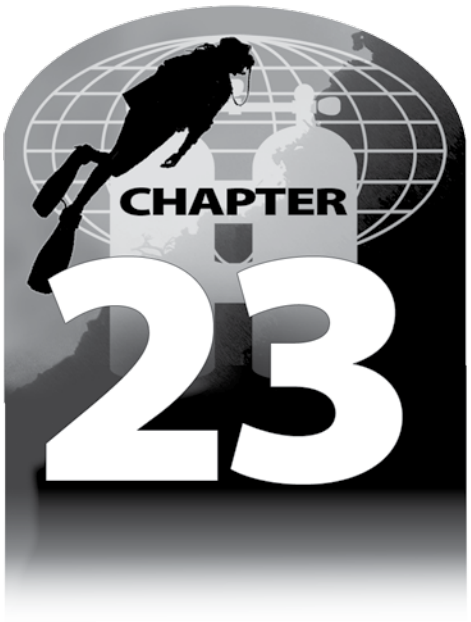

Closed Circuit Rebreather Mixed Gas Instructor Program

- Welcome and Course Overview
- The TDI Instructor
- Dive Leader Risk Management
- Methods of Instruction
- Business Side of Diving
- Teaching the TDI Closed Circuit Rebreather Mixed Gas Diver Program

The TDI Closed Circuit Rebreather Mixed Gas Instructor Program is typically an upgrade from the TDI CCR Air Diluent Decompression Procedures instructor rating. If this is the first program an instructor is completing through TDI more time will need to be spent on the core topics listed below. Once an instructor has completed their initial TDI Closed Circuit Rebreather Mixed Gas program, or any initial TDI Instructor program, they will need only to focus on the course specific content for future programs.

Objectives

The object of this program is to:

- Introduce the instructor to TDI
- Introduce the candidate to the TDI Instructor Guide and Student materials

- Demonstrate how to use the TDI Closed Circuit Rebreather Mixed Gas materials to train a new diver
- Teach the instructor "How to Conduct" the TDI Closed Circuit Rebreather Mixed Gas Diver program
- Demonstrate how to register and certify a new Closed Circuit Rebreather Mixed Gas Diver

Prerequisites for TDI Closed Circuit Rebreather Mixed Gas Instructor Program

See the current TDI Closed Circuit Rebreather Mixed Gas Instructor standards for the prerequisites and requirements for this program.

Materials Required

Teaching any program with outdated materials is just asking for problems. The trainer must confirm that their materials are current and each instructor has the current materials with which to teach the program.

Instructor Trainer

- TDI Diving Rebreathers Diver Manual
- TDI Diving Rebreathers Knowledge Quest
- TDI Diving Rebreathers Instructor Guide
- TDI Diving Rebreathers PowerPoint Presentation®
- TDI Instructor Trainer Manual
- Unit specific manufacturer's user manual

Instructor Candidate

- TDI Diving Rebreathers Diver Manual
- TDI Diving Rebreathers Diver Knowledge Quest

• TDI Diving Rebreathers Instructor Guide

• TDI Diving Rebreathers PowerPoint Presentation®

• Unit specific manufacturer's user manual

Note: Prior to beginning the program the instructor candidate should review all instructor and diver materials and complete all knowledge quests and final exams so they are completely familiar with the subject matter and the support materials to teach the TDI Closed Circuit Rebreather Mixed Gas Diver program.

The topics to be covered are:

• Welcome and Course Orientation

• The TDI Instructor*

• Dive Leader Risk Management*

• Methods of Instruction*

• Business Side of Diving*

• Courses a TDI Closed Circuit Rebreather Mixed Gas Instructor Can Teach

*Core Topics: These core topics will be found in Part One of this manual; IT Information.

Welcome and Course Overview

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Paperwork

• Instructor Registration Form

- Personal Information
- Liability Release
- Medical Statement

Let's Get to Know Each Other

Professional Staff

Participants

- Your name?
- What type of technical diving experience do you have?
- Which technical diving activities interest you the most?
- Why are you interested in becoming a technical instructor?

About This Program

Course Objective

- Develop the appropriate knowledge and skills that are expected of every dive professional

Subject Areas

- The TDI Instructor
- Dive Leader Risk Management
- Methods of Instruction
- Business Side of Diving

Structure and Schedule

- Independent Study
- Classroom Presentations
- Confined Water Training
- Open Water Training

Required Equipment

- Items you'll need for this course

Any Questions?

The TDI Instructor

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 2-The SDI/TDI/ERDI Instructor

Dive Leader Risk Management

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 3-Dive Leader Risk Management

Methods of Instruction

Refer to Instructor Trainer Manual Part 1 Instructor Training Process Chapter 4-Methods of Instruction

Business Side of Diving

Refer to Instructor Trainer Manual Part 1 Instructor Training Process Chapter 5-Business of Diving

Teaching the TDI Closed Circuit Rebreather Mixed Gas Diver Program

- Program overview
  - Classroom requirements
    - Students are required to become familiar with: risks of closed circuit rebreather mixed gas diving, pre-dive tests and checks, scrubber packing, oxygen and diluent analysis, post-dive unit cleaning as they relate to the specific unit. Since divers already hold a unit specific CCR diver certification, additional requirements for mixed gas diving on CCRs need to be covered.

An Instructor must be able to demonstrate instructor level knowledge on all topics and skills in the current TDI CCR Mixed Gas Diver standards.

- Pool / confined water requirements
    - While a pool / confined water session is not required. An instructor may take this opportunity to introduce divers to the differences of mixed gas rebreather diving and the additional equipment needed in a controlled environment or conduct a skill evaluation to help the students become better divers. This is the ideal setting to conduct buoyancy skills, trim, equipment configuration and loop drills.
- Open Water Requirements
    - Six dives with a minimum of 360 minutes of bottom time are required. If this program is conducted in conjunction with other allowed courses, the six dives plus the required number of dives from the other program are required. For the dives it is best to take divers progressively deeper so they get a slower introduction to mixed gas rebreather diving. The first couple of dives can be started in shallower waters so divers get a sense of how the rebreather performs and the dive computers when switched to mixed gas. It is also best to not obligate the diver to decompression in the first few dives but rather to perform simulated decompression. This also allows an opportunity for the instructor to monitor the comfort level and abilities of the diver.

- Materials
    - Review all diver materials to make sure the instructor candidate is familiar with all diver materials and how they are supported by the instructor materials. Instructors may use any materials that convey the knowledge needed to conduct CCR mixed gas dives.*

*At the time of printing there were no TDI materials, diver or instructor, available for this course. Should TDI publish materials they will be required for use.

- Diver Materials
    - Printed

- Required paperwork
    - Discuss in detail how the instructor should complete the required paperwork
    - The instructor candidate must be familiar with all forms and be able to answer any question a diver may have regarding the completion of those forms
        - Diver Training Folder
        - Waiver
        - Medical Questionnaire

- Complete a thorough review of the appropriate TDI Instructor manual including:
    - How to conduct:
        - Academic sessions
            - Cover helpful hints on how to teach more involved subjects
        - Pool/ Confined water sessions
            - Helpful hints on:
                - How to teach skills
                - Conducting an update / skill evaluation
                - Possible problems an instructor may experience
                - How to deal with those problems
        - Open water sessions
            - Helpful hints on:
                - How to conduct skills in open water vs pool/confined

- Possible problems an instructor may experience in open water
- How to deal with those problems

List of tips on how to teach various aspects of this program include:

Gas Physiology – this is a review as the basics were covered in the CCR air diluent diver course with the additional information on helium. Covering the gases that circulate in the loop will be a very important discussion because of the effects they have on decompression. An important one here is a CO2 breakthrough and how it affects the diver.

Formula work and metabolic consumption – divers understand as the workload increases so do their respirations but they may not understand how that affects them on a rebreather. Provide examples of metabolic rate and oxygen consumed at low and high rates. This is a concept they would have never been exposed to.

Dive tables – all tables previously covered in other courses need to be reviewed with the addition of the oxygen metabolic table.

Equipment maintenance – Dives for this course and certification will be much longer so proper system maintenance needs to be emphasized.

Dive computers problem solving – it is encouraged that all divers use dive computers and further a constant PO2 computer. Systems equipped with dive computers should be covered in great detail.

Dive planning – planning a mixed gas rebreather dive is different from planning an air diluent CCR dive so time needs to be spent on this topic. Another point would be the use of off-board gasses for decompression, contingency planning or diluent.

Emergency procedures – for this topic divers should learn both self and buddy emergency procedures, such as: signs and symptoms of CO2 build up, on-board and off-board bailout options, loss of O2 supply, loss of diluent supply, system flood to name a few.

List of academic / pool-confined water / open water topics for candidate to present:

As well as the topics above the following skills topics should be presented.

Pre-dive checks

Verify diluent and oxygen

Demonstrate correct pre-dive planning

Emergency procedures

Electronic system monitoring

Constant loop volume management

Demonstration of decompression stops

Post-dive cleaning of unit

Diver Maintenance of unit

Scheduling Options for this Program

Courses can be scheduled with a one to one ratio, as a group or scheduled in conjunction with other TDI courses. Each of these will require different time commitments and scheduling logistics. A course with one mixed gas CCR diver will take less time than if combined with another TDI course with a group.

Overview

The TDI Mixed Gas CCR Instructor program is comprised of classroom sessions and dives. One day should be allotted for the academic session with

up to three full days for the dives.

If this program is taught with any of the other allowed instructor programs, two full days for the classroom should be scheduled and the appropriate amount of days for the dives if two dives per day are scheduled. There may be times when the course can be completed in less time but it is always good to allot an extra day or two for make-up time or weather.

Classroom

You will need various pieces of equipment normally used for CCR mixed gas diving as well as a complete unit that the diver will be certified to dive on. The instructor must be able to demonstrate to instructor level quality all academic topics in the current TDI CCR Mixed Gas Diver Standards.

Dives

Four dives are required for the instructor course. These sessions could be completed over three days but it is best to build in an extra day for delays and make-up.

Knowledge Quest Review Questions if applicable

No instructor level Materials are available for this course. Candidates must be familiar with all the materials the IT presents to them.

Final Exam

No instructor level final exam is available for this program, although the candidate can complete the diver level final exam from the CCR Air Diluent Deco course and the exam from the TDI trimix open circuit course so they are familiar with the information.

*At the time of printing there were no TDI materials, diver or instructor, available for this course. Should TDI publish materials they will be required for use.