4. Candidates may be placed on provisional status and will be unable to teach independently until they clear this status. The lead Instructor Evaluator is to confer with the Training Chairman to decide what provisions the candidate must clear before being granted Apprentice Cave Instructor certification.

5.2.6 Certification Requirements

Upon successful completion of all program requirements, instructors are to submit copies of the following to the Training Chairman for approval:

- A. Completed and signed NSS-CDS Leadership Application
- B. The letter from the candidate's sponsor indicating readiness for training
- C. Completed and signed NSS-CDS Apprentice Cave Instructor Training Record
- D. Candidate's current professional liability certificate, if required, showing the NSS-CDS listed as an additional insured.

Once the Training Chairman receives and approves the application package, we will direct the candidates to where he or she can pay the Apprentice Cave Instructor registration fee on the NSS-CDS online store.

5.3 Cave Instructor

This is the second step in NSS-CDS leadership development. At its completion, successful candidates may begin to teach a range of NSS-CDS courses.

5.3.1 Limits of Graduates

Candidates who successfully complete the requirements for NSS-CDS Cave Instructor may:

- A. Continue to perform all the duties and responsibilities of an NSS-CDS Apprentice Cave Instructor.
- B. Independently conduct the NSS-CDS Cave Diver course.
- C. Conduct any NSS-CDS Special Cave Diver courses for which they later qualify.

5.3.2 Course Duration and Location

The need to teach or assist with several complete NSS-CDS Apprentice Cave Diver or Cave Diver courses dictates the length of this program.

5.3.3 Candidate Prerequisite

- A. In addition to the requirements outlined under *Standards Applying to all Leadership Training*, candidates must meet all requirements for NSS-CDS Apprentice Cave Instructor certification.

- B. Candidates must have taught least four complete NSS-CDS Apprentice Cave Diver courses.
- C. Candidate must also observe or assist with the equivalent of at least three full NSS-CDS Cave Diver courses, during which they conduct all in-water teaching skills under instructor supervision. Instructors are to record this on the NSS-CDS Cave Instructor Training Record.
- D. Prior to their final evaluation, candidates must present a letter from either an NSS-CDS Instructor Trainer or Instructor Evaluator who is acting as their sponsor, attesting to their readiness to take part in the final part of this program.

5.3.4 Instructor Prerequisites

NSS-CDS Cave Instructor evaluations must be staffed by at least one NSS-CDS Cave Instructor Trainer and one Cave Instructor Evaluator, or two Cave Instructor Evaluators.

5.3.5 Program Content

- A. Final NSS-CDS Cave Instructor evaluations involve having candidates teach all of the land- and in-water skills of the NSS-CDS Cave Diver course under direct Instructor Trainer/Evaluator supervision.
 - 1. This will ideally involve actual students recruited by the instructor candidate.
 - 2. Candidates are responsible for ensuring their evaluators are compensated for their time and expenses.
 - 3. To pass the evaluation, candidates must teach all skills successfully.
 - 4. If candidates fail to teach skills to their evaluator's satisfaction, they must repeat the final evaluation process.

5.3.6 Certification Requirements

Upon successful completion of all program requirements, instructors are to submit copies of the following to the Training Chairman for approval:

- A. Completed and signed NSS-CDS Leadership Application
- B. The letter from the candidate's sponsor indicating readiness for training
- C. Completed and signed NSS-CDS Cave Instructor Training Record
- D. Candidate's current professional liability certificate, if required, showing the NSS-CDS listed as an additional insured.

Once the Training Chairman receives and approves the application package, we will direct the candidates to where he or she can pay the Cave Instructor registration fee on the NSS-CDS online store.

5.4 Cave Instructor Trainer

The NSS-CDS Cave Instructor Trainer rating takes the place of the old Instructor Sponsor certification. An Instructor Trainer may act as a sponsor for individual instructor candidates, however, under current standards the term *sponsor* refers to an action, not a rating.

5.4.1 Limits of Graduates

Candidates who successfully complete this process may perform all of the duties previously outlined for NSS-CDS Cave Instructor Trainers.

5.4.2 Program Duration and Location

The need for candidates to participate in several Instructor Institutes and other NSS-CDS training programs will dictate the duration and location of this process.

5.4.3 Candidate Prerequisites

- A. Hold an NSS-CDS Cave Instructor certification and be in Active status for at least two years.
- B. Have taught at least five NSS-CDS diver training courses resulting in the certification of at least ten students.
- C. Have observed or assisted with at least two NSS-CDS Instructor Institutes.
- D. Have obtained letters of recommendation from the Cave Instructor Evaluators who conducted the Instructor Institutes with which the candidate observed or assisted.

5.4.4 Certification

Certification as an NSS-CDS Cave Instructor Trainer may only be granted by the Training Chairman, upon receipt of documentation attesting to the fact a candidate has met all prerequisites.

5.5 Cave Instructor Evaluator

The NSS-CDS Cave Instructor Evaluator is the final step in the leadership training process.

5.5.1 Limits of Graduates

Candidates who successfully complete this process may perform all of the duties previously outlined for NSS-CDS Cave Instructor Evaluators.

5.5.2 Program Duration and Location

The need for candidates to staff at least two Instructor Evaluations will dictate the duration and location of this process.

5.5.3 Candidate Prerequisites

- A. Meet all requirements previously outlined for NSS-CDS Cave Instructor Trainer certification.
- B. Sponsor at least one successful instructor candidate all the way through full Cave Instructor certification.
- C. Staff at least one final Apprentice Cave Instructor evaluation and one Cave Instructor evaluation.
- D. Obtain letters of recommendation from the Cave Instructor Evaluators who conducted the IDCs and IEs which the candidate staffed.

5.5.4 Certification

Certification as an NSS-CDS Cave Instructor Evaluator may only be granted by the Training Chairman, upon receipt of documentation attesting to the fact a candidate has met all prerequisites.

5.6 Instructor Crossover Program

- A. The Instructor Crossover program provides a means by which qualified instructors may cross over to the NSS-CDS at the full Cave Instructor level.
- B. Each candidate must have a sponsor. A sponsor is an NSS-CDS Cave Instructor Trainer or Cave Instructor Evaluator whose responsibility includes helping the candidate navigate the process to becoming an NSS-CDS Cave Instructor while ensuring the NSS-CDS cave diver instructor program maintains the highest of standards.

5.6.1 Candidate Prerequisites

A. Candidates must hold the equivalent of NSS-CDS Cave Instructor certification from a diver training organization recognized by the NSS-CDS. The prerequisites for such recognition include:

- 1. An instructor training and certification process similar to that of the NSS-CDS.
- 2. The Training Chairman and training committee are responsible to evaluate the agency that the crossover candidate is coming from to ensure compliance with this requirement.

- E. Final Cave Instructor certification is awarded only after candidates have been evaluated by at least two different Instructor Trainers/Evaluators other than the sponsor and after the sponsor has provided written evaluations and a letter stating that the crossover candidate is ready to pass an institute.
- F. Sponsors are responsible to collect and submit to the Training Chairman written evaluation forms from all NSS-CDS cave instructors that the candidate has co-taught with.
 - 1. The NSS-CDS Training Chairman maintains a list of organizations which meet these requirements and is charged with maintaining this list up to date.
- D. Crossover candidates must have:
 - 1. Taught at the full Cave Instructor level for at least one year.
 - 2. Conducted at least three cave diver courses training at least 5 students and certifying at least three, and provide proof of this to their sponsor.
 - 3. Pass the NSS-CDS Standards and Procedures exam.

5.6.2 Staffing

NSS-CDS Cave Instructor crossovers must be staffed by at least one NSS-CDS Cave Instructor Trainer and one Cave Instructor Evaluator, or two Cave Instructor Evaluators. The sponsor cannot be one of these staff members.

5.6.3 Program Content

- A. NSS-CDS Cave Instructor crossovers involve having candidates teach all the land, classroom and in-water skills of the NSS-CDS Cave Diver course under direct Instructor Trainer/Evaluator supervision.
 - 1. This will ideally involve actual students recruited by the instructor candidate.
 - 2. Candidates are responsible for ensuring their evaluators and sponsors are compensated for their time and expenses.
 - 3. To pass the evaluation, candidates must teach all in water skills and classroom topics assigned successfully.
 - 4. Classroom topics and in-water skills are to be assigned by the institute staff.
 - 5. If candidates fail to teach skills to their evaluators' satisfaction, they must repeat the evaluation process.

5.6.4 Certification Requirements

Upon successful completion of all program requirements, and prior to the formal evaluation/institute sponsors are to submit copies of the following to the Training Chairman for approval:

- A. Completed and signed NSS-CDS Leadership Application
- B. Completed and signed NSS-CDS Crossover Training Record
- C. Candidate's current professional liability certificate, if required, showing the NSS-CDS listed as an additional insured.
- D. Completed medical clearance signed by a physician.

Once the Training Chairman receives and approves the application package, and the candidate successfully passes the evaluation we will direct the candidates to where he or she can pay the Cave Instructor registration fee on the NSS-CDS online store. If the institute is in the last quarter of the year the fee shall apply to the following year.

5.7 CCR Cave Instructor Crossover

Unless otherwise noted, all requirements listed under *2.1 Standards Applying to all NSS-CDS Training Programs* apply to the course.

5.7.1 Purpose

The purpose of the NSS-CDS CCR Cave Instructor Crossover is to bring into the NSS-CDS skilled and experienced Instructors who are already NSS-CDS Cave Instructors in good standing with the NSS-CDS and the Training Chairman and existing CCR Cave Instructors with a recognized training agency which runs a CCR Cave Diver program.

This will allow the NSS-CDS to actively engage in teaching CCR Cave Diver courses until such time as the Training Chairman issues Standards and Procedures for CCR Cave Instructor Intern and CCR Cave Instructor Institute.

5.7.2 Procedure

The Training Chairman will consider applications for appointment as an NSS-CDS CCR Cave Instructor. Subject to approval by the Training Chairman, successful applicants will be certified as NSS-CDS CCR Cave Instructors and able to teach the NSS-CDS CCR Cave Diver programs.

