

LESSON PLAN

JANUARY 2004

COURSE TITLE: Aviation Rescue Swimmer
Courses, Q-050-0600
Q-050-0602

CLASSIFICATION: Unclassified

LESSON TOPIC NUMBER: 4.1

LESSON TOPIC: Rescue Swimmer's Equipment

ALLOTTED LESSON TIME: 1.5 Classroom

INSTRUCTIONAL SUPPORT:

- 1 Classroom Instructor
- 1 Laboratory Instructor

INSTRUCTIONAL REFERENCE:

- 1. NAVAIR 13-1-6 Series Manuals
- 2. NWP 3-50.1, Naval Search and Rescue Manual
- 3. OPNAVINST 3710.7, NATOPS General Flight and Operating Instruction
- 4. NAVAIR 16-30PRC-149-1

INSTRUCTIONAL AID:

- 1. Trainee Guide

TERMINAL OBJECTIVE:

Partially supported by this lesson topic:

- 3.0 Upon completion of this unit of instruction, the student will demonstrate the proper rescue techniques of military and civilian personnel, day or night, utilizing appropriate SAR equipment for at-sea and overland rescues, as outlined in NWP 3-50.1 and OPNAVINST 3130.6 series, without injury to personnel or damage to equipment.

Enabling Objectives:

Completely supported by this lesson topic:

- 3.26 State requirements for the maintenance of rescue swimmers equipment per current NAVAIR 13-1-6 series manuals/Maintenance Requirement Cards (MRC's).
- 3.27 Explain the functional operation of rescue swimmer's equipment.
 - a. Wet Suit
 - b. Mask, Fins and Snorkel
 - c. Rescue swimmer's harness
 - d. LPU-28 (SAR-1)
 - e. HBU 23
 - f. Navy TRI-SAR Harness

2. Wet Suit Ensemble
3. Mask, Fins and Snorkel
4. HBU-23 (Harness)
5. LPU-28 (SAR-1)
6. Navy TRI-SAR Harness
7. AN/PRC-149
8. Parachute bag

g. AN/PRC-149

CRITERION TEST: Written test.

HOMEWORK: None

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

INTRODUCTION:

A. Establish Contact

Display name and lesson topic.

1. Introduce self, give rank, current job.
2. State background, schools, duty stations, etc..
3. State question and answer policy.
4. Reiterate the training time out policy.

B. State Lesson Objectives

Turn to cover page of Lesson Plan and paraphrase objectives.

C. Establish Readiness

1. Motivating Statements

Establish importance and relevance of lesson material using personal experience or anecdote.

2. Lesson Overview

Briefly outline material to be covered.

a. Lesson Topic: Rescue Swimmer's Equipment

b. Major Teaching Points:

(1) Rescue Swimmer's Equipment

DISCUSSION POINT

(2) Rescue Swimmer's Equipment Maintenance

PRESENTATION:

A. Rescue Swimmer's Equipment

1. Wetsuit Ensemble

- a. Preferred commercial grade.
- b. Neoprene rubber sandwiched by non-chaffing nylon.
- c. Consists of:
 - (1) Jacket with long sleeves.
 - (2) Trousers, Farmer John type.
 - (3) "Shorty" assembly.
 - (4) Booties
 - a. Worn with fins to protect the feet.
 - b. Worn at the discretion of the rescue swimmer, unless atmospheric conditions dictate otherwise.
 - (5) Gloves

RELATED INSTRUCTOR ACTIVITY

Show students each item of the wetsuit ensemble.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- a. Worn at the swimmer's discretion.
- b. Shall be the five finger type.

(6) Hood

- a. Worn at the swimmer's discretion.
- b. Reduces chill factor generated by rotor wash.
- c. Reduces heat loss through the head.
Sixty percent of all body heat is lost through the head.

Emphasize that cold water in the ears can cause dizziness, fainting, or disorientation.

d. Minimum of a wetsuit top shall be worn during all rescues.

e. Entire wetsuit shall be worn as per OPNAVINST 3710.7, specifically:

(1) When water temperature is above 50° F and air temperature is above 32° F (wind chill corrected), full wetsuits shall be worn at the commanding officer's discretion.

(2) Whenever the water temperature is below 50° F or air temperature is 32° F (wind chill corrected) or below, full anti-exposure protection is mandatory.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

2. U.S. Divers Wrap Around Mask

Display

- a. Allows rescue swimmers to see clearly underwater by providing an air space in front of the eyes.
- b. Double skirted for comfort and optimum seal.
- c. Wrap around offers a wide field of view and greater peripheral vision.
- d. Plastic adel clamp on top of mask provides means to attach the four inch General Purpose Chemical Light to the swimmer.
- e. Mask fogging is prevented by coating the interior of all three lenses with commercial mask lens defogger, toothpaste, or saliva.
- f. Mask shall be tied off on either the left or right shoulder strap of the rescue swimmers harness and not passed through the neck of the SAR-1 Vest. The mask shall not be tied off to the LPU-28.

Emphasize use of four inch General Purpose Chemical Light. Using the six inch High Intensity Chemlight will reflect off mask glass and cause vision problems.

Demonstrate.

Display

3. U.S. Divers Rocket Fins

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- a. Fins provide greater propulsion, speed, power and mobility. U.S. Divers Rocket Fins are the only authorized fins.
 - 1. Slots or vents:
 - a. Redirect the flow of water through the fin and toward the tip.
 - b. Most efficient when used with the flutter kick.
 - c. Fins have a stiff blade which may cause calf cramps.
4. U.S. Divers Snorkel
- a. Permits the rescue swimmer to breathe easily while working in the rotor wash from the aircraft.
 - b. Barrel can be straight or gently curved.
 - c. Flexible hose connects barrel to mouthpiece.
 - d. Snorkel attaches to mask strap with a snorkel keeper.
5. Aviation Rescue Swimmer's Harness HBU-23

Explain to students how to stretch out calf cramps in pool with fins on.

Display

Demonstrate positioning snorkel and mask on head

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

a. Provides a means to hoist the rescue swimmer and aviator simultaneously from the water.

Display HBU-23 and show location of equipment.

b. Incorporates two lifting devices attached to the harness:

c. Two-inch snap hook

(1) Located on extension of chest strap.

Demonstrate.

(2) Aviator's V-ring or D-ring is attached to swimmer's snap hook if swimmer and survivor are to be hoisted simultaneously.

d. Lifting V-ring.

(1) Located between snap hook and chest strap.

Demonstrate.

(2) Attaches to rescue hook.

e. Has left and right riser pockets which contain the following equipment:

(1) Two MK-124 Marine Smoke and Illumination Signal.

a. One in each riser pocket.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- b. Used to signal for emergency pick up.
- (2) Two six-inch General Purpose Chemical Lights for signaling or illumination of rescue devices.
 - a. Carried in the left riser pocket
- (3) Two four-inch High Intensity Chemical Lights for use with the swimmers mask.
 - a. Carried in the right riser pocket.
- (4) J-hook Knife Demonstrate
 - (a) Used only as a last resort to cut shroud lines.
 - (b) Carried in the right riser pocket.
 - (c) Has curved end for safety.
- (5) One Strobe Light Demonstrate
 - (a) Located on right shoulder strap.
 - (b) Used for emergency signaling by the swimmer.
 - (c) Covered with a blue lens for swimmer identification.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(6) Scabbard Knife, attached to chest strap.

6. LPU-28 (SAR-1)

- a. Provides emergency flotation for the rescue swimmer. SAR One may also be used to provide flotation for survivor.
- b. Provides a minimum of 30 pounds of buoyancy.
- c. Single cell construction.
- d. Velcro on right shoulder is for attaching strobe light or the AN/PRC-149 to the LPU-28.
- e. Storage pouch is in front.
- f. Normal inflation is through the oral inflation tube, emergency inflation is accomplished with a CO2 cartridge.
- g. Relief valve under storage pouch alleviates over inflation.

Display example point out components

Demonstrate

7. Navy TRI-SAR Harness

- a. The TRI-SAR harness assembly may be worn in place of the HBU-23 swimmers harness.
- b. The TRI-SAR Harness is designed to combine the security of a full body harness with

Demonstrate donning TRI-SAR Harness

Show students seat of TRI-SAR harness

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

the comfort of a seat harness.

- c. When hoisted, the harness provides a slightly reclined seated position allowing total use of the rescuer's hands.
- d. The integrated flotation vest features a low profile, easy to swim in design with a minimum buoyancy of 35 pounds.

Show floatation

NOTE

The floatation vest is an integrated part of the TRI-SAR Harness and cannot be removed by the swimmer while in the water.

- e. The flotation bladder is encased entirely in a heavy weight, puncture/abrasion-resistant nylon cover.
- f. The floatation can be removed easily when floatation is not required.
- g. TRI-SAR harness incorporates two lifting devices that are attached to the harness.

Explain that floatation must be removed by paraloft

(1) Lifting V-ring.

Show V-ring

a. Located on waist strap.

b. Attaches to the large end of the

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

double rescue hook.

(2) Snap hook

- a. Located on the extension of the waist strap.
- b. Allows for the connection of the Aviators lifting V-ring or gated D-ring if swimmer and survivor are riding up simultaneously.

Show Snap hook

h. The vest includes three pockets for stowage of survival items.

(1) Two MK-124 Marine smoke and illumination signal.

- a. Located in the bottom left pocket.

Show students the three pockets of the TRI-SAR harness

(2) Two, four inch high intensity chemical lights for use by the rescue swimmer that are located in bottom left pocket next to the MK-124's.

(3) Two, six inch general purpose chemical lights used for signaling or illumination , and is located in the lower right pocket, next to the PRC-149.

(4) J-hook knife

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

a. Located in the lower left pocket.

(5) One strobe light.

a. Located in the top left pocket
next to oral inflation tube.

(6) Scabbard knife is located on the
right side between the floatation
folds.

8. AN/PRC-149 Rescue Swimmer's Radio

Show students AN/PRC-149
components.

- a. The AN/PRC-149 is battery-powered and contains a flexible VHF/UHF antenna, GPS antenna, LED display, ON/OFF switch, volume control switch, Press To Talk (PTT) switch, electronic microphone, speaker and earphones.
- b. The radio is a personal non-combat emergency communication radio and location beacon transmitter. It is intended to provide a means of signal and voice communication between a downed aircrew member and the rescue party. The radio is also used as the primary means of communication between the swimmer and the helicopter.
- c. Operates in voice transmitter mode on three manually selectable emergency frequencies.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

A triple frequency beacon-operating mode provides transmission on all three internationally recognized Search and Rescue frequencies.

d. Consist of the following major components:

(1) Swimmer's Radio Control Unit(SRCU, voice box w/ cable) connects to PRC-149 to make a SAR swimmer's radio. When attached, the control unit assumes control of the PUSH-TO-TALK (PTT) and volume control functions. Connecting the SRCU disables the corresponding functions in the PRC-149.

(2) Main Electronics Housing, provides controls, LED displays, speaker, and a microphone.

(3) Blade Antenna Assembly, a stowable blade type VHF/UHF antenna. This assembly is removable for replacement purposes, or attaching the SRCU.

e. Main Electronics Housing stows in LPU-28/Tri-Sar harness storage pouch, cable exits top right corner of storage pouch. Swimmer's Radio Control Unit attaches to enlarged Velcro patch on right shoulder of LPU-28/Tri-Sar.

Explain to students the Receiver/Transmitter is stowed in the storage pouch on the LPU when not wearing a TRI-SAR Harness.

f. Function switch has the following

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

positions:

(1) Off

(2) GPS (Global Positioning System)

(3) 243.0,121.5,282.8 Voice

(4) 243.0,121.5,406.025 Beacon

g. SRCU designed for hands free operation. Press to Talk (PTT) button can be operated with either hand or the chin.

h. VHF/UHF Radio transmission performance is optimized when the radio is in a direct line of sight to the SAR aircraft receiver. Speech should be directed into speaker with the antenna length pointed generally vertical and perpendicular to the line of sight to the SAR aircraft.

Explain line of sight theory.

i. Has optional waterproof earphone for use in high ambient noise areas.

j. Radio is completely waterproof, but does not float.

a. Receiver will function completely submerged as long as approximately one inch of the antenna is above the surface.

DISCUSSION POINT

- b. Do not disassemble any part of the AN/PRC-149 Radio, especially the rear cover of the receiver/ transmitter. This will break the watertight integrity of the radio and render it inoperative.

B. Rescue Swimmer's Equipment Maintenance

1. Care and Preventative Maintenance

- a. Fresh water rinse all equipment.
- b. Hang in a cool, dry, windless place.
- c. After drying hand fold wet suit loosely.
- d. Lubrication:
 - (1) Coat zippers, mechanical parts, and fins with silicone spray lubricant.
 - (2) Do not expose mask, fins, and snorkel to direct sunlight unnecessarily as this will accelerate the deterioration of the silicone rubber.

2. Inspection Intervals for Rescue Swimmers Equipment

- a. By the swimmer prior to flight or deployment.

RELATED INSTRUCTOR ACTIVITY

Show training video.

Refer to MSDS on all hazardous materials.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

1. Look for signs of deterioration
 - a. Dry rot, Corrosion
 - b. Tears, Worn or Broken components
- c. Quarterly by the paraloft.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

SUMMARY:

A. State Lesson Objectives.

Turn to cover page for objectives.

B. Review Major Teaching Points.

Briefly summarize.

EVALUATION: None

Issue Gear Prior To Lesson
Plan 4.2

ASSIGNMENT: None

1. Mask
2. Fins
3. Snorkel