

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.