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## 17. Cavern Diver

### 17.1 Introduction

This course is designed to develop the minimum skills and knowledge for cavern and overhead environment diving within the limits of light penetration; in addition outlines specific hazards associated with cave diving. The cavern diver course is not intended to provide instruction for cave diving environments. The objective of this course is to train divers in the proper planning, procedures, techniques and hazards of cavern diving.

### 17.2 Qualifications of Graduates

Upon successful completion of this course, graduates may engage in cavern diving activities without direct supervision provided the graduates adhere to the following limits:

1. Daylight zone, i.e. within natural light of the cavern entrance
2. Penetration is limited to 1/3 of a single diving cylinder or 1/6th if using double cylinders
3. 61 linear metres / 200 linear feet from the surface
4. 40 metres / 130 feet maximum depth
5. No decompression diving
6. No restrictions; no areas too small for 2 divers to pass side-by-side
7. Safety stops as appropriate or necessary
8. Maintain a continuous guideline
9. Proper cavern diving equipment is used
10. No removal of life support equipment shall be permitted within the overhead environment

Upon successful completion of this course, graduates are qualified to enroll in:

1. TDI Introductory Cave course

### 17.3 Who May Teach

Any active TDI Cavern, Intro to Cave or Cave Instructor may teach this course

### 17.4 Student to Instructor Ratio

#### Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of subject matter

#### Confined Water (swimming pool-like conditions)

1. A maximum of 6 students per active TDI instructor

#### Cavern

1. A maximum of 4 students per active TDI Instructor are allowed; ratio should be reduced as required due to environmental or operational constraints



## **17.5 Student Prerequisites**

1. Minimum age 18, 15 with parental consent
2. Provide proof of an SDI Open Water Scuba Diver or equivalent
3. Provide proof of a minimum of 25 dives

## **17.6 Course Structure and Duration**

### **Water Execution**

1. Four cavern dives with a total bottom time of 80 minutes conducted at 2 different sites

### **Course Structure**

1. TDI allows instructors to structure courses according to the number of students participating and their skill level

### **Duration**

1. The minimum number of classroom and briefing hours is 6
2. Course must be conducted over a minimum of 2 days

## **17.7 Administrative Requirements**

### **The following are the administrative tasks:**

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment and certifications
3. Communicate the training schedule to the students
4. Have the students complete the:
  - a. *TDI Liability Release and Express Assumption of Risk Form*
  - b. *TDI Medical Statement Form*

### **Upon successful completion of the course the instructor must:**

1. Issue the appropriate TDI certification by submitting the TDI Diver Registration Form to TDI Headquarters or registering the students online through member's area of the TDI website

## **17.8 Required Equipment**

### **Suggested reading materials:**

1. *TDI Diving In Overhead Environments* manual
2. *NACD Art of Safe Cave Diving*
3. *Basic Cave Diving – A Blueprint for Survival*
4. *CDAA - Cavern / Sinkhole Manual*
5. *NSS-CDS Cavern Manual*

### **The following equipment is required for each student:**

1. Primary cylinder, volume appropriate for planned dive and student gas consumption; students are permitted to use double cylinders, but would be limited to the 1/6 air rule



2. Regulator with pressure gauge and alternate air source; although not required, it is suggested one regulator be mounted on a hose approximately 2 metres / 7 feet in length
3. Buoyancy compensator device (BCD) with power inflator, CO<sub>2</sub> device rendered inoperative
4. Exposure suit adequate for cavern environment
5. Mask and fins, **NO** snorkel
6. Line cutting device
7. Safety reel with a minimum of 37 metres / 125 feet of guideline
8. One primary cavern-diving reel with length appropriate for intended dive
9. Two battery powered lights, each with burn time suitable for the planned dive time
10. Computer or watch (bottom timer) and depth gauge
11. Slate or wet notes and pencil
12. Submersible dive tables or backup dive computer (recommended)
13. Three directional line arrows
14. Weight system

**Instructor must use full cave diving equipment during all water exercises**

## **17.9 Required Subject Areas**

**The following topics must be covered during this course:**

1. Policy for Cavern Diving
2. Gas Matching Procedures and Management to Include Dissimilar Volume
3. Psychological Considerations
4. Equipment Considerations
  - a. Cylinder options
  - b. Regulator options
  - c. Buoyancy compensator device / harness options
  - d. Reel options
  - e. Proper weighting
5. Communication
  - a. Hand signals
  - b. Light signals
  - c. Touch contact signals
6. Swimming Techniques
  - a. Body posture/ trim
  - b. Buoyancy control
  - c. Line following
  - d. Propulsion techniques
7. Physiology
  - a. Breathing techniques
  - b. Stress management



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8. Cavern environment
    - a. Geology
      - i. Bottom
      - ii. Ceiling
    - b. Local access requirements
    - c. Land owner relations
  9. Cavern Conservation
  10. Problem Solving
    - a. Emergency procedures
    - b. Equipment failure
    - c. Silting conditions
  11. Accident Analysis
  12. Review of Dive Tables and Decompression Theory
  13. Cavern Diving Etiquette

## **17.10 Required Skill Performance and Graduation Requirements**

**The following land drills must be covered during this course:**

1. How to:
  - a. Properly deploy a guideline
  - b. Properly follow a guideline
  - c. Touch contact communicate
  - d. Correctly deploy directional markers

**The student must perform the following S-drill and skills during all dives:**

1. Demonstrate:
  - a. Adequate pre-dive planning
  - b. Equipment check and equipment matching
  - c. Bubble check
  - d. Specialized propulsion techniques
  - e. Proper buoyancy control
  - f. Proper body posture
  - g. Proper stress analysis (detection and management)

**The student must perform the following in-water skills during cavern dives:**

1. Properly deploy a guideline
2. Properly follow a guideline with eyes open and closed; simulating loss of visibility
3. Air share with a buddy with eyes open, following the guideline
4. Air share with a buddy with eyes closed and use touch contact, following the guideline
5. Remove and replace mask while in contact with guideline
6. Demonstrate light / hand -signals and touch contact
7. Explore cavern



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8. Referencing as back-up navigation
  9. Anti-silting techniques
  10. Simulate a primary light failure, and deploy back up light and follow guideline
  11. If diver uses a dual valve system, air/gas valve management

**Note: No removal of life support equipment shall be permitted within the overhead environment**

**In order to complete this course, students must:**

1. Perform all land drills and cavern dive requirements safely and efficiently
2. Demonstrate mature, sound judgment concerning dive planning and execution
3. Maintain an appropriate level of awareness and respect for the cavern environment
4. Log all dives