2. Emergency Response Diver I

2.1 Introduction

This course will train successful candidates in the basic skills necessary for participation in limited open water public safety diving activities. The ERD I Diver will be able to operate as a team member and support person within a dive team organization.

2.2 Student Prerequisites

ERD I

1. SDI Open Water Scuba Diver certification or equivalent
2. Current CPR, first aid and oxygen administration certification
3. Minimum age 18

It is the ERDI Instructor's responsibility to evaluate a candidate's open water skills prior to starting any emergency response diving water skills.

2.3 Qualifications of Graduates

ERD I

Upon successful completion of this course, ERD I Divers may engage in basic public safety diving activities without direct supervision. Graduates may also participate in limited application recovery/rescue operations, providing that:

1. The ERD I Diver operates under the supervision of a team supervisor
2. Operations are limited to 18 metres / 60 feet in depth
3. Operations are conducted in conditions consistent with his training
4. Dive profiles are kept within no decompression limits

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

1. ERDI Ops Components
2. ERD II Course

ERDI Tender

Upon successful completion of the tender portion of this course, graduates are qualified to:

1. Tend public safety divers in open water
2. Participate in the planning and execution of public safety diving operations

2.4 Who May Teach

An active ERDI Emergency Response Diver Instructor may teach this course

2.5 Administrative Requirements

1. Have the students complete the:
    a. *ERDI Liability Release and Express Assumption of Risk* Form
    b. *ERDI Medical Statement* Form
2. Communicate the schedule of the course to the students
3. Ensure that the students have the required equipment

Required Materials

1. The *ERD I Student Manual* or eLearning course is required for the ERD I course academics

Certification

1. Upon successful completion of an ERDI course the instructor must issue the appropriate ERDI certification by submitting the *ERDI Diver Registration* form to ERDI Headquarters or registering the students online through members area of the ERDI website.

2.6 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

1. A maximum of 10 students per ERDI Instructor
2. ERDI Instructors have the option of adding 2 more students with the assistance of an active ERDI Supervisor
3. The maximum number of students an ERDI Instructor may have in confined water is 14 with the assistance of active ERDI Supervisors

Open Water

1. A maximum of 3 dive teams or 6 tethered divers per ERDI Instructor is allowed; it is the instructor's discretion to reduce this number as conditions dictate

2.7 Course Structure and Duration

Open Water Execution

1. Student must complete 4 open water dives
2. Student may complete the required dives using dry suit and full face mask if they have documented experience in that equipment. Otherwise, the ERD Dry Suit Ops and/or ERD Full Face Mask Ops courses may be taught concurrently with ERD 1 provided two additional dives are added for each Ops course being combined with ERD 1.
3. The maximum depth must not exceed 18 metres / 60 feet on any dive
4. All dives must be completed during daylight hours
5. Upon successful completion of the dives, the student must complete his logbook and the ERDI Instructor must sign off on the completed dives

Course Structure

1. ERDI allows instructors to structure courses according to the number of participants and their skill level.

Duration

1. Classroom and briefing: Approximately 8 hours
2. Confined water: Approximately 6 hours
3. Open water dives (required): 4 dives

2.8 Required Equipment

ERD I Diver

Instructor Note: It is important that the student understand the need for the proper equipment when performing the duties of an emergency response diver. The student should also understand the need for equipment standardization among team members.

1. Mask and fins
2. Buoyancy compensator device (BCD)
   i. A technical harness or similar BCD capable of emergency response diving tether requirements. The BCD must be capable of supporting a pony cylinder of at least 3 litres / 18cubic feet in addition to the primary cylinder
   a. The BCD must have adequate lift, 18 kilograms/40 pounds minimum recommended
   b. If the student's BCD is not adequate for tether rigging but is otherwise acceptable, the student may use their BCD with an ERDI approved tether harness

3. Regulator
    a. A primary regulator appropriate for the local diving environment *
    b. A secondary regulator for the pony cylinder appropriate for the local diving environment *
       It should be noted that environmentally sealed regulators are recommended.
4. Cylinders
    a. A primary cylinder of at least 11.1litres / 80 cubic feet when filled to its service pressure
    b. A pony cylinder of at least 3 litres / 18cubic feet when filled to its service pressure
    c. The pony cylinder must be rigged so that it is accessible and useable to the student. Additionally, the student must have the ability to pass the redundant air source to another diver without assistance in an emergency
    d. Twin cylinders are not permitted at this level
5. Instrumentation; All students will be equipped with
    a. Submersible pressure gauge (SPG) *
    b. Depth gauge *
    c. Underwater compass
    d. Underwater timing device*
       *Students may use a dive computer to meet these requirements
6. Exposure protection appropriate for the dive conditions
7. Cutting tool: 1 primary, 1 backup
8. Weight system
9. Surface signaling devices; 1 audible and 1 visual
10. Logbook
11. USCG approved personal floatation device (PFD)
12. Gloves: latex and work
13. Dive tables

ERD Tender

1. United States Coast Guard (USCG) approved personal floatation device (PFD)
2. Cutting tool: 1primary and 1backup
3. Rescue signals: 1 audible and 1 visual
4. Gloves: latex and work

2.9 Academic Outline

The Organization

1. Recreational vs. Emergency Response Diving
   a. Differences
   b. Training specific
   c. Why recreational is not adequate
2. Building the Team
   a. Organizations; fire departments, police departments, rescue, volunteer, contract
   b. Funding
   c. Team structure
      i. Primary diver
      ii. Primary tender
      iii. Backup diver
      iv. Backup tender
      v. Incident commander
      vi. Incident commander aide
3. Attitudes
   a. Professionalism
   b. Responsible use of assets
   c. Team cohesion
   d. Physical fitness
4. Operations
   a. National Fire Protection Association (NFPA) guidelines, Occupational Safety and Health Administration (OSHA) regulations
   b. Standard operation procedures (SOP's), standard operating guidelines (SOG's) and protocols
   c. Scene safety
   d. Record keeping
5. Training
   a. Increases safety
   b. Increases abilities
   c. May be required by law
   d. Individual and team
   e. Interagency
   f. Keeping members stimulated
   g. Frequency
6. Public Safety Diving Accidents
   a. Lack of training
   b. Exceeding abilities and training
   c. Learning from others
   d. Avoid through education
   e. Go/No Go decision

Equipment

1. Recreational vs. Emergency Response Diving
2. Standardization
    a. Benefits
3. Scuba Equipment
    a. Mask
    b. Fins
    c. Regulators
    d. Cylinder
    e. Buoyancy compensator device (BCD)
    f. Instrumentation
    g. Pony cylinder
    h. Exposure protection
    i. Weight systems
    j. Cutting tools
4. Specialized Equipment
    a. HazMat
    b. Diver propulsion vehicle (DPV)
    c. Tow sleds
    d. Metal detectors
    e. Communications
    f. Surfaced supplied air
    g. Remote operated vehicle (ROV)
    h. Range finders
5. Small Boats Ops
    a. Types
    b. Search patterns
    c. Handling
    d. Safety issues
6. Recording Keeping
    a. Service records
    b. Lines
    c. Air fills
    d. Team logs
    e. Diver logs
    f. Training records
    g. Court documentation

Problem Solving

1. Diver Problems
    a. Stress
    b. Panic
    c. Illness
    d. Fatigue
    e. Psychological
    f. Keeping focus
2. Air Loss
    a. Causes
    b. Solutions
3. Entanglement
    a. Common points of entanglement
    b. Cutting tools
    c. Tether entanglement
4. Equipment Problems
    a. Inappropriate equipment
    b. New or unfamiliar equipment
    c. Malfunctions

Tender Skills

1. Value to Team
2. Back-up Tender
    a. Responsibilities
3. Mapping and Documentation
4. Line Signals
    a. Tender to Diver
        i.   Pull = OK
        ii. 2 Pulls = Stop, Change Direction, Take Out More Line
        iii. 3 Pulls = Surface
        iv. 4 Pulls = Stop, Standby
    b. Diver to Tender
        i.   1 Pull = OK
        ii. 2 Pulls = More Line
        iii. 3 Pulls = Object Found
        iv. 4 Pulls = Help, Trouble
5. Other Sets of Signals
    a. Line
    b. Hand signs
6. Search Patterns
7. De-con Procedures

8. Evidence Recovery
9. Required Equipment
   a. Personal floatation device (PFD)
   b. Appropriate/Inappropriate clothing, protective equipment

Responding to the Call

1. Scene Evaluation: Rescue or Recovery; Go/No Go
   a. Scene safety
   b. Control of scene
   c. Team standard operating procedure (SOP) / standard operation guideline (SOG)
   d. Set up, gear up, deploy
2. Rescue
   a. Risk vs. benefit
   b. Witnesses
   c. Timeline
   d. Resuscitation/Cold water near-drowning
   e. Rescue to recovery
3. Recovery
   a. Crime scene recognition
      i. Documentation
   b. Body Recovery
      i. Protecting evidence
      ii. Bagging procedures
      iii. Victim dignity
4. After the Call
   a. Team debriefing and critique
   b. Counseling
   c. Leaving the scene

Search Patterns

1. Tools
   a. Lines
   b. Tow systems
   c. Metal detectors, magnetometers, side scan sonar, ROV
2. Execution
   a. Simplicity
   b. Pre-determined start point, area of coverage, documented end point
   c. Black water
   d. Moving water

3. Types
    a. Sweeping arc
    b. Expanding circle
    c. Parallel pattern
    d. V-Pattern
    e. Jackstay
    f. Tyrolean
4. Determining Which Pattern
5. Boat Based Search Patterns
    a. Anchoring
    b. Global positioning system (GPS)
    c. Anchored circle
    d. Tow sleds
6. Marking Objects, Places

Crime Scene Recognition

1. Securing Scene; Above and Below
2. Interview Skills
3. Scene Documentation
    a. Photography
    b. Videography
    c. Accurate diagramming
    d. Accurate description
4. Evidence Recovery
    a. Proper handling
    b. Evidence containers
    c. Bagging procedures
    d. Continuity of evidence/chain of custody

Environmental/HazMat

1. Planning
2. Recognition
3. Equipment Issues
4. Types
    a. Chemical
    b. Biological
        i. Human
5. Decontamination Procedures
    a. Personnel
    b. Equipment
    c. Patient/Victim
6. Water Sample
    a. Proper container for laboratory analysis

2.10 Confined Water Outline

Students are required to successfully complete the following skills:

1. Evaluation of scuba skills
    a. Mask removal and replacement
    b. BCD removal and replacement
    c. Buoyancy skills
2. Line signals, performed with blacked out mask *
3. Search patterns, at least 2 patterns performed with blacked out mask *
    * These skills may be conducted concurrently.
4. Diver to diver touch communications *
    a. Out of air = Hand to regulator
    b. Go forward = Push
    c. Go backward = Several pulls
    d. Stop = Pull

* The primary diver will have a blacked out mask, the backup diver a normal mask.

5. Deploy 2 cutting devices and simulate use, one of which is without a mask
6. Simulated bailout consisting of blacked out mask, switching to redundant air supply, bailout of primary and surfacing
7. Diver to diver redundant air source with contact ascent
8. Victim bagging procedures

Tender Skills

1. Line Signals *
2. Search patterns, at least 2 *
    * These skills may be conducted concurrently.

Students are to complete the following watermanship skills:

1. 800 metre swim with mask, snorkel, and fins non-stop without the use of arms in less than 16 minutes.
2. 500 metre distance swim, nonstop, without the use of swim aids in less than 14 minutes.
3. 100 metre buddy tow in full scuba equipment; in less than 4 minutes.
4. Survival float without aids, for 15 minutes; during the last 2 minutes the student will keep their hands above the waterline.

Tender Swimming Evaluation

Students are to successfully complete the following water skills:

1. 200 metre swim without aids non-stop
2. 100 metre buddy tow in PFD non-stop
3. 10 minute survival-float

2.11 Open Water Performance Requirements

The open water training consists of 4 dives. Each dive activity should be conducted as closely as possible to an actual incident response. The number of dives may be increased if, in the opinion of the instructor, it is necessary to meet a minimum training standard or proficiency level.

During all open water training there will be an ERDI Supervisor, Instructor or Instructor Trainer present and equipped to respond to an in-water emergency at all times. During any in-water training, NFPA 1006 and NFPA 1670 guidelines must be followed or for regions not governed by NFPA, any regulatory or legal requirements that apply to professional and/or volunteer public safety and emergency response divers.

The dive team will consist of:
- Primary diver
- Primary tender
- Backup diver
- Backup tender
- Incident commander – may be filled by backup tender

Each student will need to rotate through each team position at least 3 times. ERDI recommends that a third diver be partially geared up to assume backup diver status if needed.

ERD Diver

Students are to successfully complete the following skills:

1. Scene size-up
2. Team briefing
3. Deploying team
4. Correctly perform at least 3 search patterns
5. Locate and recover small evidence object and perform correct evidence handling procedures
6. Simulated recovery of victim performing correct handling procedures
7. Respond as backup diver to primary diver in trouble resolving situation
8. Communicate with tender using line signals
9. Bring simulated unconscious diver to surface and transport to shore/boat while performing rescue breathing and remove from water. The recommended distance is 50 metres.
10. Participate in proper decontamination procedures
11. Debrief and record each dive, team log and diver log
12. Post dive diver evaluation (medical and psychological)

ERD Tender

Students are to successfully complete the following skills:

1. Assist in dressing primary diver
2. Proper tether attachment
3. Correctly perform at least 2 search patterns
4. Communicate with primary diver through tether using line signals
5. Assist in proper evidence handling procedures
6. Assist in proper decontamination procedures

Recommended Sequence

1. Dive 1:
   a. Perform first of 3 search patterns;
   b. Locate and recover small evidence object and perform correct evidence handling procedures
   c. Participate in proper decontamination procedures
2. Dive 2:
   a. Perform second of 3 search patterns
   b. Simulated recovery of victim while performing correct bagging/ handling procedures
3. Dive 3:
   a. Perform third of 3 search patterns
   b. Perform diver in trouble task as assigned by instructor
4. Dive 4:
   a. While performing as backup diver, respond to diver in trouble resolving problem
   b. Bring simulated unconscious diver to surface and transport to shore/boat while performing rescue breathing and remove from water

2.12 Certification Requirements

1. Minimum score of 80 percent on the ERD I written test, with 100 percent remediation
2. Satisfactorily complete all academic, confined water and open water requirements
3. Satisfactorily complete swim evaluation requirements