

part 3

ERDI OPS Component Standards

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Revision History		
Revision Number	Date	Changes
3.0	08/01/2004	The manual is completely new.
6.0	11/01/2005	Ice/Surface Rescue Ops Component added.
7.0	10/27/2006	Language corrections made.
8.0	11/13/2007	Minor editorial changes.
11.0	01/01/2011	Major editorial changes, added Contaminated Water Standard. Version 9 and 10 bypassed to standardize all versions
12.0	01/01/2012	Minor edits
12.1	08/15/2012	Added Definitions Updated Swift Water #7 Added Underwater Crime Scene Investigator #9
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14.0	01/01/2014	No Changes
14.1	10/01/2014	Added Confined Space # 1 and Small Boat Ops #9 5.9.5 Added additional topics to approved outline 5.11 Added additional skills for Graduation Requirements
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18.0	01/01/2018	10.10 Changed 460 metres to 500 metres and yards from 500 to 548 and added in less than 14 minutes Added: with last two minutes holding hands out of the water

Revision History		
Revision Number	Date	Changes
19.0	01/01/2019	Added eLearning to all applicable courses Changed CPR, first aid and oxygen provider certification requirements in all applicable courses 8.4 Clarified who may teach 9.4 Clarified who may teach 9.11.1 Added Non-Diving Specialty Instructor 11.4 Clarified who may teach 11.6 Added required materials Formatting Updated
0120	01/01/2020	No Changes
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0221	02/01/2021	No Changes
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1. Disclaimer

Emergency response diving generally is a hazardous activity requiring significant training, good physical fitness and a working knowledge of the inherent risk associated with these activities. This manual is not intended to and cannot replace a comprehensive training program conducted by a qualified instructor.

Neither the authors of this manual, Emergency Response Diving International (ERDI), Scuba Diving International (SDI), Technical Diving International (TDI), International Training (IT), nor any party associated with Emergency Response Diving International (ERDI), Scuba Diving International (SDI), Technical Diving International (TDI), International Training (IT) can nor will accept responsibility for accidents or injuries resulting from the use of the materials contained herein, the activity of scuba diving generally, or the activities associated with emergency response diving specifically.

1.1 Definitions

Assistant or Assisted by = A person who is assisting a primary and certified instructor, IT staff instructor or instructor trainer for a course that they, the “assistant”, is not certified to teach. Assistants can be used for the purposes of additional supervision and to increase ratios where standards and environmental conditions allow. Assistants listed on registrations will receive experience credits for courses they have assisted with only if listed on the initial registration form.

Co-Teach or 2nd Instructor = A person who is certified to teach the course taking place and is working together with an also certified instructor, IT staff instructor or instructor trainer. The 2nd instructor will receive equal credit for the course if listed on the initial registration form.

1.2 ERDI Levels

Many of the ERDI programs can be taught at several levels in accordance with National Fire Protection Association (NFPA) guidelines. The level of participation in the practical portion of the course will determine the final level of certification. The classification levels are: Awareness, Operations and Technician. All ERDI programs are available to public safety professionals regardless of their position within a department.

1.3 Awareness

The Awareness level can be completed simply by doing the online academics for the ERDI course of interest. Upon completion of any of the online ERDI Academy courses, an individual will receive an awareness level certificate. For additional insight and understanding of the course, the individual can audit the practical session.

1.4 Operations

The Operations level course requires the participant to complete the online academics and also participate in the non-diving segments of the Operations level course taught by an ERDI Instructor. Depending on the program the individual is completing, this portion of the training shows how to properly perform and/or supervise non-diving emergency response duties.

1.5 Technician

The Technician level is the final step and requires the participant to complete the required number of practical training sessions under the supervision of an ERDI Instructor. Here the individual will apply what they have learned during the awareness and skill-development sessions, while learning practical lessons that can only be gained through real-world experience. Upon successful completions of this course, the individual will receive a Technician certification.

Note: Cylinder capacities used in the ERDI Standards are based on manufacturer values or generalized conversions and are NOT exact conversions from metric to imperial due to variance in cylinder volume and working pressures. If you use metric cylinders, please use the metric size cylinder listed; likewise, if you use imperial cylinders, please use the imperial size cylinder listed, I.E. 3 litres / 18 cubic ft.

2. Confined Space Ops

2.1 Introduction

The ERDI Confined Space Ops Component is designed to develop the knowledge and skills necessary for limited confined space operations in emergency response conditions. This course complies with NFPA 1006 and 1670, OSHA, and FEMA for water rescue.

2.2 Student Prerequisites

The following standards must be met and documented prior to the commencement of any training.

1. Minimum age, 18
2. Provide proof of current CPR, first aid and oxygen administration certification
3. Certified as an ERD II or equivalent
4. An active member of a recognized Emergency Service or team conducting Public Safety Diving and/or Rescue activities

2.3 Qualifications of Graduates

Upon successful completion of the ERDI Confined Space Ops component, graduates may engage in limited confined space operations without direct supervision of an instructor provided:

1. The diving activities approximate those of training
2. The areas of activities approximate those of training
3. Environmental conditions approximate those of training

2.4 Who May Teach

1. An active ERDI Confined Space Ops Instructor

2.5 Administrative Requirements

Required forms

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

2.6 Required Materials

Optional materials

1. *SDI Wreck, Boat and Drift Diving* Student Manual or eLearning
2. *SDI Rescue Diver* Slate with five-minute neurological exam
3. *ERDI Standards and Procedures* manual
4. *TDI Advanced Wreck Diving* Diver Manual

Certification

1. Upon successful completion of an ERDI course the Instructor must issue the appropriate ERDI certification and submit the registration form to ERDI. Operations and Technical levels will receive a certification card and wall certificate. Awareness level will receive a certificate upon completion if the online course was taken or a certificate can be requested if a traditional course was taken.

2.7 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training

Confined Water

1. A maximum of 2 dive teams 6 divers and 6 surface tenders per ERD Instructor
2. ERD Instructors have the option of adding 2 more divers and 2 more surface tenders with the assistance of an active ERD Supervisor
3. The maximum number of divers an ERD Instructor may have in confined water is 8 with the assistance of a qualified ERD Supervisor

Open Water

1. A maximum of 4 divers and 4 surface tenders per ERD Instructor. However, it is the instructor's discretion to reduce this number as conditions dictate
2. No more than 2 divers can penetrate the confined space environment at a time

2.8 Course Structure and Duration

Course Structure

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

In accordance with various guidelines, ERD Instructors can structure the course in the following three manners.

1. Awareness Level—participant completes the academic portion of the course and may audit the practical portion. This participant has no “hands-on” experience with the course. This level can be taught to both divers and non-divers. Awareness Level participants recognize the dangers of confined space environments.
2. Operational Level—participant completes the academic portion of the course and any non-penetration portions. Operational Level participants are able to assist in a confined space diving operation without becoming a liability. Any member of a team who may end up tending a diver at the incident should be trained to this level.
3. Technician Level—participant completes the academic portion of the course as well as all practical elements of the course. This level is taught to divers with the ability and skills to complete confined space diving. Divers should have a basic understanding of the hazards and operations of the confined space diving environment.

Duration

1. Classroom and briefing: Approximately 4 hours
2. Confined water training: Approximately 4 hours; to include simulated penetration/confined space dives, blackout penetration on a tether, exterior safety for the penetrating diver, and rescue/assist of the penetrating diver
3. Open water operations: Three dives total, with a minimum of 2 penetration/confined space dives and 2 dives as the exterior safety diver, including one rescue/assist

2.9 Required Equipment

The following equipment is required for each student:

1. Same equipment requirement as for ERD II Diver
2. Secondary regulator for the bailout cylinder appropriate for the diving environment
3. Bailout cylinder (stage bottle; recommended minimum 5.6 litres / 40 cubic feet)
4. Light Systems
 - a. Primary light
 - b. Backup light
5. Underwater slate
6. Reels/Tethers
 - a. Primary tether line for all divers
 - b. Secondary safety reel/spool

2.10 Academic Outline

The following land drills must be covered during this course :

1. Emergency Procedures
 - a. Following a tether to rescue/assist
 - b. Use of a safety reel/spool to search for a lost buddy
 - c. Use of a safety reel/spool to search for a lost exit/tether
2. Communications
 - a. Proper techniques for using hand signals
 - b. Proper techniques for using line signals
 - c. Proper FFM communications
3. Confined Space Land Drills
 - a. Blackout or eyes closed
 - b. Maze navigation simulating movement through a car or actual car interior navigation
 - c. Recovery of object or mannequin in maze or car simulation
4. Decontamination Procedures
 - a. Discuss and demonstrate initial rinse-off with water at the water's edge
 - b. Discuss and demonstrate secondary decontamination of chemical and/or biological agents
 - c. Discuss and demonstrate tertiary decontamination and equipment removal

The following topics must be covered during this course. Instructors may use any text or materials that they feel best present these topics.

1. History of ERDI and International Training
2. Equipment Considerations
 - a. Redundant scuba
 - b. Lights
 - c. Reels
 - d. Tools
3. Procedures
 - a. Pre-dive
 - b. Pre-penetration
 - c. Penetration
 - d. Exiting the wreck
4. Search techniques
 - a. Cars
 - b. Boats
 - c. Aircraft
5. Search and extraction consideration
 - a. Window/door sizes
 - b. Jammed openings
 - c. Car seats
6. Hazards of confined space diving
 - a. Disorientations
 - b. Reduced Visibility
 - c. Entrapment
 - d. Entanglement
 - e. Environmental
 - f. Loss of gas supply
 - g. Line traps
 - h. Tether entanglement
7. Penetration Lines
 - a. Types
 - b. Proper use
 - c. Tether Line
8. Potential Hazards
 - a. Contaminates on surface
 - i. Fuels
 - ii. Oils

- b. Contaminates inside wreck
 - i. Fuels
 - ii. Oils
 - iii. Battery acids
 - c. Glass windows/doors
 - d. Wreck moving/unsettled
9. Contingency Planning
- a. Chamber locations
 - b. Communications
 - c. Emergency gases
 - d. Emergency procedures

2.11 Required Skill Performance and Graduation Requirements

The student must complete the following skills during the confined space dives. All dives should be conducted with a maximum linear penetration of 18 metres / 60 feet from the surface. Penetration is also limited to 1/3 of a single diving cylinder (not to include redundant gas supply).

Land Drills

1. Emergency Procedures
 - a. Following a tether to rescue/assist
 - b. Use of a safety reel/spool to search for a lost buddy
 - c. Use of a safety reel/spool to search for a lost exit/tether
2. Communications
 - a. Proper technique for touch contact signals
 - b. Proper technique for line signals
 - c. Proper FFM communications
3. Confined Space Land Drills
 - a. Blackout or eyes closed
 - b. Maze navigation simulating movement through a car or actual car interior navigation
 - c. Recovery of object or mannequin in maze or car simulation
4. Decontamination Procedures
 - a. Discuss and demonstrate initial rinse-off with water at the water's edge
 - b. Discuss and demonstrate secondary decontamination of chemical and/or biological agents
 - c. Discuss and demonstrate tertiary decontamination and equipment removal

5. Demonstrate adequate pre-dive planning
 - a. Limits based on personal and team gas consumption
 - b. Limits based on nitrogen absorption at planned depths for actual gas used

The following confined water skills must be covered during this course:

1. Simulated confined space diving using PVC or other material
2. Use of cutting tools within a confined area, cutting options include:
 - a. Seat belt material
 - b. Heavy rope and/or cordage
 - c. Possible diver entanglement
3. Safety diver positioning
4. Safety diver assisting primary diver
5. Practice various types of communication, including:
 - a. Hand signals
 - b. Rope pull signals
 - c. FFM communications

Pre-dive Drills

1. Site and Safety Briefing Before all Operations.
2. Buddy check (TDI's START* drill is a good buddy check option) before every dive
3. Stress analysis and mitigation

***START is S-drill (OOA drill and Bubble Check), Team (buddy equipment checks, Air (gas management), Route (entry/exit and planned path underwater), Tables (depth, duration, waypoints, and schedule).**

In-water Drills

1. Demonstrate proper planning for potential contamination(s) on surface
2. Demonstrate specialized propulsion techniques for an overhead environment
3. Follow tether, eyes open and eyes closed, or blacked out mask, out of the confined space
4. Demonstrate simulated glass breakage and clearing for entry into wreck
5. Switch to redundant air supply while exiting confined space, eyes open and eyes closed, or blacked out mask
6. Demonstrate light and hand communications with team members
7. Demonstrate touch contact with team members
8. Demonstrate correct techniques for staging contingency gas outside wreck

9. Perform search pattern locating planted search object and extracting from wreck
10. Properly execute the planned dive within all pre-determined limits
11. Demonstrate out of air, pony bottle hand-off prior to exiting the wreck
12. Silt-out procedures
13. Safety diver follows tether line to locate primary diver
14. All divers/tenders perform simulated post dive decontamination

Recommended Sequence

Dive #1 One diver remains on the outside of the confined space as the safety diver while the second diver penetrates for an initial exploration. Diver is limited to one compartment for progressive penetration. First diver exits and becomes the safety diver while the second diver makes their initial penetration.

Dive #2 One diver remains on the outside of the confined space as the safety diver while the second diver penetrates for a second time. The penetrating diver simulates an emergency situation during the dive and the safety diver must follow the tether line and deal with the emergency (possible emergencies include, but are not limited to out of air, entanglement, entrapment/stuck).

Dive #3 Divers one and two switch roles as penetrator and safety divers and Dive #2 above is repeated.

Dive #4 (Optional) Divers can simulate an extrication of evidence or make a recovery from the penetration.

In order to complete the course the students must:

1. Complete all field exercises, and confined and open water requirements safely and efficiently
2. Demonstrate mature, sound judgment concerning dive planning and execution
3. Minimum score of 80 percent on the ERDI Confined Space Course written examination, with 100 percent remediation

3. Contaminated Water Ops

3.1 Introduction

The ERDI Diving in Contaminated Water Ops Component is one of the most challenging public safety diver training programs. Students must demonstrate proficiency of all contaminated water skills and techniques, a high level of awareness and a proper attitude prior to certification. Dives incorporate hazard recognition and handling, use of specialized equipment; helmets and surface supplied air delivery systems require additional training.

3.2 Student Prerequisites

1. ERD I or equivalent
2. Minimum age 18
3. SDI/ERDI Dry Suit Diver or equivalent
4. SDI/ERDI Full Face Mask Diver or equivalent

3.3 Qualifications of Graduates

Upon successful completion of the ERDI Contaminated water Component, students will have developed the knowledge and skills necessary to plan and execute contaminated water diving operations

3.4 Who May Teach

An active ERDI Instructor that has been certified to teach this ops component

3.5 Administrative Requirements

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

3.6 Required Manuals

1. The *ERDI Contaminated Water Diving Operations Student Manual* (or online equivalent)
2. The *ERDI Contaminated Water Diving Operations Knowledge Quest*
3. The *ERDI Contaminated Water Diving Operations Instructor Guide*

Optional materials

1. *SDI Rescue Diver* Slate with five minute neurological exam
2. *ERDI Line Tender* Slates
3. *ERDI Contaminated Water Diving Operations* Instructor Resource CD

Certification

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 member's area of the ERDI website. Awareness level will receive a certificate upon completion if the online course was taken or a certificate can be requested if a traditional course was taken. Operations and Technician levels will receive a certification card and wall certificate.

3.7 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 6 students per ERDI Instructor
2. ERDI Instructors have the option of adding 2 additional students with the assistance of an active ERDI Supervisor
3. The maximum number of students an ERDI Instructor may have in confined water is 8 with the assistance of active ERDI Supervisors

Open Water

1. A maximum of 2 dive teams per ERDI Instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The ERDI Instructor has the option of adding 2 more students with the assistance of an active ERDI Supervisor
3. The total number of students an ERDI Instructor may have in the water is 10 with the assistance of 2 active ERDI Supervisors

3.8 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Two open water dive operations (required): One decontamination dive with a total bottom time of 20 minutes. Air supply limited to 1/3 of a single cylinder and a maximum depth not to exceed 15 metres / 45 feet; dive operations are not required for non-diving students taking

3.9 Required Equipment

1. Same equipment as required for ERD I Diver
2. Dry suit with inflator hose
3. Full face mask
4. Environmentally sealed first stage
5. Gas switching block

3.10 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

Reality of it All

1. Water Transition from Recreational Environment to Hostile Work Arena
2. How Early Humans created water pollution
3. How the maritime Industry created a Hostile Environment for Divers
4. Agricultural Effects which Aid in creating risks for Divers
5. Industrial Discharge into the Waterways
6. Initial Assessment of what task the Diver is performing
7. Beginning to address Mitigation Strategies

History

1. Cousteau: The Father of Diving in Polluted Waters
2. Unknown Long Term Risks
3. CWD Operations Equipment Selection
4. Rumors of Health Issues for Divers Operating in CWD Campaigns
5. US Navy's Commitment to CWD Standards and Protocols
6. PSD Health Survey

What is Contaminated Water

1. Definition of Contaminated water
2. Levels of Contamination
3. All Water is Contaminated
4. US Navy Water Classification Levels
5. Types of Contaminants

How Contaminated Water Affects the Team

1. Contaminated Water Affects Everyone
2. Planning is a Key Role
3. Locard's Theory
4. Exposure Recognition

How Exposure Can Occur

1. Absorption
2. Inhalation
3. Ingestion
4. Injection

Targets

1. Victim Recoveries
2. Vehicle Recoveries
3. Item Recoveries

Dive Planning

1. Duties Upon Arriving at the Scene
2. Dealing with the Public
3. Establishing Perimeter and Area of Operations
4. Performing a Site Assessment
5. Establishing a Staging Area
6. Choosing a Dive Mode

Equipment for Contaminated Water Diving

1. Exposure Control for CWD
2. Full Face Mask and Helmets
3. Air Delivery Systems
4. Buoyancy Control Devices
5. Specialized Equipment

Decontamination

1. Communal Rinse Tank Questions
2. Water Quality Levels
3. Differing Decontamination Beliefs
4. Multi Phases Aspects of Decontamination
5. Decontamination Practices
6. Suggested Equipment for Decontamination Personnel
7. Finite Cleaning and Equipment Inspection

Record Keeping

1. Importance for Developing a Recordkeeping Protocol
2. Formation of Documentation for Statistical Recordkeeping
3. How to Research Local Water Body History
4. Assistance with Water Quality Testing and Reports
5. Need for Medical Screening
6. Exposure Control Recommendations
7. Post Dive Follow-up

3.11 Required Skill Performance and Graduation Requirements

Confined water training is not required but highly recommended. It would consist of:

1. Pool Session One:
 - a. Plan dive
 - b. Enter water
 - c. Buoyancy check
 - d. Get comfortable
 - e. Descend
 - f. Proper attitude utilizing a full face mask
 - g. Demonstrate proper buoyancy and trim (ability to maintain thorough the dive)
 - h. Ascend and exit

Students are required to successfully complete the following in open water:

1. Land Drills
 - a. Establish scene parameters
 - b. Perform scene assessment
 - c. Staging decontamination area
 - d. Demonstrate adequate pre-diving planning
 - e. Demonstrate proper scene recording and log information
 - f. Lost diver procedure
 - g. Scenario briefing
 - h. Risk assessment
 - i. Communication use
2. Open Water Dive 1
 - a. ERDI recommends that the first dive be no deeper than 6 metres / 20 feet
 - b. Plan dive
 - c. Enter water from back of boat or shore entry
 - d. Buoyancy check
 - e. Get comfortable
 - f. Descend
 - g. Proper attitude utilizing a full face mask
 - h. Demonstrate proper buoyancy and trim (ability to maintain thorough the dive)
 - i. Ascent with safety stop
 - j. Exit / log dive
3. Open Water Dive 2:
 - a. Plan dive
 - b. Enter and descend
 - c. Practice dry suit skills
 - d. Inflating and deflating suit
 - e. Roll from inverted position
 - f. Emergency procedures for dry suit malfunctions
 - g. Enjoy the sites
 - h. Ascend w/ safety stop
 - i. Exit / log dive

4. Post Dive Drills and demonstrations
 - a. Proper decontamination of diver exiting water
 - b. Proper undressing of diver
 - c. Proper equipment inspection
 - d. Neurological assessment on diver
 - e. Proper finite cleaning

In order to complete the course the students must:

1. Satisfactorily complete the ERDI Contaminated Water Diving Operations written exam with a minimum score of 80 percent and 100 percent remediation
2. Perform all land, pre-dive, in-water and post-dive drills correctly and efficiently
3. Demonstrate mature and sound judgment concerning dive planning and execution
4. Maintain an appropriate level of awareness and respect for the contaminated water environment
5. Log all dives

4. Dry Suit Ops

4.1 Introduction

The ERDI Dry Suit Ops Component is designed to develop the knowledge and skills necessary for dry suit diving operations in emergency response diving.

4.2 Student Prerequisites

1. ERD I or equivalent
2. Minimum age 18
3. Current CPR, first aid and oxygen administration certification

4.3 Qualifications of Graduates

Upon successful completion of the ERDI Dry Suit Ops Component, students will have developed the knowledge and skills necessary to plan and execute dry suit diving operations

4.4 Who May Teach

An active ERDI Instructor that has been certified to teach this ops component

4.5 Administrative Requirements

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

Required Manuals

1. The *SDI Dry Suit Diving Manual* or eLearning is required for the ERD II Dry Suit Ops Component

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 member's area of the ERDI website.

4.6 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 6 students per ERDI Instructor
2. ERDI Instructors have the option of adding 2 additional students with the assistance of an active ERDI Supervisor
3. The maximum number of students an ERDI Instructor may have in confined water is 8 with the assistance of active ERDI Supervisors

Open Water

1. A maximum of 4 students per ERDI Instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The ERDI Instructor has the option of adding 2 more students with the assistance of an active ERDI Supervisors
3. The total number of students an ERDI Instructor may have in the water is 8 with the assistance of 2 active ERDI Supervisors

4.7 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Open water dives (required): Two dives are required with complete briefs and debriefs by the instructor. Dive plan must include surface interval, max no-decompression time, etc. to be figured out and logged

4.8 Required Equipment

1. Same equipment as required for ERD I Diver
2. Dry suit with inflator hose
3. *SDI Dry Suit Diving Manual*

4.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

Environmental Issues

1. Nuclear, Biological, Chemical
 - a. Medical concerns
 - i. Water sample
 - ii. Team health and safety
 - b. Sources
2. Dangers to Diver, Scene, Team Members, Family
3. Suit Permeation
4. Protecting Potable Water Supply
5. Post Dive Observations
6. Decontamination Procedures

Dry Suit

1. Types of Dry Suits
 - a. Shell style
 - b. Crushed neoprene
 - c. Neoprene
 - d. Types of seals
 - i. Latex
 - ii. Neoprene
2. Features
 - a. Self don
 - b. Rear entry
 - c. Boots
 - d. Zipper guard - protect waterproof zipper from chaffing
 - e. Warm neck collar
 - f. Suspenders
3. Dive Wear Insulation
 - a. Cut to be close to skin
 - b. Compression-resistant
 - c. Dive wear is primarily made of polyester fibers or polypropylene

4. Dry Suit Valves
 - a. Inflator
 - i. Push to inflate
 - ii. To maintain the air space created by the dry suit
 - b. Deflator
 - i. Push to dump an adjustable
 - ii. Simple open and close system
5. Buoyancy Control
 - a. Proper weighting
 - i. Cylinders and weights
 - ii. Weight integrated buoyancy compensator device (BCD)
 - iii. Harness system.
 - b. Maintaining neutral buoyancy underwater
 - c. Dry suit is not a substitute for proper BCD
6. Maintenance and care
 - a. Flush with fresh water
 - b. Dry inside first
 - c. Avoid heat, chemicals and oils
 - d. Zipper care
 - i. Clean inside and out (toothbrush)
 - ii. Use only paraffin wax never Silicon spray
 - e. Minor repairing
 - i. Repair from inside out
 - ii. 50/50 mix Cotel-240 and Aquaseal™
 - f. The use of water-soluble lubricants inside wrist seals to ease wear and tear on wrist seals while donning the suit
7. Dry Suit Emergencies
 - a. Excessive air in suit
 - b. Inflator valve stuck open or leaking air
 - c. Exhaust valve stuck closed.
 - d. Accidentally dropped weights
 - e. Excessive air in feet
 - f. Dry suit flooded

4.10 Required Skill Performance and Graduation Requirements

Confined water training is not required but highly recommended. It would consist of:

1. Pool Session One:
 - a. Plan dive
 - b. Proper donning of dry suit
 - c. Review functions and features of dry suit
 - d. Enter water
 - e. Buoyancy check
 - f. Get comfortable
 - g. Descend
 - h. Practice dry suit skills
 - i. Inflating and deflating suit
 - j. Roll from inverted position
 - k. Buoyancy skills / hovering
 - l. Ascend and exit

Students are required to successfully complete the following in open water:

1. Open Water Dive 1 (ERDI recommends that the first dive be no deeper than 6 metres / 20 feet)
 - a. Plan dive
 - b. Proper donning of dry suit
 - c. Review functions and features of dry suit
 - d. Enter water from back of boat or shore entry
 - e. Buoyancy check
 - f. Get comfortable
 - g. Descend
 - h. Practice dry suit skills
 - i. Inflating and deflating suit
 - j. Roll from inverted position
 - k. Ascent with safety stop
 - l. Exit / log dive

2. Open Water Dive 2:
 - a. Plan dive
 - b. Enter and descend
 - c. Practice dry suit skills
 - d. Inflating and deflating suit
 - e. Roll from inverted position
 - f. Emergency procedures for dry suit malfunctions
 - g. Enjoy the sites
 - h. Ascend w/ safety stop
 - i. Exit / log dive

5. Full Face Mask Ops

5.1 Introduction

The ERDI Full Face Mask Ops Component is designed to develop the knowledge and skills necessary for full face mask operations in emergency response diving

5.2 Student Prerequisites

1. Minimum age 18
2. Certified as ERD I or equivalent
3. Current CPR, first aid and oxygen administration certification

5.3 Qualifications of Graduates

Upon successful completion of the ERD Full Face Mask Ops Component, students will have developed the knowledge and skills necessary to plan and execute full face mask diving operations

5.4 Who May Teach

An active ERDI Instructor that has been certified to teach this ops component

5.5 Administrative Requirements

Required forms

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

Required Manuals

1. *ERDI Full Face Mask* Student Manual or elearning
2. *ERDI Full face Mask* Knowledge Quest or elearning
3. *ERDI Full Face Mask* Instructor Guide

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 member's area of the ERDI website.

5.6 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 6 students per ERDI Instructor

Open Water

1. A maximum of 6 students per ERDI Instructor; it is the instructor's discretion to reduce this number as conditions dictate

5.7 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Open water dives (required): Two dives are required with complete briefs and debriefs by the instructor. Dive plan must include surface interval, max no-decompression time, etc. to be figured out and logged

5.8 Required Equipment

1. Same equipment required for ERD I Diver
2. Full face mask with communication capabilities

5.9 Approved Outline

Encapsulation

Environmental Issues

1. Nuclear, Biological, Chemical
 - a. Medical concerns
 - i. Water sample
 - ii. Team health and safety
 - iii. Sources
2. Dangers to Diver, Scene, Team Members, Family
3. Suit Permeation

4. Protecting Potable Water Supply
5. Post Dive Observations
6. Decontamination Procedures

Full Face Mask

1. Purpose
 - a. Diver safety
 - b. Communications
2. Advantages
 - a. Increased diver safety
 - i. Contaminated water
 - ii. Winter diving
 - b. Communications
 - c. Corrective lenses
3. Disadvantages
 - a. Increased air consumption
 - b. Buoyancy
 - c. Bulky
4. Types
 - a. Appropriate/Inappropriate
 - b. Scuba Quick connect/disconnect
 - c. Surface supplied
5. Techniques/Procedures
 - a. Donning
 - i. In water vs. out of water
 - ii. Strap adjustment
 - iii. Skirt seal
 - b. Diving with a full face mask
 - i. Equalization
 - ii. Buoyancy
 - iii. Removal and replacement underwater
 - iv. Alternate air source use
 1. Spare mask
 - v. Surface options
 1. Surface valve
 - vi. Decontamination procedures prior to doffing
 - vii. Positive pressure in a ffm
 - viii. Causes of free flow
 - ix. Mask removal underwater
 - x. Free flow while inverted/while diving/ use and how to resolve
 - xi. Low Pressure Inflator when disconnected

6. Underwater Communications
 - a. Types of communication equipment
 - i. Push to talk (PTT)
 - ii. Voice activated (VOX)
 - iii. Hardwire/Tether
 - iv. Battery failure
7. User/Field Maintenance and Care
 - a. Authorized servicing/preventive maintenance
 - b. After use

5.10 Confined Water Outline

Students are required to successfully complete the following skills:

Scuba Skills

1. Instructor evaluation of basic scuba skills including redundant air source use

Full Face Mask Skills

1. Equipment set up
2. Proper donning and adjustment
3. Entry techniques
4. Proper weighting
5. Equalization
6. Clearing partially flooded mask
7. Remove and replace mask underwater
8. Remove mask and utilization of redundant air source

5.11 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

1. Open Water Dive 1
 - a. Dive plan
 - b. Equipment set up
 - c. Proper donning and adjustment
 - d. On the surface switching from open to close
 - e. Communications on surface and underwater (hand signals, push to talk, com unit, line signals, talking etc)
 - f. Proper weighting
 - g. Equalization techniques
 - h. Establish buoyancy and demonstrate buoyancy control
 - i. Clearing a partially flooded mask
 - j. Ascent and exit
 - k. Log dive
2. Open Water Dive 2
 - a. Dive plan
 - b. Remove and replace full face mask underwater
 - c. Successfully switch to a back up mask
 - d. Remove mask and utilization of alternate air source
 - e. Free flowing ffm
 - f. Underwater tour
 - g. Ascent and exit
 - h. Log dive

6. Helicopter Underwater Escape Training (HUET) Safety Diver

6.1 Introduction

This course provides training and experience to competently act as a safety diver during Helicopter Underwater Escape Training (HUET) operations. This course includes theory presentations on hazards associated with HUET operations, physiological response to stress and intervention techniques and commands and emergency procedures associated with HUET diving.

6.2 Qualifications of Graduates

Upon successful completion of this course, graduates may engage in Helicopter Underwater Escape Training (HUET) safety diving provided the diving activities, areas of activities and environmental conditions approximate those of training.

6.3 Who May Teach

1. Any active ERDI Instructor with a HUET Distinctive Specialty qualification may teach this course

6.4 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 material

Confined Water (swimming pool-like conditions)

1. A maximum of 4 students per instructor; however, it is the instructor's discretion to reduce this number as conditions dictate

Open Water (ocean, lake, quarry, spring, river or estuary)

1. N/A as this course is swimming pool, confined water based

6.5 Student Prerequisites

1. Minimum age 21
2. Certified as an SDI Rescue Diver or the equivalent
3. Provide proof of completion of first aid training within past 2 years

6.6 Course Structure and Duration

Pool / Confined Water Execution

1. 8 sessions are required and are to include:
 - a. Ditching scenarios on water
 - b. Partial submersion
 - c. Full submersion
 - d. Full submersion with capsized

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, briefing and pool work is 14 hours

6.7 Administrative Requirements

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

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 member's area of the ERDI website.

6.8 Training Material

Required material

1. *Tropical Basic Helicopter Underwater Escape* training manual
2. *Tropical Advanced Helicopter Underwater Escape* training manual
3. OPITO HUET stress and exit report

Required Equipment

The following equipment is required for each student:

1. Mask, fins, snorkel
2. Buoyancy compensator device (BCD) with a low pressure power inflator
3. Regulator with submersible pressure gauge
4. Alternate air source
5. Weighting system
6. Compressed gas cylinder
7. Cutting device
8. Exposure suit appropriate for the training conditions
9. Light, during night training

6.9 Required Subject Areas

The following topics must be covered on this course. The Instructor may use any text or material that they feel best presents these topics.

1. Hazards associated with HUET operations and diving
2. Roles and responsibilities of HUET dive team
3. Legislative requirements that apply to HUET operations
4. HUET operational and emergency procedures, commands, communication and signals
5. Function and operation of equipment used in HUET operations
6. The physiological response to stress and suitable intervention techniques

In order to complete this course, students must:

1. Score minimum 80 percent on the ERDI HUET written test with 100 percent remediation
2. Demonstrate mature, sound judgment concerning training, dive planning and execution
3. Complete all 8 submersion drills safely and efficiently including a simulated casualty recovery from inside the HUET cabin

7. Ice Diving Ops

7.1 Introduction

Diving under ice presents hazards not common to the emergency response diver and special training is required. The purpose of this course is to acquaint the diver with many of the hazards associated with ice diving and how to plan and execute an ice dive.

7.2 Who May Teach

An active ERDI Instructor that has been certified to teach this ops component

7.3 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

Open Water

1. A maximum of 2 students per ERDI Instructor; it is the instructor's discretion to reduce this number as conditions dictate

7.4 Student Prerequisites

1. ERD I or equivalent
2. Minimum age 18

7.5 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Open water dives (required): Two dives are required with complete briefs and debriefs by the instructor. Dive plan must include surface interval, max no-decompression time, etc. to be figured out and logged

7.6 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 Manuals

1. Texts, other than ERDI manuals, used for ERDI Ops Components must be approved by ERDI Headquarters

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 member's area of the ERDI website.

7.7 Required Equipment

1. Same equipment as required for ERD I
2. Dry suit
3. Regulator appropriate for the environment
4. Harness
5. Lines
6. Lights (as required)
7. Cold weather surface support equipment
8. Hole cutting equipment

7.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Effects of the Cold
 - a. Physiological aspects of cold water diving
 - b. Emergency aspects of cold water diving
 - c. Special first aid for cold exposure
2. Equipment for Ice Diving
 - a. Harness
 - b. Lines
 - c. Dry suit
 - d. Hole cutting equipment

3. Surface Support Procedures
 - a. Duties and responsibilities
 - b. Hole cutting techniques
 - c. Lines and securing
 - d. Line tending
 - e. Communications
 - f. Signals
 - g. Ice spokes
 - h. Lost diver procedures
 - i. Safety diver
 - i. Equipment of the safety diver
 - ii. Search and recovery trained
 - iii. Broken line procedures
4. Navigation
5. Diving Lights and their Care

7.9 Required Skill Performance and Graduation

Students are required to successfully complete the following:

1. Open Water Dive 1
 - a. Review of scuba skills on land
 - b. Test lights and equipment
 - c. Set up shelter
 - d. Cut hole in ice and secure
 - e. Dive plan
 - f. Descent and line considerations on land
 - g. Line handling and short line signals on land
 - h. Ten minute familiarization
 - i. Enter
 - j. Each diver must rotate and practice both surface support and safety diver
 - k. Exit
 - l. Log dive
2. Open Water Dive 2
 - a. Set-up and dive plan
 - b. Enter
 - c. Line handling and simulated lost diver procedures
 - d. Fifteen minute exploring under the ice
 - e. Exit
 - f. Log dive

8. Ice/Surface Rescue Ops

8.1 Introduction

The ERDI Surface Ice Rescue Ops Component is designed to develop the knowledge and skills necessary for surface ice rescue operations in emergency response diving

8.2 Student Prerequisites

1. Minimum age 18
2. Current CPR and first aid certification

8.3 Qualifications of Graduates

Upon successful completion of the ERDI Ice/Surface Ops Component, students will have developed the knowledge and skills necessary to plan and execute ice/surface operations

8.4 Who May Teach

An active ERDI Instructor or ERDI Non-Diving Specialty Instructor that has been certified to teach this ops component

8.5 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 Manuals

1. ERDI Instructors may use any materials they feel are relevant to the course

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 member's area of the ERDI website

8.6 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

Open Water

1. A maximum of 12 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. At no time may an ERDI Ice/Surface Rescue Instructor have more than 2 tethered students in the water

8.7 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Ice/Shore evolutions: Approximately 8 hours

8.8 Required Equipment

Student

1. Immersion suit appropriate for the conditions
2. Tether harness
3. USCG approved personal floatation device (PFD)

Instructor

1. All student equipment
2. Any specialized equipment to complete ice training requirements such as line bags with line, rescue sled, line throwing devices (throw bag, line gun etc.) locking carabineers

8.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

Environment

1. Types of Ice, Characteristics and Traits
2. Impact of Weather
3. Water, Currents
4. Tidal Areas, Rivers, Lakes

Victims

1. Human
 - a. Aggressive
 - b. Passive
 - c. Unconscious
2. Animal
 - a. Domestic/Farm
 - b. Team capabilities
3. Hypothermia
 - a. Effects on victims and rescuers
 - b. Heat loss factors
 - c. Signs and symptoms
 - d. Proper patient handling/treatment

Operations

1. Team Selection
2. Assignments/Roles of Team Members
 - a. Incident commander
 - b. Spotter
 - c. Primary rescuer
 - d. Primary tender
 - e. Backup rescuer
 - f. Backup tender
3. Incident Command
 - a. Standard operating procedures (SOPs) / standard operating guidelines (SOGs)
 - b. Pre-planning
 - c. Mutual aid
 - d. Scene set up and control
4. Tender Operations

Equipment

1. Immersion Protection
 - a. Dry suits/wetsuits, suitability, pros and cons
 - b. Gumbo suit, rescue suits
 - c. Other exposure protection
 - d. Shore personnel
 - e. Maintenance
2. Primary and Backup Rescuer
 - a. Harness and tethers
 - b. PFD's
 - c. Cutting devices
 - d. Signaling devices
 - e. Fins
3. Line Bags/Throw Bags
4. Ice Pole, Use, Placement
5. Ice Awls/Picks
6. Ice Rescue Sling
 - a. Positioning on rescuer/victim
 - b. Line rigging
7. Rescue Sled
 - a. Features
 - b. Placement for victim extrication/transport

Rescue Techniques

1. Scene Size Up
2. Communicating with Victim if Possible
3. Reach, Throw or Go, Decision Making Process
4. Victim Rescue
 - a. Approach
 - b. Ice assessment
 - c. Rescuer positioning, victim
 - d. Victim assessment, extrication and transport
5. Self Rescue Techniques

8.10 Required Skill Performance and Graduation Requirements

All students are required to rotate through team positions as primary rescuer, primary tender, backup rescuer and backup tender

All students are required to show proficiency in the following skills:

1. Proper donning of immersion protection
2. Ice assessment
3. Tending of rescuer
4. Approach of victim
5. Victim extrication and transport
6. Self rescue techniques

9. Small Boat Operations

9.1 Introduction

This course is designed to expand a diver's knowledge in Small Boat Operations and is primarily intended for a qualification system. This course is a compilation of minimum knowledge and skills that an individual must demonstrate in order to qualify to stand watches or perform other specific routine duties necessary for the safety, security or proper operation of a small craft in emergency response diving.

9.2 Student Prerequisites

1. Minimum age 18
2. Provide proof of current CPR, first aid and oxygen provider, where local law permits
3. Qualified to operate a small craft in accordance with local regulations

9.3 Qualifications of Graduates

Upon successful completion of this course, graduates may carry out vessel-based rescues, and perform stand watches or other specific routine duties necessary for the safety, security or proper operation of a small craft in non-commercial emergency response operations.

9.4 Who May Teach

1. Any ERDI Instructor or ERDI Non-Diving Specialty Instructor that has been certified to teach this ops component

9.5 Administrative Requirements

Administrative Tasks:

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

Upon successful completion of this ops component the instructor must:

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

9.6 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 (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, or river)

1. Student to Instructor ratios are not to exceed the designated vessel capacity; it is the instructor's discretion to reduce this number as conditions dictate.

9.7 Course Structure and Duration

Classroom briefing

1. Approximately 8 hours

Small Boat Orientation

1. A minimum of 3 hours

Open Water Operations

1. A minimum of 5 hours

9.8 Required Equipment and Materials

1. Same equipment required for ERD Tender Ops
2. Small Boat (or vessel meeting the needs of training and operational standards)
3. Personal protective equipment (to include appropriate personal flotation device (PFD) for all active participants))

9.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered

1. Operational Risk Management (ORM)
 - a. ORM concept
 - b. The three levels of ORM
 - i. In- depth ORM
 - ii. Deliberate ORM
 - iii. Time critical ORM
 - c. The four principles of ORM
 - d. Steps of the ORM process:
 - i. Identify the hazards
 - ii. Assess the hazards
 - iii. Make risk decisions
 - iv. Implement controls
 - v. Supervise
 - e. Name the four steps of the Time Critical Risk Management mnemonic and discuss how they relate to execution of deck operations
 - f. Safety precautions to be observed during boat operations in regard to weather and hazards to navigation
 - g. Safety precautions to be observed while fueling
 - h. Procedures involved in recovering a Man Overboard from the water
 - i. Use of portable firefighting equipment for your boat
 - j. Safety precautions to be observed by the boat crew when hoisting and lowering a boat
 - k. State the requirements for wearing inherently buoyant life preserver vest type with collar
 - l. Importance of a proper fit test and pre-operational maintenance of floatation device
 - m. Safe working load of the davit assigned to your boat
 - n. State the passenger and cargo capacity of your boat in various conditions/evolutions
 - o. Use of pre-operational check-off lists prior to getting underway
 - i. Pre-operational check list
 - ii. Post-operational check list

Note: The ultimate responsibility for boat operation rests with boat operators. It is their duty to refuse to operate a vessel if, in their judgment, conditions are unsafe or if they would be violating federal, state, or local laws. It is a boat operator's responsibility to be familiar with and follow all federal, state, and local laws pertaining to the safe operation of the vessel.

2. Small Boat/Rigid Inflatable Boat (RIB)
 - a. Basic characteristics of small boats
 - b. Team's lowering and hoisting capability; equipment and configuration
 - c. Procedures, importance of, and requirement for starting the boat prior to the boat becoming water borne
 - d. Team's procedures for launching and recovering small boats
 - e. Basic responsibilities and duties for:
 - i. Boat Officer
 - ii. Coxswain
 - iii. SAR swimmer
 - iv. SONAR Operator
 - f. Proper deployment and recovery the Search and Recovery (SAR) swimmer
 - i. Hand signals
 - ii. Flare signals
 - iii. Light signals
 - g. Lay out and use of SAR Equipment
 - i. Medical kit
 - ii. Medevac litter
 - iii. AED
 - h. Use of:
 - i. Bow/stern lines
 - ii. Steadying lines
 - iii. Fenders
 - iv. Life ring
 - v. Boarding ladder
 - vi. Compass
 - vii. Anchor
 - viii. Oars
 - i. The effect and typical situations of the following on small boats
 - i. Side force
 - ii. Frictional wake current
 - iii. Screw current

- j. Maneuvering situations
 - i. Port side to landing and getting underway
 - ii. Starboard side to landing and getting underway
- k. Function of the anchor
 - i. Precautions that must be observed when anchoring a RIB
- l. Define and discuss the following handling characteristics for the RIB
 - i. Planning speed
 - ii. Pivot turns
 - iii. Prevention or tripping
 - iv. Prevention of becoming airborne
- m. Procedures to be followed when approaching and recovering a survivor in the water
 - i. Pilot rescue
 - ii. Conscious/unconscious victim
 - iii. Proper employment/Safety precautions when deploying SAR swimmer
- 3. Basic Operation Fundamentals
 - a. Define the following terms:
 - i. Vessel
 - ii. Power-driven vessel
 - iii. Sailing vessel
 - iv. Underway
 - v. Restricted visibility
 - vi. Safe speed
 - vii. Risk of collision
 - viii. Distress signals
 - ix. Give-way vessel
 - x. Crossing situation
 - xi. Overtaking situation
 - b. Discuss the arc of visibility, range of visibility, and color of the following lights:
 - i. Forward masthead
 - ii. Aft masthead
 - iii. Port running light
 - iv. Starboard running light
 - v. Stern
 - vi. All-around lights
 - vii. Flashing light
 - viii. Towing light

- c. Sound and light signals required during restricted visibility
 - i. Power-driven vessel underway
 - 1. Making way
 - 2. Making no way
 - ii. Power-driven vessel towing
 - iii. Vessel at anchor
 - 1. 100 metres or longer
 - 2. Less than 100 metres
 - iv. Vessel aground
 - d. Whistle signals used by a boat in inland waters:
 - i. Head on (meeting) situation
 - 1. One short
 - 2. Two short
 - ii. Overtaking situation
 - 1. One short
 - 2. Two short
 - iii. Crossing
 - 1. One short
 - 2. Two short
 - iv. Three short
 - v. Five or more short
 - e. Situation requiring one prolonged blast
 - f. Explain in the following situation, which vessel is give-way, which vessel is stand-on, and action required of both vessels to pass safely:
 - i. Head-on situation
 - ii. Crossing situation
 - iii. Overtaking situation
 - g. The rule of good seamanship
 - h. Action required to avoid collision
4. Navigation Fundamentals
 - a. Describe the following chart symbols:
 - i. Buoys
 - ii. Obstructions
 - iii. Shoals
 - iv. Depth contour lines
 - v. Compass rose

Note: Because printing PDFs can alter the scale, color and/or legibility of a chart, PDF charts should not be considered suitable for navigational use. Only printed charts provided by NOAA-certified Print-on-Demand (POD) providers or The United Kingdom Hydrographic Office fulfill a vessel's requirement to carry a navigational chart "published by the National Ocean Service" "or The United Kingdom Hydrographic Office" in accordance with federal regulations.

- b. Five basic buoy shapes
 - c. Types of buoys and purpose
 - i. Lateral marks
 - ii. Special purpose
 - iii. Preferred channel
 - iv. Cardinal
 - v. Safe water
 - vi. Day markers
 - d. Define the following terms:
 - i. Tide
 - ii. Mean lower low water
 - iii. Flood current
 - iv. Ebb current
 - v. Tidal current
 - vi. Slack water
 - vii. Set/drift
 - e. How to convert a course to a true/compass course
 - f. Deviation, variation and their effect on a magnetic compass
5. Start-Up and Shutdown Fundamentals
- a. Preoperational procedures
 - b. Liquid levels for the following:
 - i. Oil sump
 - ii. Expansion tank
 - iii. Fuel tank
 - iv. Transmission
 - v. Steering fluid
 - c. Start-up procedures
 - d. Normal operating ranges for the following:
 - i. Engine oil pressure
 - ii. Jacket water temperature
 - iii. Tachometer
 - iv. Voltmeter

- e. Emergency procedures:
 - i. Over speed engine
 - ii. Loss of steering
 - iii. Loss of throttle
 - iv. Loss of lube oil pressure
 - v. Overheating
 - f. Shutdown procedures
 - g. Emergency shutdown procedures
6. Radar System
- a. Principles of operation
 - i. How do the components work together to achieve the system's function?
 - ii. What indications are received if the system is malfunctioning?
 - b. Variables that can affect minimum/maximum ranges
 - c. Outside influences that affect the operation of the system
 - i. Adverse weather conditions
 - ii. Loss of electrical power
 - iii. Power fluctuations
 - iv. Electromagnetic interference
 - d. How the system interfaces with the navigation equipment
7. Global Positioning System (GPS)
- a. What are the principles of operation of a GPS to achieve the system's function?
 - b. What is the sequence of component involvement to accomplish:
 - i. Mode/on
 - ii. Initialize
 - iii. Enter way points
 - iv. Enter routes
 - v. Navigate by way points
 - vi. Display track
 - vii. Mode/off
 - c. What indications are received if the system is malfunctioning?
 - d. How do the following outside influences affect the operation of this system?
 - i. Inclement weather
 - ii. Fog
 - iii. Electrical/electronic interference
 - iv. Overhead obstruction
 - v. Satellite
 - vi. Radar
 - e. How does this system interface with Radar?

8. Dive Team Applications to Small Boat Operations
 - a. Operational structure
 - i. Vessel command structure
 - ii. Divers working with vessel crew
 - b. Prep and boat layout for dive operations
 - i. Diver positions
 - ii. Equipment positioning and storage
 - iii. Medical equipment storage, availability, and access
 - c. Current
 - i. Vessel positioning
 - ii. Diver/Swimmer safety
 - d. Deploying divers
 - i. Entry methods
 - ii. Current and diver entries
 - iii. Equipment hand-off
 - iv. Support equipment (storage, availability, and use)
 - e. Diver-Boat Communications
 - i. Hand signals
 - ii. Wireless communications
 1. Signal capabilities
 - iii. Hardwire communications
 1. Tethering
 2. Dangers related to moving water
 - f. Recovering divers
 - i. Vessel approach
 - ii. Equipment loading
 - iii. Diver recovery methods
 - g. Recovering secondary items
 - i. Support during evidentiary recovery
 - ii. Body recovery
 - iii. Chain of custody requirements
 - iv. Hull tie-downs
 - v. Towing
 - vi. Diver positioning and safety
 - h. Unloading
 - i. Evidentiary and secondary item transfer
 - ii. Possible chain of custody requirements
 - iii. Equipment offload
 - iv. Diver offload
 - v. Vessel stand-down

9.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

1. Prepare small boat for hoisting and lowering, or deployment (adjust for departmental needs)
2. Convert true course to compass course
3. Maintain and log compass course to and from destination
4. Demonstrate VHF/Handheld radio transmission protocol (minimum of 2 times)
5. Make PORT/STARBOARD landings to:
6. Accommodation ladders (minimum of 2 times)
7. Boat landing (minimum of 2 times)
8. Transit a four-way point using GPS (minimum of 2 times)
9. Supervise loading and unloading of cargo/personnel
10. Deploy/recover SAR Swimmer
11. Demonstrate SAR Swimmer hand signals
12. Deploy and recover 2 divers, maintaining communications throughout
13. Conduct two towing scenarios (one towing, one being towed)
14. Use/identify distress signals
15. Serve as a coxswain for mooring procedures
16. Complete and pass written exam

9.11 To qualify to teach the ERDI Small Boat Operations Component, an Instructor must:

1. Be an active ERD Instructor or Non-Diving Specialty Instructor
2. Provide proof of current CPR, first aid and oxygen provider
3. Hold a valid USCG Captain's license, or equivalent

OR

1. Successfully complete a Boating Skills & Seamanship (BS&S) course recognized by the U.S. Coast Guard, Essential Navigation & Seamanship Course recognized by the Royal Yachting Association (RYA) or equivalent
2. Provide verification of 360 days of boating experience, 90 within the past 3 years
3. Submit the appropriate paperwork with a complete ERDI Instructor Upgrade request to World HQ or Regional Office for processing

10. Swift Water - Level 1 Ops

10.1 Introduction

This course is designed to provide information and hands on training to students/team members who may need to respond to a swift water call where no water entry is practical or possible. As defined by NFPA 1006/1670 guideline “water moving at a rate greater than 1 knot [1.85km/hr. (1.15 mph or 1.69 ft/sec)]”. Swift water is typically found in high hills, mountain areas or in flash flood areas designed for moving water away and represents water in a natural setting moving downhill. With large scale flooding now common in rural and urban environments, moving water may be swift and the need for safe and effective training programs are in demand.

The purpose of the ERDI Swift Water program is to provide necessary skills and knowledge in performing life saving operations in swift water, and the importance of understanding the dangers of moving water such as strainers and hydraulics.

10.2 Level 1 Student Prerequisites

1. 18 years old
2. Should be a member of a Emergency First Response group
3. Must be a good swimmer, in good health and comfortable working in the water
4. CPR / AED / O2 / First aid certified

10.3 Qualifications of Graduates

1. Swift Water Level 1:
 - a. Awareness, Operational and Technician Level courses are for emergency response personnel who may be first on the scene of a swift water emergency. First responders at the awareness level are expected to recognize the presence of hazardous conditions, protect themselves, secure the area, and call for additional resources, activate an emergency plan, assess conditions and attempt a reach or throw rescue.

10.4 Who May Teach

1. Any active ERDI Instructor who is qualified to teach the ERDI Swift Water Level 1 program. To become qualified to teach this program an ERDI Instructor must have completed a program involving level 1 swift water operations, or have gone to an ERDI IT who is qualified to conduct the ERDI Level 1 Swift Water Instructor program.
2. The ERD Swift Water Instructor must also:
 - a. Taken a minimum of 3 swift water rescue courses,
 - b. Have taken 1- 40 Hour Ropes Course (rigging and lifting with Mechanical Advantages - Litter Care) including Level I and II instruction
 - c. Be able to teach first aid, O2, AED, CPR
 - d. Be part of a swift water rescue team

10.5 Administrative Requirements

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

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 member's area of the ERDI website. Awareness level will receive a certificate upon completion if the online course was taken or a certificate can be requested if a traditional course was taken. Operations and Technician levels will receive a certification card and wall certificate

10.6 Student to Instructor Ratio

Academic

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

Confined / Controlled water

1. A maximum of 6 students per ERDI Instructor
2. ERDI Instructors have the option of adding 2 more students with the assistance of a qualified ERDI Supervisor
3. The maximum number of students an ERD Instructor may have in confined / controlled water is 10 with active ERDI Supervisors

Open water

1. The maximum of responders for Level 1 swift water should not exceed 6 in water participants per instructor; however it is the instructor's discretion to reduce this number as conditions dictate.

10.7 Level 1 Swift Water Course Structure and Duration

Course Structure

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

Duration

Awareness

1. Classroom and briefing: Approximately 4 hours

Operations

1. Confined / Controlled water: Approximately 4 hours

Technician

1. Open water: Approximately 8 hours
2. Open water exposures (required): Two open water exposures are required with complete briefs and debriefs by the instructor.

10.8 Required Equipment

The student must have the following equipment during all water training:

1. USCG approved type V PFD or instructor approved suit and PFD (minimum USCG type III specific to swift water)
2. Throw Ropes
3. First aid kit, O and AED available
4. Water proofed cell phone and or working radio capable of 911 communication
5. Improvised rescue items
6. Minimum of 1 cutting tool
7. Gloves
8. Spare clothes, towel, hat, sunscreen, food, water

The ERDI Swift Water Instructor must have the following equipment:

1. Same equipment as student with visual marks identifying as instructor
2. Throw Ropes
3. Personal swift water fins
4. Mask and Snorkel
5. PFD must be of tethered swimmer design
6. Emergency first aid and oxygen and AED available on site (May use guest agency's resources)
7. Boogie board, rope/line, carabineers
8. Spare equipment to allow for damage/loss while training

10.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

Incident Command

1. Standard operating procedures (SOPs) / standard operating guidelines (SOGs)
2. Pre-planning
3. Mutual aid
4. Scene set up and control

Environment

1. Impact of Weather
2. Water, Currents
3. Types of Swift Water, Characteristics and Traits
4. Tidal Areas, Rivers, Lakes
5. Hazards, including Low Head Dams, Strainers, Culverts, Delta P Changes
6. Pollutants Caused by Rising Water Including:
 - a. Petroleum products
 - b. Septic systems
 - c. Farm run-off
 - d. Other temporary hazardous chemical or pathological exposures
7. Types of Swift Water Rescues
 - a. TALK
 - b. REACH
 - c. ROW
 - d. THROW
 - e. GO
 - f. HELO
8. Implementing REACH Rescue
9. Risk Benefit Analysis
 - a. Are the right team members on scene?
 - b. Are the right numbers of team members on scene?
 - c. Is the proper equipment on scene?
 - d. Does the experience of the team match the requirements of the rescue?
10. Equipment
 - a. Reach tools
 - i. Stick
 - ii. Board
 - iii. Pike Pole
 - iv. ANY makeshift item that will work
11. Throw tools (should float)
 - a. Rescue can or buoy
 - b. Life-Safer or Rescue Disc
 - c. Throw Rope
 - d. ANY makeshift item that will work
12. Skills
 - a. Rope Skills
 - i. Rapid assessment of need and deployment
 - ii. Ability to throw past victim in the water
 - iii. Static Belay
 - iv. Dynamic Belay

Victims

1. Human
 - a. Conscious / Active
 - b. Passive
 - c. Unconscious
2. Animal
 - a. Domestic/Farm
 - b. Team capabilities
3. Hypothermia / Hyperthermia
 - a. Effects on victims and rescuers
 - b. Heat loss/gain factors
 - c. Signs and symptoms
 - d. Proper patient handling/treatment

Operations

1. Assignments/Roles of Team Members
 - a. Incident commander
 - b. Spotter
 - i. Up stream
 - ii. Down stream
 - c. Primary rescue team
 - d. Backup rescue team
2. Incident Command
 - a. Standard operating procedures (SOPs) / standard operating guidelines (SOGs)
 - b. Pre-planning
 - c. Mutual aid
 - d. Scene set up and control
 - e. Tender Operations

Equipment

1. USCG approved type V PFD or instructor approved suit and vest (minimum USCG type III specific to swift water)
2. Live bait or swift water harness system
3. Throw ropes
4. First aid kit, O2 and AED Available
5. Water proofed cell phone and or working radio capable of 911 communication
6. Improvised rescue items
7. Minimum 1 cutting tool

8. Gloves
9. Spare clothes, towel, hat, sunscreen, food, water
10. Victim extraction / transport
 - a. Private means
 - b. ALS / BLS unit
 - c. Helo
11. Rescue Sled
 - a. Features
 - b. Placement for victim extrication/transport
 - i. Land
 - ii. Helicopter

Rescue Techniques

1. Scene Size Up
2. Communicating with Victim if Possible
3. Talk, Reach, Throw, Go or Helo, Decision Making Process
4. Dynamic and Static Throw Rope Belay
5. Downstream Lines / Catch Lines
6. Victim Rescue
 - a. Approach
 - b. Swift water scene assessment
 - c. Rescuer positioning, victim
 - d. Victim assessment, extrication and transport
7. Self-Rescue Techniques

10.10 Required Skill Performance and Graduation Requirements

Confined Water Training

Confined water training is not required for the basic swift water course unless teaching advanced skills and/or the instructor feels that current open water conditions are unsafe for the skill to be mastered. The swift water course cannot be completed except in moving open water.

1. 500 metres /548 yard continuous forward stroke swim –no swim aids, in less than 14 minutes
2. 15 minute survival tread with last two minutes holding hands out of the water

Open Water Training

The Instructor, with the following considerations, must carefully choose a swift water training site: The body of water should be similar to what the team will respond to.

1. Swimming pools are not considered an open/swift water environment
2. Water and air temperature, including the need for shade and drinking water
3. Water access
4. Thermal protection appropriate for the conditions above and below water
5. Appropriate equipment for training
6. Appropriately apply ICS
7. Demonstrate ICS
8. A complete briefing that includes:
 - a. Team safety, go or no-go, when to abort the call
 - b. Emergency action plans if rescuer becomes a victim
 - c. The operation site
 - d. Water conditions
 - e. Skills to be performed: self-rescue
 - f. River hazards and entry/exit(s) to be used
 - g. Emergency and safety procedures
 - h. Ropes/lines, knots, tying points, carabineers
 - i. Cell or satellite phone in a waterproof container or bag
 - j. If working in a remote location, a hand held GPS is recommended
9. Appropriate usage of PFD's type I-V
 - a. Usage
 - b. Checking participants vest for fit and proper threading
10. Throw ropes
 - a. Consistently throw a bag approximately 15 metres / 50 feet
 - b. Consistently throw a bag, over hand or side arm, approximately 12 metres / 40 feet to a simulated victim in water
 - c. Coil and make second throw to simulated victim in approximately 20 seconds
 - d. Demonstrate effectively re-stuffing throw bag
 - e. Demonstrate proper rope care
11. Demonstrate swimming a strainer
 - a. Swimming techniques – defensive to super aggressive techniques
 - b. Approach to the strainer
 - c. Movement over the strainer
 - d. Understand point positive commands

12. Flip an unconscious victim
 - a. Demonstrate proper methods
 - b. Package patient consistent with EMS protocols
13. Using litter flotation
 - a. Demonstrate In-water packaging using a basket litter
 - b. Demonstrate In-water packaging using a backboard
 - c. Provide Cervical Spine Management techniques
 - d. Provide Airway Management techniques
14. Demonstrate the use of Live Bait or releasable Type V PFD technologies
 - a. Demonstrate requisite knowledge of water entry
 - b. Head- up water rescue entry
 - c. Swiftwater leaping rescue entry
 - d. Safety Considerations
 - e. Rescuer belaying techniques
 - f. Swimming techniques
15. Peel out procedures using secondary motorized boat
 - a. Demonstrate a two-boat tether system
 - b. Demonstrate operator's ability to maneuver motorized boat
 - c. Use of power turns
16. Knots and Hitches
 - a. Figure 8
 - i. Follow through
 - ii. On a bight
 - b. Bowline
 - c. Sheet Bend
 - d. Prusick knot
 - e. Barrel knot
 - f. Water knot
 - g. Munter hitch
 - h. Clove hitch
17. Knot usage
 - a. Identify strengths and limitations of each knot/hitch
 - b. Identify proper knot/hitch to use for a given situation
18. Anchors
 - a. Create one and two point anchor systems
19. Tension Diagonal System
 - a. Demonstrate proper set up
 - b. Use of communication
 - i. Whistle, hand signals, radios

- 20. Construct a simple Mechanical Advantage 3:1 and a simple 5:1 Mechanical Advantage
 - a. Demonstrate requisite knowledge of Mechanical Advantages
 - b. Identify Hardware. i.e. Pulleys, breaking systems
 - c. Identify the Mechanical Advantage using T methods
- 21. Construct a highline system
 - a. Demonstrate requisite knowledge of highline
 - b. Construct on land and overwater
 - c. Anchor loading
 - d. Vector Angles
- 22. Using a highline rope system
 - a. Tether a boat for upstream and downstream movement
 - b. Construct moveable control lines for river left and river right boat movements
 - c. Understand proper boat placement in water
 - d. Utilize proper communication techniques
- 23. A complete debriefing includes:
 - a. Performance of team members as a whole
 - b. Areas that need improvement
 - c. Question and answers

During all swift water training there will be a qualified and dedicated safety officer assigned who will be present and equipped to respond to an in-water emergency at all times. During any in-water training, OSHA regulations, NFPA 1006 and 1670 standards must be followed. Any regional regulatory or legal requirements that apply to the location will also be followed, whichever is more stringent. Must also adhere to any department or office SOG/SOP's during training.

11. Tender Ops

11.1 Introduction

This course is designed to introduce the public safety professional to the ERDI Tender skills necessary to participate in public safety diving operations in a non-diving roll. Successful completion results in the ERDI Tender certification.

The ERDI Tender course can be taught in conjunction with the ERD I course. While the ERDI Tender Course is a non-diving course; the tender student should have a working knowledge of diving physics, physiology, techniques and equipment.

11.2 Student Prerequisites

1. Minimum age is 18
2. Current CPR, first aid and oxygen administration certification

11.3 Qualifications of Graduates

Upon successful completion 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

11.4 Who May Teach

Any active ERDI Emergency Response Diver Instructor or ERDI Non-Diving Specialty Instructor may teach this course

11.5 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 12 ERDI Tender 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 at confined water is 16 with the assistance of active ERDI Supervisors

Open Water

1. A maximum of 12 ERDI Tender students per ERDI Instructor is allowed; it is the instructor's discretion to reduce this number as conditions dictate
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 at open water is 14 with the assistance of active ERDI Supervisors

11.6 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

11.7 Required Materials

1. *ERDI Tender* student manual and Knowledge Quest or eLearning
2. *ERDI Line Tender* slates
3. *ERDI Tender* Instructor Guide
4. Texts, other than ERDI manuals, used for ERD Ops Components must be approved by ERDI Headquarters

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 member's area of the ERDI website.
2. Execution and Structure

Course Structure

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

Duration

1. Classroom and briefing: Approximately 2 hours
2. Confined water: Approximately 4 hours
3. Open water: Approximately 6 hours

Open Water

1. All open water training must be completed during daylight hours

11.8 Required Equipment

1. USCG approved personal floatation device (PFD)
2. Cutting tools: 1 primary, 1 backup
3. Rescue signals: audio and visual
4. Gloves: latex and work

11.9 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 department, police department, 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) standards, Occupational Safety and Health Administration (OSHA) regulations
 - b. Standard operating 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

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. Hazardous material (HazMat)
 - b. Diver propulsion vehicle (DPV)
 - c. Tow sleds
 - d. Metal detectors
 - e. Communications
 - f. Surfaced supplied air
 - g. Remote operated vehicle (ROV)
 - h. Heavy lifting equipment
 - i. 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

ERD Tender Skills

1. Value to Team
2. Back-up Tender
 - a. Responsibilities
3. Mapping and Documentation
4. Line Signals
 - a. Tender to Diver
 - i. One (1) Pull = OK
 - ii. Two (2) Pulls = Stop, Change Direction, Take Out More Line
 - iii. Three (3) Pulls = Surface
 - iv. Four (4) Pulls = Stop, Standby
 - b. Diver to Tender
 - i. One (1) Pull = OK
 - ii. Two (2) Pulls = More Line
 - iii. Three (3) Pulls = Object Found
 - iv. Four (4) Pulls = Help, Trouble
5. 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
 - a. Scene safety
 - b. Control of scene
 - c. Team SOP/SOG
 - d. Set up, gear up, deploy
2. Rescue
 - a. Risk vs. benefit
 - b. Witnesses
 - c. Timeline
 - d. 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. Predetermined start point, area of coverage, documented end point
 - c. Black water
3. Search Types
 - a. Sweeping arc
 - b. Expanding circle
 - c. Parallel pattern
 - d. V-Pattern
 - e. Jackstay

4. Determining Which Pattern
5. Boat Based Search Patterns
 - a. Anchoring
 - b. Global positioning system (GPS)
 - c. Anchored circle
 - d. Tow sleds

Crime Scene Recognition

1. Securing Scene
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

11.10 Confined Water Outline

ERD Tender Skills

1. Line signals, communicating with diver through tether*
2. Performing search patterns, at least 2*
3. *These skills may be conducted concurrently.

Students are to successfully complete the following waterman-ship skills:

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

11.11 Open Water Outline

The open water training consists of 2 evolutions. Each dive activity should be conducted as closely as possible to an actual incident response. The number of evolutions 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, ERDI Instructor or ERDI Instructor Trainer present and equipped to respond to an in-water emergency at all times. During any open 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

Assistants may be used in the role of primary diver, backup diver, backup tender and incident commander.

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

11.12 Certification

1. Score minimum 80 percent on the ERDI Tender written test with 100 percent remediation
2. Satisfactorily complete all academic, confined water and open water requirements
3. Satisfactorily complete swim evaluation requirements

12. Underwater Crime Scene Ops

12.1 Introduction

This course is designed to provide information and hands on training to Certified Peace Officer Standards and Training (P.O.S.T) officials, Coroners, Deputy Coroners, Certified Medico legal Investigators (ABMDI) and non-P.O.S.T. members to include, search and recovery dive personnel, rescue personnel who may respond to an in water evidence search or water related drowning. Evidence search may include items of interest or cadavers.

The purpose of the ERDI Underwater Crime Scene Investigations program is to provide necessary skills and knowledge in performing underwater crime scene investigations, preservation and proper documentation for court ready testimony.

12.2 Student Prerequisites

1. 18 years old
2. Should be an active member of a law enforcement investigation agency or emergency first response group.

12.3 Qualifications of Graduates

UWCSI courses are for law enforcement and emergency response personnel who may be first on the scene of a underwater crime scene investigation. Responders are expected to understand the constitution, responding, preparing the crime scene, death investigations, medical aspects, fingerprints, characteristics of bodies in water, recovery procedures, and court ready documentation.

12.4 Who May Teach

Any active ERDI Instructor who is qualified to teach the Underwater CSI program. To become qualified to teach this program an ERDI instructor must have completed three nationally sponsored UWCSI programs, or be an active medico legal death investigator, or be an active law enforcement death/crime scene investigator or have gone to an ERDI IT who is qualified to conduct the UWCSI program. The ERD UWCSI Instructor must also:

1. Have taken a minimum of 3 UWSCI courses
2. Be active with a law enforcement/investigations agency, coroner office, medico legal investigator
3. Actively attend state or nationally recognized death investigation programs, coroners conferences, medico legal death investigations conferences

12.5 Administrative Requirements

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

Certification

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 member's area of the ERDI website. Awareness level will receive a certificate upon completion if the online course was taken or a certificate can be requested if a traditional course was taken. Operations and Technician levels will receive a certification card and wall certificate

12.6 Student to Instructor Ratio

Academic

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

12.7 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 16-24 hours

12.8 Required Manuals

The student must have the following equipment during all water training:

1. Approved textbook
2. Note taking material

The ERDI UWCSI Instructor must have the following equipment:

1. Textbook
2. Videos
3. Crime scene investigation tools of the trade

12.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. The Constitution
 - a. Bill of Rights
 - b. Fourth, fifth, sixth and 14th amendments
 - c. Reasonable expectations of privacy
 - d. Plainview doctrine
 - e. Case studies
2. Terms and Definitions Used in Industry
3. Establish Crime Scene
4. Witness Interviewing
5. Types of Evidence
6. Methods Photographing and Sketching the Scene
7. Decomposition Processes
8. Death Investigation
9. Physiology of Drowning
10. Body Recovery, Reporting and Handling Procedures

11. Securing Evidence- Metal and Nonmetal Evidence Preservation
12. Packaging and Submitting Evidence
13. Scuba-Accident or Fatality Investigation
14. Fingerprint Analysis-Underwater Fingerprinting
15. Case Studies-911 Calls
16. Videos
17. Red Flags With Investigations
18. Develop Court Ready Documentation
19. Examination

12.10 Required Skill Performance and Graduation Requirements

1. Written examination is required with an 80% passing grade, 100% remediation of exam.

13. Night Ops

13.1 Introduction

The ERDI Night Ops Component is designed to develop the knowledge and skills necessary for night operations in emergency response diving.

13.2 Student Prerequisites

1. Minimum age 18
2. Certified as ERD I or equivalent
3. CPR 1st or equivalent
4. CPROX or equivalent

13.3 Qualifications of Graduates

Upon successful completion of the ERD Night Ops component, students will have developed the knowledge and skills necessary to plan and execute night diving operations within the scope of a team's operational guidelines.

13.4 Who May Teach

1. An active ERDI Instructor that has been certified to teach this ops component

13.5 Administrative Requirements

Required forms

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

13.6 Optional Materials

1. *SDI Night and Limited Visibility* Student Manual or eLearning
2. *SDI Night and Limited Visibility* Knowledge Quest or eLearning
3. *SDI Night and Limited Visibility* Instructor Guide

13.7 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 member's area of the ERDI website.

13.8 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 6 students per ERDI Instructor

Open Water

1. A maximum of 6 students per ERDI Instructor; it is the instructor's discretion to reduce this number as conditions dictate

13.9 Course Structure and Duration

Course Structure

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

Duration

1. Classroom and briefing: Approximately 3 hours
2. Confined water dives: Suggested simulation of reduced/zero visibility environment
3. Open water dives (required): Two dives are required with complete briefs and debriefs by the instructor. Dive plan must include surface interval, max no-decompression time, etc. to be figured out and logged. Night or limited visibility dive is defined as any dive requiring a light to enhance visibility
4. Support dive: One dive is required in which the student will act as a surface support/tender asset.

13.10 Required Equipment

1. Same equipment required for ERD I Diver
 - a. Lights; primary and backup
 - b. Whistle/Audible signaling device

13.11 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Why Dive at Night?
 - a. Definition of “Night” operational environment
 - b. Experience in limited visibility
 - c. Why choose limited visibility operations
 - d. Risk assessment, Go/No-Go
2. Special Equipment
 - a. Lighting types and needs
 - i. Scene Lighting
 - ii. Dive Lights
 - iii. Tender Lights
 - iv. Marker Lights (Location/Recognition)
 - v. Marker Lights
 - vi. Color identification/recognition
 - vii. Visual assistance systems (thermal/night/Darkwater Vision/etc)
 - b. Importance of diver/tender lights and backups
 - c. Comparison of different styles
3. Buddy/Tender
 - a. Buddy contact
 - i. Plausibility
 - ii. Limited visibility, buddy line
 - iii. Tender vs Buddy
 - b. Communications
 - i. Types
 1. Electronic
 2. Line signals
 3. Touch
 4. Audible
 5. Visual
 - ii. Light signals at distance (diver/tender)
 1. Attention / OK
 2. Something’s wrong
 3. Location reference
 - iii. Line pulls (Tender to Diver)

1. Ok – One pull
 2. Stop/Turn – Two pulls
 3. Surface – Three pulls
 4. Stop/Standby – Four pulls
 - iv. Line pulls (Diver to Tender)
 1. Ok – One pull
 2. More Line – Two pulls
 3. Found Object – Three pulls
 4. Help/Trouble – Four pulls
 - v. Tactile Signals
 1. Squeeze – Stop
 2. Pull – Backup
 3. Push – Go
 4. Crossed Fingers – Entanglement
 5. Rapid Squeezing – Out of Air Issue
 - vi. Whistle on surface
 1. Repetitive Blasts: Distress
4. Navigation
 - a. Compass (surface/subsurface)
 - b. Line assisted
 - c. Marker light / strobe
5. Disorientation
 - a. Mental Aspects
 - b. Surface reference points
 - c. Constant communication
6. Buoyancy considerations
7. Emergency Procedures
 - a. Disabled diver
 - b. Lost diver
 - c. Lost communications
 - d. Light failure (all types)
8. Surface support operations
 - a. Diver medical and rehab
 - b. Diver decontamination
 - c. Scene coordination/security
 - d. Outside/Mutual Aid resources
9. Contingency Planning
 - a. Incident action plan
 - b. Medical/Chamber support
 - c. Communications
 - d. Emergency gases
 - e. Emergency procedures

13.12 Confined Water Outline

Students are suggested to successfully complete the following skills:

Scuba Skills

1. Instructor evaluation of basic scuba skills including redundant air source use

Blacked out Simulation/Reduced Visibility

1. Entanglement
2. Out of air
3. Search patterns
4. Communications methods
5. Lost/Diver in trouble
6. Evidence recovery
7. Victim recovery (bagging)

13.13 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

Open Water Dive 1

1. Plan dive
2. Safety procedures
3. Enter and descent
4. Remain submerged at least 20 minutes
5. Change direction several times while maintaining proper navigation
6. Use properly; underwater light, submersible pressure gauge, compass, depth gauge, and computer
7. Maintain buddy/tender contact throughout dive
8. Recover and package one item
9. Log dive

Open Water Dive 2

1. Plan dive
2. Safety procedures
3. Descend
4. Two-minute swim without compass
5. Surface and reorient
6. Descend and navigate
7. Perform response to one emergency scenario (out of air, entanglement, equipment malfunction, etc)
8. Log dive

Open Water Surface Support

1. Plan dive
2. Safety Procedures
3. Provide tender/surface support role
4. Respond to one emergency scenario as a surface support individual
5. Log dive