UNITED STATES MARINE CORPS
MARINE CORPS COMBAT DEVELOPMENT COMMAND
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO

1500
C 472M
07 MAY 2002

From: Commanding General, Training and Education Command, 3300 Russell Road, Quantico, Virginia 22134-5001
To: Commanding General, I Marine Expeditionary Force, Box 555300, Camp Pendleton, California 92055-5300
Commanding General, II Marine Expeditionary Force, PSC Box 20080, Camp Lejeune, North Carolina 28542-0080
Commanding General, III Marine Expeditionary Force, Unit 35601, FPO AP 96606-5601

Subj: MARINE CORPS UNDERWATER EGRESS AND INTERMEDIATE PASSENGER HELICOPTER AIRCREW BREATHING DEVICE (IPHABD) FAMILIARIZATION TRAINING PROGRAM

Encl: (1) Egress Individual Training Standard
(2) Marine Corps Underwater Egress and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) Familiarization Training Employment Plan

1. This letter formally promulgates the Egress Individual Training Standard, enclosure (1), and the prescribed training curriculum, enclosure (2), for use by the Operating Forces. They were developed with the assistance of subject matter experts from Marine Expeditionary Forces and Naval Operational Medicine Institute during a conference held the week of 8 April 2002. The curriculum focuses on providing Marines and Sailors the requisite knowledge and techniques to egress from a ditched aircraft and, if required, employ the SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device.

2. Of note, the enclosed training material serves as the only approved means for training Marines and Sailors assigned to the Operating Forces until the fixed site Marine Amphibious Egress Training System (MAETS) is fielded and operational. The prescribed instructor training and certification are set forth in enclosure (2).

3. As a precaution for managing risk and identifying and tracking hazards and injuries, the following are mandatory:

a. Each training site shall develop and implement a written Pre-Mishap Plan. This Pre-Mishap Plan should be exercised prior to commencing this new curriculum, and on a reoccurring basis.

b. All incidents requiring hyperbaric recompression therapy shall be reported in accordance with OPNAVINST 5100.19 Series and if applicable, MCO 5100.8F.

c. All identified and/or possible hazards should be reported in accordance with MCO 5100.8F.

4. Commanders shall ensure the following prerequisites are met prior to participating in this training:

a. Each Marine and Sailor (student) participating shall, at a minimum, be qualified as a Combat Water Survival, Fourth Class, or U. S. Navy equivalent.

b. Each student participating shall have completed the Underwater Egress Training/Intermediate Passenger Helicopter Aircrew Breathing Device Medical Screening Questionnaire, Tab (D) to enclosure (2).

c. The unit leader in charge of the Marines and Sailors arriving for training will provide the completed Underwater Egress Training/Intermediate Passenger Helicopter Aircrew Breathing Device Medical Screening Questionnaire, Tab (D) to enclosure (2), for those individuals participating in training, to the Supervising Instructor.

d. All trainees will, for the entire training evolution, be dressed in the utility uniform, boots, helmet, and the provided LPU-32 Life Preserver Unit and SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device.

5. No modification to the enclosed training curriculum is authorized unless approved, in writing, by the Commanding General, Training Command. Submit all recommended changes to enclosures (1) and (2), in writing, to Commanding General, Training Command (C 472) for consideration/approval. It is imperative that this training be captured and tracked for entry into the Marine Corps Total Force System.

T. S. JONES

Subj: EGRESS INDIVIDUAL TRAINING STANDARD

TASK: EXECUTE SUBMERGED AIRCRAFT EGRESS PROCEDURES (CORE PLUS) (Helicopter/Tilt-Rotor/Fixed Wing Aircraft)

CONDITION: As a combat equipped individual being transported in assault support aircraft, during a day or night operation in any environmental condition, and given an LPU-32 Life Preserver Unit equipped with an SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD), and a simulated emergency aircraft ditching situation.

STANDARD: By efficiently and rapidly egressing the aircraft, per the references.

PERFORMANCE STEPS:

1. Be present and pay attention to the aircrew’s pre-flight briefing.

2. Inspect LPU-32 Life Preserver Unit and SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device for serviceability.

3. Don and secure LPU-32 Life Preserver Unit.

4. Don combat load (helmet, flak vest, weapon, load bearing equipment) and adjust fit.

5. Load aircraft when directed, and buckle restraint harness/seat belt.

6. Secure pack and additional equipment/gear to the deck or immovable object.

7. Review routes to nearest (primary) exit points and secondary exits.

8. Visually locate reference points to each exit point (primary and secondary).

9. When notified of impending ditching, maintain discipline, remain calm, and pay attention to Crew Chief's instructions.

10. Lay weapons on the deck.

11. Assume crash position.

12. Wait for all violent motion and violent water turbulence to stop.

13. Ditch combat load (pack, flak vest, load bearing equipment, etc.), but retain helmet.

14. Grasp reference point with left hand and release restraint harness/seat belt with right hand. (This will assist with maintaining a starting reference point and limit/minimize flotation).

15. Pull yourself Hand-Over-Hand from one reference point to another towards nearest exit. DO NOT SWIM.

a. In the darkness of a submerged aircraft, hands will be your eyes.

b. Do not release one reference point until the next reference point has been firmly grasped.

c. To avoid striking personnel behind you, do not kick your feet. Drag legs behind you.

d. IF AIR IS REQUIRED DURING EGRESS, retrieve SRU-40/P IPHABD regulator, execute PURGING and CLEARING procedures, and begin breathing.

16. Open exit, if necessary (window, door, hatch).

17. Grasp exit opening with both hands and pull yourself through.

18. When physically clear of aircraft, ascend to the surface.

19. During ascent to the surface, exhale air from lungs.

20. Once at the surface, inflate LPU-32 Life Preserver Unit, by pulling on the beaded handles down and away from the body.

21. On the surface, gather together with all survivors and prepare for rescue.

REFERENCES:

1. Appropriate NATOPS Aircraft Manual.

2. NAVAIR 13-1-6.1-2 LPU-32 Life Preserver Unit Operations and Maintenance Manual.

3. NAVAIR 13-1-6.5 SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device Operations and Maintenance Manual.

ADMINISTRATIVE INSTRUCTIONS:

1. Instructors should stress the importance of remaining calm during any submerged egress situation.

2. During NON-FORMALIZED INSTRUCTION, the LPU-32 Life Preserver Unit with SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device will be non-operational.

3. Units should conduct dry land egress training drills prior to conducting helicopterborne operations.

INITIAL TRAINING SETTING:

Managed-On-the-Job Training (MOJT)
Sustainment: Every four years (48 months)
Required by: Pvt and above

TRAINING MATERIEL:

1. Complete utility uniform and boots
2. Helmet
3. Flak Vest (*)
4. Weapon (Personal and Crew Served) (*)
5. Load Bearing Equipment and Pack (*)
6. Inert LPU-32 Life Preserver Unit
7. SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device
8. Two Shallow Water Egress Trainer (SWET) devices
9. Marine Amphibious Egress Trainer (MAET/Dunker) facility

(*) Used In dry land drills only

AMMUNITION: NA

1. **EQUIPMENT REQUIREMENTS:**

a. Two Shallow Water Egress Trainer (SWET) devices per training site.

b. Air compressor for SRU-40/P IPHABD bottle refilling.

c. 50 to 100 SRU-40/P IPHABD bottles per training site.

d. 30 LPU-32 Life Preserver Units with IPHABD pocket modification per training site.

e. Training tank (pool).

f. Audiovisual – “NOMI USMC IPHABD/SWET” videotape.

g. NAVAIR 13-1-6.1-2 LPU-32 Life Preserver Unit Operations and Maintenance Manual.

h. NAVAIR 13-1-6.5 SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device Operations and Maintenance Manual.

2. **GENERAL TRAINING SITE REQUIREMENTS:**

a. No more than 30 students for training for each pool training session.

b. No greater than 60-minutes transit time to a recompression facility (hyperbaric chamber).

c. Swimming pool/training tank with shallow section no deeper than four (4) feet and large enough to accommodate two (2) SWET trainer devices and personnel.

d. IPHABD bottle refill station, if portable compressors are not available.

e. Secure storage area.

3. **SHALLOW WATER EGRESS TRAINING:**

a. Function. SWET devices are designed to provide hands-on training in procedures for underwater problem solving and for egress while breathing from the SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD).

b. Description. The SWET is used to familiarize students in Hand-Over-Hand egress techniques and to train non-aircrew personnel in the procedures to be used during egress while using the SRU-40/P. SWET consists of a tubular frame, a seat, and a lap belt. For some training, the trainee is strapped into the seat, and then inverted. The student shall use proper egress procedures while using the SRU-40/P IPHABD.

c. Minimum Training Personnel Requirements. A minimum of five (5) personnel are required to safely conduct operations on a single training device. A minimum of two (2) additional personnel are required for each additional training device. Consideration should be given to including a separate instructor for on-site remediation of trainees experiencing difficulties.

(1) Device Positions/Stations for Staff Personnel. The following required device positions/stations shall be staffed during device operations:

(a) Supervising Instructor

(b) Primary Instructor

(c) Device Operator

(d) IPHABD Diving Supervisor

(e) Medical Provider

(2) The IPHABD Diving Supervisor is not required to be in the water, but must directly supervise all in-water SRU-40/P (IPHABD) training.

(3) Medical Provider shall be present during all training, and shall not perform training demonstrations.

(4) The IPHABD Diving Supervisor may supervise up to two (2) devices simultaneously.

d. Minimum Training Personnel Qualifications. All personnel filling the required device positions/stations shall be fully qualified.

(1) Supervising Instructor (SNCO or higher) and Primary Instructors (Sgt (E-5) or higher) must have successfully completed the Naval Operational Medicine Institute (NOMI) Train-The-Trainer Course. Instructors shall remain current in first-aid and Cardiopulmonary Resuscitation (CPR) qualifications.

(a) Prerequisites for attending the NOMI Train-The-Trainer Course.

1. Completion of a group-paced basic instructor's training course or equivalent training. Personnel qualified as Marine Corps Instructor of Water Survival (MCIWS) or Marine Corps Instructor Trainers of Water Survival (MCITWS) satisfy this requirement.

2. Current CPR certification from the American Red Cross or American Heart Association in a course that covers two person CPR.

3. Minimum qualification as a First Class Swimmer or Combat Water Survival, First Class (CWS1).

4. Current certification as a U. S. Navy Lifeguard or equivalent. MCITWS, MCIWS, Combat Water Safety Swimmer (CWSS), or American Red Cross lifeguard training satisfies this requirement. If requested, the NOMI Train-The-Trainer course can include a block of instruction that meets this requirement by certifying the student as a U. S. Navy lifeguard.

5. Completion of both the U. S. Navy Underwater Egress Course (N9), or equivalent, and the Helicopter Aircrew Breathing Device (HABD) (N7) is required. These courses can be conducted as part of the NOMI MTT Train-The-Trainer course.

(2) The IPHABD Diving Supervisor shall be a qualified Navy Diver or Marine Combatant Diver. The IPHABD Diving Supervisor will be designated in writing by the Commanding Officer or Officer-in-Charge of the training program. He/She must have been trained in the recognition and treatment of compressed gas injuries based on the completion of the IPHABD Diving Supervisor Job Qualification Requirement (JQR) (Tab A), and must be recommended for the billet by the local Master Diver.

(3) Device Operator(s) shall be Water Safety Qualified (WSQ) and complete a Shallow Water Egress Trainer (SWET) Device Operator JQR, (Tab B).

(4) Medical Provider shall be a Diving Medical Technician (DMT), Special Amphibious Reconnaissance Corpsman (SARC), Independent Duty Corpsman, or Emergency Medical Technician. The Medical Provider will be designated in writing by a Diving Medical Officer, based on the completion of the Underwater Egress/IPHABD Medical Provider, JQR (Tab C). If the EMT is not a Corpsman, a Corpsman will be on-site during training.

e. Training Personnel Responsibilities.

(1) Supervising Instructor. The Supervising Instructor is responsible for all phases of daily training. The Supervising Instructor shall observe training and shall have no duties other than supervising SRU-40/P IPHABD training and performing required tasks during a mishap. Supervising Instructor shall:

(a) Ensure availability and status of recompression facilities (hyperbaric chamber) prior to commencement of compressed air breathing.

(b) Ensure qualified personnel are available to refill SRU-40/P bottles, as necessary.

(c) Ensure the SRU-40/P bottles are properly disinfected, prior to use.

(2) Primary Instructor. The Primary Instructor is directly in charge of device training and shall:

(a) Ensure the Laboratory/Practical Application phase is performed per the curriculum.

(b) Allow the student to practice the approved procedures to locate and commence breathing on the SRU-40/P.

(3) IPHABD Diving Supervisor. The Diving Supervisor shall:

(a) Be responsible for the overall safe use of compressed air during training evolutions.

(b) Be responsible for management of all injuries or suspected injuries that are related to breathing compressed air.

(c) After students complete training breathing compressed gas, monitor each student for no less than 10 minutes following last ascent for signs of a compressed gas injury. During this time, students will not participate in any activity, and will not leave until cleared by the IPHABD Diving Supervisor.

(d) Assist the Primary Instructor, as directed/ necessary.

(4) SWET Device Operator(s). Device Operator(s) shall:

(a) Inspect the SWET to ensure it is in good mechanical condition. During rotation, ensure the student does not go below 3½ feet/42 inches of water, measured at mid-thorax.

(b) Ensure the student is properly strapped into the device and ready before water entry.

(c) Slowly rotate the student to the inverted position, maintaining a firm grip on the rotation bar(s) and remaining alert/ready to retract the student, if necessary.

(5) Medical Provider shall:

(a) Medically pre-screen students prior to in water training.

(b) Assist the IPHABD Dive Supervisor in treating compressed gas injuries.

(c) Serve as the primary care giver during any non-compressed gas injuries once the patient has been brought to the pool deck and until more qualified medical support arrives.

4. **OPERATING PROCEDURES:**

a. General. SWET shall be operated per this approved USMC curriculum.

b. SRU-40/P IPHABD Training Procedures.

(1) The student shall be strapped into the seat using lap belt (restraints).

(2) When the student is ready, the Device Operator(s) shall slowly rotate the device to the student’s left, submerging the student.

(3) Student will then proceed with the predetermined egress procedures.

(4) If the student appears to be having trouble or gives the signal for assistance, the Primary Instructor shall assist the student out of the device, or retract the device.

(5) If the student has been assisted or retracted, the Primary Instructor shall ensure he/she is not experiencing any physical problems prior to submerging him/her again.

c. Safety. To avoid injuries, the Primary Instructor shall ensure:

(1) Students are briefed prior to training on the emergency signal for distress (example: raising a clenched fist with either hand).

(2) The student does not descend below 3½ feet/42 inches during training, as measured from mid-thorax, when breathing compressed gas.

(3) The student exhales continuously during ascent.

(4) After breathing compressed gas, students are monitored for at least 10 minutes by the IPHABD Diving Supervisor for signs of a compressed gas injury following last ascent.

(5) Students are wearing helmets and enter and exit the pool via a ladder.

5. **EMERGENCY PROCEDURES:**

a. Suspected Water Inhalation.

(1) The Primary Instructor shall perform a primary survey and administer care, per U. S. Navy Lifeguard procedures.

(2) The Supervising Instructor shall clear the pool and ensure activation of the Pre-Mishap Plan.

(3) The Primary Instructor shall direct team members in the removal of the student from the water.

(4) Medical Provider shall assume control of the student (patient) once he/she is moved to the pool deck and shall treat the student for water inhalation and administer supplemental oxygen, as needed.

b. Suspected Compressed Gas Injury.

(1) The IPHABD Diving Supervisor shall supervise the removal of the student from the water and conduct a preliminary neurological exam. If a compressed gas injury is suspected, the student shall be placed on supplemental oxygen and transported at once to the nearest recompression facility (hyperbaric chamber).

(2) The Supervising Instructor shall clear the pool and ensure activation of the Pre-Mishap Plan.

(3) The Medical Provider shall assist the IPHABD Diving Supervisor during the neurological exam.

(4) The IPHABD Diving Supervisor shall remain with the injured student until the possibility of a compressed gas injury has been ruled out.

LESSON PLAN

1. **COURSE TITLE**: UNDERWATER EGRESS AND IPHABD FAMILIARIZATION FOR NON-AIRCREW MARINES AND SAILORS.

2. **TERMINAL OBJECTIVE**:

a. Execute proper egress procedures from a submerged Egress Trainer while wearing the LPU-32 Life Preserver Unit.

b. Execute proper egress procedures from a submerged Egress Trainer while wearing the LPU-32 Life Preserver Unit and utilizing the integrated SRU-40/P IPHABD.

3. **ENABLING LEARNING OBJECTIVES**:

ELO 3.a. Describe the procedures for utilizing the SRU-40/P IPHABD.

ELO 3.b. Describe the precautionary measures required to prevent injury during ascent while breathing compressed gas.

ELO 3.c. Describe the regulatory clearing procedures for the SRU-40/P IPHABD.

ELO 3.d. Properly don the LPU-32 Life Preserver Unit.

ELO 3.e. Execute a submerged traverse (approximately 30 feet) around two SWET trainers married (joined) together using the Hand-Over-Hand underwater egress technique without the use of an SRU-40/P IPHABD.

ELO 3.f. Execute a Hand-Over-Hand egress from a submerged SWET trainer without the use of an SRU-40/P IPHABD.

ELO 3.g. Execute a Hand-Over-Hand egress from a submerged SWET trainer while wearing blacked out goggles and without the use of an SRU-40/P IPHABD.

ELO 3.h. Breathe using a snorkel while face down in the water.

ELO 3.i. Purge a flooded snorkel with a sharp exhale while face down in the water.

ELO 3.j. Retrieve the SRU-40/P IPHABD regulator on the surface and start breathing using the SRU-40/P IPHABD.

ELO 3.k. Breathe using the SRU-40/P IPHABD regulator while in a sitting position with legs extended at the bottom of the pool (maximum four (4) feet beneath surface).

ELO 3.l. Purge the SRU-40/P IPHABD regulator with a forceful exhale while submerged (maximum four (4) feet beneath surface).

ELO 3.m. Ascend from a sitting position, four (4) feet below the surface, utilizing the SRU-40/P IPHABD, exhaling continuously.

ELO 3.n. Execute a submerged traverse (approximately 30 feet) around two SWET trainers married (joined) together using the Hand-Over-Hand underwater egress technique while breathing from the SRU-40/P IPHABD.

ELO 3.o. In an egress situation with a fouled exit, properly egress a submerged SWET trainer utilizing the SRU-40/P IPHABD, exhaling continuously during ascent.

4. **INSTRUCTIONAL SUPPORT**:

a. One Classroom Instructor for Classroom Theory Phase.

b. Staff for Laboratory/Practical Application Phase:

(1) Supervising Instructor

(2) Primary Instructor

(3) Device Operator(s)

(4) IPHABD Diving Supervisor

(5) Medical Provider

5. **ALLOTTED LESSON TIME**: 1.0 Classroom Theory hour.
2.5 Laboratory/Practical Application hours.

6. **REQUIRED EQUIPMENT**:

a. Classroom

(1) Videocassette player and Monitor.

(2) Audiovisual – “NOMI USMC IPHABD/SWET.”

(3) SRU-40/P IPHABD demonstration bottle.

(4) LPU-32 demonstration Life Preserver Unit.

b. Laboratory (Pool deck)

(1) SRU-40/P IPHABD bottles.

(2) Bottle charging station.

(3) LPU-32 Life Preserver Units.

(4) Two SWET Devices.

(5) Training tank (pool).

(5) All items of equipment required per the Pre-Mishap Plan and the Ready-to-Train checklist.

7. **INTRODUCTION**:

a. Establish contact, display name, and lesson topic.

(1) Introduce self, give grade, and current billet.

(2) State background, schools, duty stations, etc.

(3) State question and answer policy.

(4) Ask for medical concerns:

(a) Has everyone completed the Shallow Water Egress Training/Helicopter Aircrew Breathing Device Medical Screening Questionnaire, Tab (D)?

(b) Has anyone sought medical or dental treatment in the last 24 hours? (Refer all personnel with affirmative/ positive responses to the Medical Provider. All questionable cases should be referred to a physician/Medical Officer for further evaluation).

(c) Has anyone taken any medications within the last 24 hours? (Refer all personnel with affirmative/positive responses to the Medical Provider).

(d) Are there any other concerns that need to be addressed at this time? (Refer all personnel with medical concerns to the Medical Provider).

b. State Lesson Objectives. (INSTRUCTOR: READ THE LIST OF ENABLING LEARNING OBJECTIVES).

c. Attention gainer.

(1) Motivating statements (Establish importance and relevance of lesson material using personal experience, anecdote or lessons learned from a recent mishap).

(2) Lesson Overview (INSTRUCTOR: BRIEFLY OUTLINE MATERIAL TO BE COVERED).

(a) Lesson Topic: Underwater egress procedures/ SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device familiarization for non-aircrew Marines.

(b) Major Teaching Points:

Preparation for underwater egress procedures.

SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device, Manufactured by U. S. Divers Micro Air System (MAS).

Use of the IPHABD during underwater egress.

Basic underwater physics and physiology.

8. **PRESENTATION:**

a. Preparation Underwater Egress Procedures

(1) All personnel must be familiar with the aircraft they will be flying in and familiar with the specific aircraft’s Emergency Egress Procedures.

(2) Personnel should have an Escape Plan firmly established and memorized.

(a) Escape Plan should be reviewed each and every time Marine and/or Sailor enters the aircraft.

(b) Plan should be practiced from time to time, as practical.

(3) Passengers in multi-place aircraft should listen to preflight briefing and plan an escape route immediately following boarding.

(4) All personnel, whether part of the crew or a passenger, should be familiar with the operation of all doors, windows, and escape hatches.

(5) In an emergency, open exits according to safety brief.

b. Egress Procedures

(1) When notified of impending ditching, pay strict attention to any instructions. Review route to nearest exit mapped out when boarding.

Knowing your escape route is extremely important. Studies show that in 40° F water temperature or less, the average human's breath holding capability ranges from 10 – 20 seconds.

(2) Visually locate reference points.

(3) Brace for impact. (INSTRUCTOR: EXPLAIN PROPER BRACE POSITION).

(4) Grasp reference point (seat frame/exit frame, etc.).

(5) Wait for violent motion and in-rush of water to subside. Regrasp reference point, if grasp was lost.

NOTE: Extraneous or discarded equipment and gear (packs, weapons, boxes, etc.) can impede egress. (INSTRUCTOR: A SIMULATION WITH EXTRANEOUS OR DISCARDED EQUIPMENT WILL NOT BE CONDUCTED DURING THIS COURSE OF INSTRUCTION).

(6) Release restraint harness/seat belt.

(7) Egress the cabin.

(a) Pull yourself Hand-Over-Hand from one reference point to another to nearest exit. DO NOT SWIM.

(b) Personnel must maintain a tight grasp on each reference point. Do not release one reference point until the next one has been firmly grasped.

(c) Do not kick your feet (to avoid injuring personnel behind you or entangling yourself in extraneous equipment and gear).

(d) Do not inflate your life preserver while in the aircraft.

(8) Open exit/window/hatch, if necessary.

(9) Grasp opening with BOTH hands, and pull yourself forcefully through the exit.

(10) If primary exit is blocked or jammed, pull Hand-Over-Hand to alternate exit.

(11) When completely clear of the aircraft, inflate your LPU-32 Life Preserver Unit and head to the surface. (INSTRUCTOR: BRIEFLY EXPLAIN THE LPU-32).

(a) If utilizing SRU-40/P IPHABD while egressing, DO NOT inflate the LPU-32 Life Preserver Unit unless absolutely needed to get to the surface. You should SWIM to the surface with an un-inflated LPU-32 Life Preserver Unit, taking care to ascend slowly, continuously exhaling as you ascend.

(b) If LPU-32 Life Preserver Unit has been inflated after egressing while utilizing the SRU-40/P IPHABD, exhale continuously while ascending. DO NOT HOLD YOUR BREATH!

(12) On the surface, ensure your LPU-32 Life Preserver is fully inflated. Assist other survivors and begin preparation for rescue.

NOTE: INSTRUCTOR: PLAY EGRESS PROCEDURES PORTION OF VIDEO.

c. SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device.

NOTE: INSTRUCTOR: PLAY SRU-40/P IPHABD PROCEDURES PORTION OF VIDEO.

(1) Display SRU-40/P IPHABD.

(a) Description of IPHABD:

1. Compact, lightweight, breathing apparatus intended for use during emergency ditching, providing emergency air upon demand to aid in safe egress from a submerged aircraft.

2. Provides a limited amount of compressed air for underwater breathing at depths and durations normally encountered during helicopter egress.

3. Consists of a small aluminum cylinder and a two-stage demand type regulator; the first stage is attached to the cylinder and the second stage is connected via a flexible hose.

4. The cylinder is charged to 3000 pounds per square inch (psi). The first stage reduces the pressure to approximately 130 psi. The second stage then reduces the 130 psi to ambient pressure. With the air turned on, no air should flow until you inhale, or the purge button is depressed. This feature explains why the regulator is referred to as a demand system.

5. The regulator first stage contains the on/off valve, indicator pin, and the pressure gauge.

6. The second stage contains the mouthpiece, the purge button, and the exhaust port.

7. The second stage is attached to the LPU-32 Life Preserver Unit via the regulator mouthpiece retainer cup. (INSTRUCTOR: DEMONSTRATE THE DONNING OF THE LPU-32 LIFE PRESERVER UNIT WITH IPHABD INSTALLED).

(b) IPHABD Preflight Inspection:

1. The SRU-40/P IPHABD must be inspected prior to each flight.

2. Care must be taken when storing the integrated LPU-32 Life Preserver Unit with SRU-40/P IPHABD installed to prevent contamination or damage. The SRU-40/P IPHABD should be stored in the OFF position.

3. Remove the SRU-40/P from the LPU-32 prior to flight and inspect as follows:

a. Check entire unit for signs of contamination or damage.

b. Check hose for cuts, cracks, and overall integrity.

c. Check first and second stage for integrity cracks, deterioration, and security of attachment of all components.

d. Check mouthpiece for cracks, security of attachment, and deterioration.

e. To turn the SRU-40/P IPHABD to the ON position, grasp the first stage in your left hand, with the pressure gauge facing down.

f. Note that the ON/OFF indicator pin is in the slot marked OFF. (Should be stored in the OFF Position).

g. Grasp the cylinder with your right hand and slowly twist/turn the cylinder counterclockwise until the indicator pin is positioned inside the circular hole marked ON. Do not force the cylinder, or damage to the indicator pin may result.

h. No air should flow. If air does flow, tap the purge button once or twice gently. If this does not stop the airflow, the bottle cannot be used for flight and must be replaced.

i. Check the pressure indicator gauge. The gauge should indicate a full charge with the needle in the GREEN area.

j. Depending on the refill station, a complete charge may not be possible and it has been shown that 2000 psi is enough to start the training. Instructors will need to query the trainees periodically to check remaining pressure.

k. Air should flow (a short burst) when the purge button is depressed, and then stop flowing. Listen to ensure the air has stopped flowing. If air continues to flow,

the unit cannot be used for flight and must be replaced. (SAFETY NOTE: Do not hold regulator to ear and push the purge button).

l. Leave the SRU-40/P IPHABD in the ON position for flight.

m. After inspection, return the unit to the pocket of the flotation vest making sure it remains in the ON position. (INSTRUCTOR: POINT OUT THE RELATED PARTS OF THE SRU-40/P IPHABD).

d. Basic Underwater Physics and Physiology

(1) Prior to discussing how to use the SRU-40/P IPHABD, it is important that you understand the dynamics of how compressed air can affect the body.

(a) A column of air one-inch square extending from the earth’s surface to the outer edge of the atmosphere weighs 14.7 pounds. (INSTRUCTOR: DRAW ILLUSTRATION OF A ROUND VOLUME AT THE SURFACE AND AT A DEPTH OF 33-FEET TO SHOW A DIFFERENCE IN PRESSURE AND VOLUME).

This constitutes one atmosphere of pressure.

This force is constantly exerted on our bodies.

(b) One atmosphere of pressure is also represented by a one-inch square column of seawater at a depth of 33 feet.

(c) While submerged, the body is subject to not only the pressure of the water, but also the pressure of the air above the water.

When at a depth of 33 Feet of Seawater (FSW), the pressure equals two (2) atmospheres (or 29.4 psi).

As depth increases, pressure exerted upon the body will increase by one atmosphere for every 33 FSW.

(d) Increased depth and pressure markedly affects the air spaces in the body.

The density of air increases linearly with depth.

At 33 Feet of Seawater (FSW), the lungs will hold twice as much air and have twice as much pressure inside as at the surface.

At 66 FSW, the lungs will hold three times as much, etc.

While ascending, the decreasing pressure of the water on the body will result in expansion of the gasses in the lungs.

If the expanding air inside the lungs is not allowed to escape, the lungs will rupture, causing any one of several over-expansion injuries.

(2) Injuries associated with breathing compressed gas include pulmonary overinflation syndrome. If you feel any different after this training, or at any time, immediately inform the instructor staff.

(3) Prevention.

(a) As previously stated, as you ascend, the water pressure on the outside of the body will decrease while the volume of the air inside your lungs will increase.

(b) If you hold your breath while ascending, your lungs will quickly expand to a point where they will rupture.

In laboratory tests, lung tissue has ruptured with the addition of as little as two (2) psi when the tissue was fully stretched (such as inhaling as deeply as possible).

Two (2) psi pressure change equals approximately four (4) Feet of Seawater (FSW).

To avoid the possibility of experiencing a compressed gas injury following a successful underwater egress utilizing the SRU-40/P IPHABD, remain calm and exhale continuously. Exhale continuously whether on a normal swimming ascent, on a buoyant ascent (inflated LPU-32), or after running out of air on the SRU-40/P IPHABD.

e. Underwater Egress

(1) Timeframe between water impact and aircraft submerging.

(a) After water impact, (INSTRUCTOR: EMPHASIZE AFTER IMPACT) retrieve mouth piece from regulator and place it in your mouth. Do not breathe from the SRU-40/P IPHABD until you are underwater.

(b) After you are underwater, breathe in through your mouth and out through your mouth utilizing the SRU-40/P IPHABD.

(c) Make normal egress from aircraft.

(d) Swim to the surface, exhaling as you ascend. DO NOT, under any circumstances, hold your breath during your ascent to the surface.

(e) When you are at the surface, inflate your LPU-32 Life Preserver Unit by pulling out and down on the beaded handles.

(2) Timeframe after aircraft submerges, if unable to place regulator in mouth prior to aircraft filling with water.

(a) Place the regulator in your mouth and purge the regulator.

1. If the regulator is inserted in your mouth underwater, it must be purged prior to inhaling.

a. With the mouthpiece in your mouth, **EXHALE SHARPLY** into the regulator. Repeat purging procedures as necessary.

b. Inhale carefully to ensure you have completely purged. Then breath normally. (INSTRUCTOR: DEMONSTRATE THE PROPER WAY OF PURGING THE REGULATOR – DEMONSTRATION SHOULD BE DONE ABOVE WATER).

(b) Egress through the nearest exit using reference points. (INSTRUCTOR: STRESS THE IMPORTANCE OF MAINTAINING REFERENCE POINTS THROUGHOUT THE EGRESS EVOLUTION).

(c) Once clear of the aircraft, continue breathing normally and swim to the surface, exhaling as you ascend. DO NOT, under any circumstances, hold your breath during your ascent to the surface.

(d) When you are at the surface, inflate your LPU-32 Life Preserver Unit by pulling out and down on the beaded handles. (INSTRUCTOR: DEMONSTRATE THE PROPER INFLATION TECHNIQUE FOR THE LPU-32 LIFE PRESERVER UNIT).

(e) In some cases it may be necessary to inflate the LPU-32 while underwater, such as being disoriented following a night egress. (INSTRUCTOR: STRESS THE LIFE PRESERVER UNIT SHALL NEVER BE INFLATED UNTIL AN INDIVIDUAL IS COMPLETELY CLEAR AND OUTSIDE OF THE AIRCRAFT. ALSO, DEPENDING ON DEPTH, THE INDIVIDUAL MAY HAVE TO “HELP” OPEN THE LPU-32 LIFE PRESERVER UNIT. THIS SHOULD BE DEMONSTRATED). Buoyant ascents will increase the possibility of overinflation injuries, therefore it is imperative that you continuously (FORCEFULLY) exhale until on the surface.

(f) If resistance is experienced during inhalation, the SRU-40/P IPHABD is running out of air.

1. If you run out of air during ascent, you must exhale continuously for the remainder of the ascent.

2. If, for any reason, you cannot continue to breathe off the SRU-40/P IPHABD after once having started breathing, you must exhale continuously to the surface. After surfacing, inflate your LPU-32 Life Preserver Unit and begin normal sea survival techniques.

LABORATORY PHASE/PRACTICAL APPLICATION

For Underwater Egress and SRU-40/P Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD).

NOTES: *Students shall wear the pre-flight inspected LPU-32 Life Preserver Unit with SRU-40/P IPHABD installed, utility uniform, boots, and helmet for all phases of this training.*

INSTRUCTOR: INFORM STUDENTS THAT FOLLOWING THE SRU-40/P IPHABD TRAINING THEY WILL BE HELD FOR 10 MINUTES IN A PRE-DESIGNATED AREA FOR OBSERVATION.

1. **PHASE I (EGRESS PROCEDURE AND TECHNIQUES)**

Enabling Learning Objectives: (INSTRUCTOR: READ THE LIST OF ENABLING LEARNING OBJECTIVES (ELOs)).

ELO 3.d. Properly don the LPU-32 Life Preserver Unit.

ELO 3.e. Execute a submerged traverse (approximately 30 feet) around two SWET trainers married (joined) together using the Hand-Over-Hand underwater egress technique without the use of an SRU-40/P IPHABD.

ELO 3.f. Execute a Hand-Over-Hand egress from a submerged SWET trainer without the use of an SRU-40/P IPHABD.

ELO 3.g. Execute a Hand-Over-Hand egress from a submerged SWET trainer while wearing blacked out goggles and without the use of an SRU-40/P IPHABD.

a. First Traverse (Hand-Over-Hand Egress Techniques)

(1) Students don the LPU-32 Life Preserver Unit but do not inflate it.

(2) Students shall execute a Hand-Over-Hand underwater egress starting with their left hand and moving counter-clockwise around the perimeter of the trainer. Students must cover a 30-foot length underwater in a controlled manner without using an IPHABD bottle. The two SWET devices placed end-to-end will be used to complete the distance.

NOTES: *All egress training will be completed utilizing the middle rung of the trainer.*

Traverse around two SWET married (joined) together. (PROBLEM solving exercise).

The 30-foot distance represents a worst-case scenario and is equivalent to the length of the CH-53E cabin.

Students must successfully complete the Hand-Over-Hand underwater egress portion of the training prior to continuing to the Initial SWET Ride (Egress Techniques) of Phase I.

b. Initial SWET Ride (Egress Techniques)

(1) **RIDE 1** – Student wearing, but not using, the LPU-32/SRU-40/P is strapped into the seat and submerged underwater. Student will complete the proper egress procedures (i. e., find a left hand reference point, release from the seat with their right hand, and complete a Hand-Over-Hand egress from the SWET trainer). If the student is not comfortable with this stage of training, additional work must be done with them prior to moving on to the next training evolution (Ride 2).

(2) **RIDE 2** – Repeat RIDE 1, but utilize BLACKED OUT GOGGLES.

2. **PHASE II (UNDERWATER BREATHING TECHNIQUES)**

Enabling Learning Objectives: (INSTRUCTOR: READ THE LIST OF ENABLING LEARNING OBJECTIVES (ELOs)).

ELO 3.a. Describe the procedures for utilizing the SRU-40/P IPHABD.

ELO 3.b. Describe the precautionary measures required to prevent injury during assent while breathing compressed gas.

ELO 3.c. Describe the regulatory clearing procedures for the SRU-40/P IPHABD.

ELO 3.h. Breathe using a snorkel while face down in the water.

ELO 3.i. Purge a flooded snorkel with a sharp exhale while face down in the water.

ELO 3.j. Retrieve the SRU-40/P IPHABD regulator on the surface and start breathing using the SRU-40/P IPHABD.

ELO 3.k. Breathe using the SRU-40/P IPHABD regulator while in a sitting position with legs extended at the bottom of the pool (maximum four (4) feet beneath surface).

ELO 3.l. Purge the SRU-40/P IPHABD regulator, with a forceful exhale while submerged (maximum four (4) feet beneath surface).

ELO 3.m. Ascend from a sitting position, four (4) feet below the surface, utilizing the SRU-40/P IPHABD, exhaling continuously.

ELO 3.n. Execute a submerged traverse (approximately 30 feet) around two SWET trainers married (joined) together using the Hand-Over-Hand underwater egress technique while breathing from the SRU-40/P IPHABD.

a. Snorkel Drill – The student will place snorkel in mouth and breathe. On signal, the student places face in the water and continues breathing using a snorkel. Once student feels comfortable, the instructor will signal the student to remove and flood snorkel. The student will then replace snorkel and will purge snorkel with a **SHARP EXHALE**. (Student executes two purges).

b. Regulator Drill - (WITH SRU-40/P IPHABD BOTTLES)

(1) INSTRUCTOR: HAVE STUDENTS VERBALIZE THE FOLLOWING:

(a) Describe the procedures for utilizing the SRU-40/P IPHABD.

(b) Describe the precautionary measures required to prevent injury during ascent while breathing compressed gas.

(c) Describe the regulatory clearing procedures for the SRU-40/P IPHABD.

(2) Student will retrieve the SRU-40/P regulator on the surface (eyes closed using the right hand only) and start breathing off the SRU-40/P IPHABD regulator above the water. On the instructor’s signal, the student will slowly submerge, lowering himself/herself to the sitting position with legs extended, and will continue breathing underwater. On the instructor’s signal, the student will remove regulator from

mouth for a count of three, and then replace and purge regulator with a **FORCEFUL EXHALE.** Student will then continue breathing and surface on instructor's signal, while exhaling.

NOTES: *This exercise will be conducted in no more than 4 feet/48 inches of water - one instructor per student.*

Instructors maintain positive eye contact with the student at all times.

c. Second Traverse (Hand-Over-Hand Egress with SRU-40/P IPHABD)

(1) Hand-Over-Hand egress techniques. Student shall execute a Hand-Over-Hand underwater egress starting with the left hand and moving counter-clockwise around the perimeter of the trainer. Student must cover a 30-foot length underwater in a controlled manner using an IPHABD bottle. Student submerges, place regulator in mouth, purges regulator **(FORCEFUL EXHALE)**, and begins traverse while breathing from the SRU-40/P IPHABD.

NOTE: *The two SWET devices placed end-to-end will be used to complete the distance.*

3. **PHASE III – (FINAL EGRESS EXERCISE) (COMBINED EGRESS TRAINING UTILIZING SRU-40/P IPHABD)**

Enabling Learning Objective: (INSTRUCTOR: READ THE ENABLING LEARNING OBJECTIVE (ELO)).

ELO 3.o. In an egress situation with a fouled exit, properly egress a submerged SWET trainer utilizing the SRU-40/P IPHABD, exhaling continuously during ascent.

a. FINAL SWET RIDE (EGRESS TECHNIQUES with SRU-40/P IPHABD)

(1) **RIDE 3** - With the SRU-40/P IPHABD regulator in the stowed position, student is submerged and starts normal egress. Upon reaching the exit to the SWET, the instructor will simulate a fouled egress by obtaining and maintaining positive control of the student **(INSTRUCTOR GRASPS THE LPU-32)**. Student finds SRU-40/P regulator, places it in mouth, purges the regulator (**FORCEFUL EXHALE)**, takes two complete breaths, and properly egresses, while exhaling, to the surface.

IPHABD Diving Supervisor
Job Qualification Requirement

1. This Job Qualification Requirement shall be utilized by the Dive Masters of the Operating Forces for the training and certification of the IPHABD Diving Supervisor, in accordance with paragraph 3d(2) of the Marine Corps Underwater Egress and IPHABD Familiarization Training Employment Plan.

MODULE 1	**SIGNATURE**	**DATE**
1. Qualified U. S. Navy Diver (Marine Combatant Diver, SCUBA, 2nd Class, 1st Class).	_____	_____
2. Demonstrate the ability to complete a neurological examination.	_____	_____
3. Explain the signs and symptoms of compressed gas injuries.	_____	_____
4. Explain the proper treatment and medical evacuation procedure for compressed gas injuries.	_____	_____
5. Successfully demonstrate proper screening of medical records for pre-existing medical conditions (i. e., upper respiratory, Ears-Nose-Throat).	_____	_____
6. Successfully demonstrate knowledge of the SRU-40/P's (HABD) operational characteristics, pre-flight procedures, and refilling procedures utilizing AHP compressor/ cylinder. Complete Aqua Lung approved HABD maintenance course.	_____	_____
7. Be familiar with pre-existing conditions that may affect a student during IPHABD/SWET (i. e., medications, asthma, panic attacks, smokers, overweight individuals, near drowning, Ephedrine, Rip Fuel, etc.).	_____	_____

	SIGNATURE	DATE
8. Successfully demonstrate knowledge of pre-breathing station procedures.	_____	_____
9. Correctly state the duties and responsibilities of the following SWET personnel:	_____	_____

a. Supervising Instructor.
b. Primary Instructor.
c. Device Operator.
d. HABD Diving Supervisor.
e. Medical Provider.

MODULE 2

1. Observe Diving Supervisor duties for the IPHABD/SWET under instruction two times.	_____	_____
	_____	_____
2. Perform IPHABD/SWET Diving Supervisor duties under supervision three times and receive a satisfactory evaluation.	_____	_____
	_____	_____
	_____	_____
3. Complete a Pre-Mishap Plan Drill as the Diving Supervisor for IPHABD/SWET under supervision and receive a satisfactory evaluation.	_____	_____
Final Qualification: Master Diver.	_____	_____

Shallow Water Egress Trainer (SWET) Device Operator
Job Qualification Requirement

1. The Supervising Instructor or Primary Instructor will use this Job Qualification Requirement to train and qualify Device Operators, in accordance with paragraph 3d(3) of the Marine Corps Underwater Egress and IPHABD Familiarization Training Employment Plan. The Supervising Instructor and Primary Instructor must have successfully completed the Naval Operational Medicine Institute (NOMI) N7 and N9 curricula prior to utilizing this JQR.

MODULE 1	**SIGNATURE**	**DATE**
1. Read Marine Corps Underwater Egress and IPHABD Familiarization Training Employment Plan and Pre-Mishap Plan, to understand the following: a. Device Function. b. Modes of operation for the specific curriculum requirements. c. Emergency situations and corrective procedures.	_____	_____
2. State the duties and responsibilities of the following personnel: a. Supervising Instructor. b. Primary Instructor. c. Device Operator. d. IPHABD Diving Supervisor. e. Medical Provider.	_____	_____

MODULE 2	**SIGNATURE**	**DATE**
1. Correctly state the symptoms of an Air Gas Embolism.	_____	_____
2. Observe Marine Corps Underwater Egress and IPHABD Familiarization Training Employment Plan (including Classroom Theory and Laboratory/Practical Application).	_____	_____
3. Correctly state the emergency retract drill procedures.	_____	_____

MODULE 3		
1. Complete one Pre-Mishap Drill as Device Operator and receive a satisfactory evaluation.	_____	_____
2. Perform Device Operator duties under supervision two times and receive two satisfactory evaluations.	_____ _____	_____ _____

Underwater Egress/IPHABD Medical Provider
Job Qualification Requirements (JQR)

1. This Job Qualification Requirement shall be utilized by the Dive Medical Officer of the Operating Forces for the training and certification of the Medical Provider in support of the Underwater Egress/IPHABD Training, in accordance with paragraph 3d(4) of the Underwater Egress and IPHABD Familiarization Training Employment Plan.

MODULE 1	**SIGNATURE**	**DATE**
1. Possess a current certification in one of the following: a. Hospital Corpsman. b. State or National Emergency Medical Technician.	_____	_____
2. Possess an up-to-date BLS/CPR Certification.	_____	_____
3. Demonstrate the ability to complete a neurological examination.	_____	_____
4. Explain the signs and symptoms of compressed gas injuries (to include arterial gas embolism, pneumothorax, and mediastinal emphysema).	_____	_____
5. Successfully demonstrate proper screening of medical records for pre-existing medical conditions (i. e., upper respiratory, Ears-Nose-Throat).	_____	_____
6. Review training site-specific Pre-Mishap plan.	_____	_____

MODULE 2	**SIGNATURE**	**DATE**
1. Observe Medical Provider duties for the Underwater Egress/IPHABD training under instruction two times.	_____	_____
	_____	_____
2. Perform Underwater Egress/IPHABD Medical Provider duties under supervision two times and receive a Satisfactory evaluation.	_____	_____
	_____	_____
3. Complete one Pre-Mishap Plan Drill as the Medical Provider for Underwater Egress/IPHABD under supervision and receive a satisfactory evaluation.	_____	_____
4. Demonstrate proper immobilization procedures using the following devices:		
a. Cervical collar.	_____	_____
b. Long backboard.	_____	_____
Final Qualification: Diving Medical Officer.	_____	_____

Underwater Egress Training/Intermediate Passenger Helicopter Aircrew Breathing Device Medical Screening Questionnaire

TO THE APPLICANT – PLEASE READ CAREFULLY: This training is considered high-risk training that requires you to be comfortable in the water environment, be rested and free of injury or illness prior to participating in the training evolution. You will be required to complete training in helmet, cammies, boots, life preserver unit (LPU-32) and an IPHABD. Training includes an underwater egress evolution using hand-over-hand skills and underwater training with an emergency escape bottle (IPHABD) containing compressed gas. To participate in this training you must have your medical record screened by your unit's medical department, then complete the medical questionnaire below. You must then present this completed form to the training facility that is providing the training.

SECTION I – To be filled out by member's medical department representative (MDR)

Servicemembers Name_____ Rank _____ Date of last physical: _____

Is the servicemember currently on Limited Duty, Light Duty, or a Medical Board? Yes ☐ No ☐

Is the servicemember currently under the care of a physician for **<u>any</u>** reason? Yes ☐ No ☐

_____

Medical Department Representative Signature and **Stamp**

SECTION II – To be filled out by servicemember in the training class room on the day of training

1. Have you been sick in the past 3 weeks or are you currently under medical treatment? YES / NO
2. In the past 24 hours have you been diving, performed any physical exertion (PFT or hump), or had less than adequate rest (normal sleep) prior to this training period? YES / NO
3. Do you have any disease of the eyes, ears, sinuses, seasonal allergies, hay fever, difficulty with clearing your ears, or pain in your ears or sinuses from flying or diving? YES / NO
4. Are you allergic to shellfish or iodine? YES / NO
5. Do you now or have you ever had asthma, wheezing, pneumonia, or other chronic respiratory disease? YES / NO
6. Have you ever had a collapsed lung (pneumothorax) or other injury that required the insertion of a chest tube? YES / NO
7. Do you have recurring back or joint pain? YES / NO
8. Are you presently taking any prescription or over-the-counter medication or sports supplements? YES / NO
9. Have you consumed alcohol in the past 12 hours? YES / NO
10. Are you less than adequately hydrated? YES / NO
11. Have you ever had a diving-related injury (such as arterial gas embolism [AGE], decompression sickness [DCS], or the "bends")? YES / NO
12. Do you have a fear of aquatic training or have you ever requested to be removed from aquatic training? YES / NO
13. Female Marines/Sailors: Are you now or do you suspect that you may be pregnant? YES / NO
14. Did you pass your last PFT/PRT? YES / NO
15. Is there any reason you should not participate in high-risk aquatic training? YES / NO

If you answered "YES" to any of the questions above, list the question number and describe your "YES" response in the space provided below:

_____

_____

_____

Applicant's Name: _____ Applicant's Signature: _____

IPHABD Dive Supervisor/Corpsman Evaluation

We, _____ and _____, have reviewed the information presented and determined that this student is **FIT / UNFIT** for participation in egress/IPHABD training at this time.

_____ _____ _____

IPHABD Dive Supervisor Signature Corpsman Signature Date