

LESSON PLAN

JANUARY 2004

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

CLASSIFICATION: Unclassified

LESSON PLAN NUMBER: 4.3

LESSON TOPIC: Primary Rescue Devices and
Procedures

ALLOTTED LESSON TIME: 2.5 Classroom
6.0 Laboratory

INSTRUCTIONAL SUPPORT:

1 Classroom Instructor
1 Laboratory Instructor
Safety personnel and additional instructors
as required per Annex E, Staffing
Requirements, of Curriculum Outline

INSTRUCTIONAL REFERENCES:

1. NWP 3-50.1, Naval Search and Rescue Manual
2. NAVAIR-13-1-6.5, Rescue and Survival Equipment

INSTRUCTIONAL AIDS:

1. Trainee Guide
2. Double Rescue Hook

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:

- 3.30 Explain the functional operation of the following Rescue Devices per NWP 3-50.1:
 - a. Double Rescue Hook
 - b. Modified Rescue Strop
 - c. Quick strop
 - d. Rescue Net
 - e. Rescue Litter/SAR MEDEVAC Litter, Trail Line and Gloves
 - f. Rescue Seat

3. Quick Strop
4. Modified Rescue Strop
5. Rescue Net
6. Rescue Litter/SAR MEDEVAC Litter,
Trail Line and Gloves
7. Rescue Seat

- 3.31 Demonstrate procedures for placing a survivor into the following rescue devices in a water environment:
- a. Double Rescue Hook
 - b. Modified Rescue Strop
 - c. Rescue Litter/SAR MEDEVAC Litter

CRITERION TEST: Job Sheet 4.3/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. Review Training Time Out policy.
5. Ask the following questions:
 - a. Has anyone gone to the hospital/branch clinic for treatment within 24 hours, and are you taking any medications?
 - b. Has anyone taken over-the-counter medications within 24 hours?
 - c. Are there any potentially disqualifying illnesses/conditions for which you are currently being evaluated?

Refer student to department medical representative for disposition.

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.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

2. Lesson Overview

Briefly outline material to be covered.

The wave generator may be used during all non-testable portions of this lesson as approved by the Training Chief.

- a. Lesson Topic: Rescue Devices and Procedures
- b. Major Teaching Points:
 - (1) Communication Procedures
 - (2) Double Rescue Hook
 - (3) Modified Rescue Strop
 - (4) Rescue Net
 - (5) Rescue Litter/SAR MEDEVAC Litter
 - (6) Rescue Seat
 - (7) Inspection and Care of Rescue Devices

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

PRESENTATION:

Instructor note: This presentation may be given in the classroom or on the pool deck.

A. Communication Procedures

1. Efficient communications keeps pilot, hoist operator, deck crew and swimmer aware of a developing rescue situation and allows rescue platform to provide needed support to swimmer (i.e., deployment of rescue devices).
2. The radio offers an optimal secondary means of communications.
3. Hand signals are the primary means of communication between Rescue Swimmer and the rescue platform in a maritime environment.
 - a. All crewmembers must be familiar with the meaning of standard hand signals.

Demonstrate all signals.

1. I am all right

Raised arm, open hand, fingers extended.

2. Move in for pickup

Raised arm, thumb up.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

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|-----|--|--|
| 3. | In trouble, need assistance | Vigorous waving of one arm. |
| 4. | Deploy raft | Clenched fists, arms crossed overhead. |
| 5. | Deploy radio | Hand held to ear |
| 6. | Deploy Pneumatic Webbing Cutter | Clenched fist, arm pumping motion |
| 7. | Deploy Rescue Litter | One arm raised with open palm, fingers extended, other arm raised over the swimmer`s head and touching the first arm at the elbow. |
| 8. | Deploy Rescue Net | Both arms raised, palms open, fingers extended, at a 45° angle to the swimmer`s head. |
| 9. | Deploy Rescue Seat (Aviation only) | Both arms outstretched, palms up. |
| 10. | Deploy Oxygen/Suction Unit (Aviation only) | One palm cupped over mouth and nose, clenched fist in front. |
| 11. | Deploy Medical Kit | Both arms raised, palms overlapping and touching top of head. |
| 12. | Ready to be hoisted | Raised arm, thumb up. |

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

13. Stop hoisting

Raised arm, clenched fist.

14. Lower cable

Raised arm, thumb down.

15. Failed hoist

Clenched fist over clenched fist followed by a thumbs down by hoist operator.

16. I am all right (night)

Swimmer's lighting device (chemlight) on, raised arm, palm open, fingers extended.

17. Move in for pickup (night)

Wave chemlight.

18. In trouble need assistance

Wave signal device (smoke flare).

19. In trouble need assistance

Blue strobe on.

B. Double Rescue Hook

Display device, indicating hooks and equipment ring.

1. The Double Rescue Hook is the primary rescue device.

a. All other rescue devices can only be used with the Double Rescue Hook.

b. Load ratings of the Double Rescue Hook (per the NAVAIR 13-1-6.5):

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (1) Large hook, rated at 3,000 lbs., shall be the only hook used to hoist personnel.
- (2) Small hook, rated at 1,000 lbs., is to be used only for lightweight items such as mail.
- (3) The equipment ring, rated at 1500 lbs., is used to hoist light equipment and mail.

c. Night-time Illumination

- (1) Attach chemlight strap to equipment ring and attach two chemlights to strap.

2. Procedures for Helo-Deployed Rescue Hook.

Walk-through procedures with equipment and "survivor".

WARNING

Never touch any rescue device before it is grounded on deck or by water entry, as doing so may cause electrical shock. Helicopter rotors can build up a significant static electrical charge.

a. Procedures for hoisting swimmer alone:

Demonstrate.

- (1) Signal for pickup.
- (2) Allow hook to ground.
- (3) Connect "V"-ring to large hook.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (4) Perform safety check:
 - (a) Double check connections.
 - (b) Ensure cable clear and taut.

 - (5) Signal for "up-hoist".

 - b. Procedures for hoisting survivor alone:
 - (1) Signal for pickup.
 - (2) Allow hook to ground.
 - (3) Connect survivor's "V"-ring (center of chest) or "D"-ring (right shoulder) to large hook.
 - (4) Perform safety check to ensure survivor is not entangled in the hoist cable .
 - (5) Signal for "up-hoist".

 - c. Procedure's for hoisting survivor and swimmer simultaneously:
 - (1) Connect the Rescue Swimmer's harness snap hook to the survivor's lifting device.
 - (2) Signal ready for pickup.
 - (3) Allow hook to ground.
 - (4) Connect lifting "V"-ring of Rescue
- Explain danger of cable wrapped around body.
- Demonstrate.
- Demonstrate.

DISCUSSION POINT

Swimmer's harness to large rescue hook.

(5) Perform safety check.

(6) Signal for up-hoist".

WARNING

Do not to place fingers in or around the bumper compression spring due to the possibility of a crushing injury during hoisting operations when the hoist reaches the upper limit switch.

RELATED INSTRUCTOR ACTIVITY

Point out the bumper compressing spring.

C. Modified Rescue Strop

Display Strop.

1. Rescue device used with Double Rescue Hook. The Modified Rescue Strop is a buoyant device with a red waterproof cover designed to accommodate one survivor. A webbing strap runs through the cover and has a "V"-ring at both ends for attaching the Double Rescue Hook. Two arm retainer straps are attached on the outside to hold survivor in the strop.

2. Night-time Illumination

Two chemlights are attached to the chemlight strap. The strap is attached to the Rescue Strop lower "V"-ring by the crewman.

3. Procedures for use:

Walk-through procedures with equipment and "survivor".

NOTE

Arm retainer straps shall be in the stowed position when

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

lowering the Rescue Strop.

- a. Signal for pick-up.
- b. Allow rescue device to touch water.
- c. Approach hoist with survivor in an appropriate carry.
- d. Working behind the survivor with the arm retainer straps outboard, the Rescue Swimmer shall pass the free end of the strop under one arm, around the back, and under the other arm.
- e. Connect the Rescue Strop free end lifting "V"-ring to the large hook.
- f. Position the Rescue Strop tightly under the survivor's armpits and on the upper half of the survivor's back.

WARNING

Arm retainer straps shall always be used when hoisting survivor with the Rescue Strop. This prevents the survivor's arms from rising and the survivor from slipping out of the Rescue Strop.

- g. Pass the arm retainer straps over the survivor's arms, route under the Rescue Strop and across the survivor's chest.
- h. Connect the snap-hook arm retainer strap to the "V"-ring arm retainer strap.
- i. Pull webbing on the "V"-ring arm retainer

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

strap until the arm retainer straps are secured tightly around the survivor's arms.

- j. If swimmer is to be hoisted, connect swimmer's lifting "V"-ring to large hook.
- k. Perform Safety Check.
- l. Signal Ready to be hoisted.
- m. Rescue Swimmer and survivor are hoisted up to the aircraft. After reaching the aircraft the Rescue Swimmer and crewman shall assist the survivor inside the aircraft.
- n. Once the survivor is inside and on the deck of the aircraft, the Rescue Swimmer shall maintain positive control of the survivor until the crewman gives a thumbs up. A thumbs up indicates to the Rescue Swimmer that the crewman has the survivor in positive control within the aircraft.

D. Rescue Net

- 1. Conically-Shaped Bird Cage

WARNING

In order to utilize the net, the front support rods must be locked in place to prevent the net from collapsing on the survivors. Collapsing of net could result in the survivor(s) drowning.

- 2. Primarily used for multiple rescue.
- 3. Never send unconscious victim up alone in rescue

Display Device

Demonstrate locking support rods into place.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

net.

4. Flotation for two persons.
5. A "V"-strap is provided for securing the net in the rescue vehicle door.
6. Night-time illumination.

Two chemlights are attached to the strap. Chemlight straps are attached to nylon rope just above the middle frame flotation on both sides of the net opening.

7. Procedures:
 - a. Signal for net.
 - b. Allow device to ground.
 - c. Place Rescue Net opening directly in front of the Rescue Swimmer without disconnecting it from the rescue hook.
 - d. Place survivor in a collar/equipment tow and swim into rescue net backwards while positioning the survivor on either side of the net facing out.
 - e. Ensure that survivor's body is entirely in the net.

Demonstrate procedures.

WARNING

Survivor shall not attempt to get out of the rescue net until directed by the crewman.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- f. Place one arm across the net.
- g. Signal for up-hoist.
- h. When net reaches the helicopter, the crewman shall hook up the safety strap from the Rescue Net to the decking of the helicopter. The crewman shall assist the survivor inside the helicopter.

E. Rescue Litter/SAR MEDEVAC Litter

1. Litter Characteristics:

- a. Both are for use with suspected back injury victims and unconscious survivors.
- b. Both are designed to be used over land or in water with flotation assemblies.
- c. Rescue Litter requires a flotation kit for over water use. When flotation is installed litter floats with patients head slightly reclined from the vertical.

Display Litter,
indicating features.

WARNING

If survivor is wearing the bright orange Quick Donning Anti-Exposure Suit it may counteract the self-righting feature of the Rescue Litter and the SAR MEDEVAC Litter.

- d. Both have a two piece rescue litter hoisting sling which are attached to the Double Rescue Hook. Sling is color coded short red to head and long white to feet.

- e. The SAR MEDEVAC Litter folds in half and can

Display SAR MEDEVAC

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

be stored in a backpack and weighs approx. 40 lbs. It can be hoisted vertically or horizontally with its own sling, making it especially useful in restricted access situations. Overland, two rescuers can carry the litter between them using the two adjustable carrying harnesses.

Litter, indicating features.

f. Night-time illumination.

Two chemlights are attached to each strap. One strap is attached to the head of the litter; one to the foot.

g. Both litters utilize a "trail line" controlled by the swimmer in the water to control litter deployment and stabilize the litter during hoisting.

Display trail line assembly and gloves.

(1) One hundred and twenty feet in length.

(2) Three eights inch thick polyethylene, diamond-braided rope.

(3) A weak link is incorporated, designed to break if the trail line becomes entangled.

(4) Gloves and line are deployed together via a 5 pound shot bag.

2. Securing Survivor to the Rescue Litter:

Display Rescue Litter securing features. Demonstrate each procedure as it is presented.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- a. Rescue Litter has five restraint straps. They are stowed with four retaining straps.
- b. Procedure for securing survivor:
 - (1) The rescue swimmer shall guide the survivor into the positioned litter by using the collar tow or equipment carry.
 - (2) Once positioned, the swimmer shall take the top restraint strap from the front of the litter and secure it around the survivor's chest. The strap is pulled loose from the right side, placed under the arms but over the chest, and attached to the fitting on the left.
 - (3) Next, working from the chest strap down, secure the rest of the restraint straps.
 - (4) Once the restraint straps are secured, attach the chest pad over the survivor's arms. The rescue swimmer may encounter some difficulty if survivor has flotation; however, flotation shall not be removed. Instead, remove chest pad from litter and continue with rescue. If practical swimmer will return chest pad back to helicopter when hoisted.

3. Securing survivor to the SAR MEDEVAC Litter:

Display SAR MEDEVAC Litter securing features.

- a. Litter will need to be assembled by hoist operator prior to lowering to swimmer.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

b. Litter has integral cervical collar and head restraint, four patient restraint straps, one chest flotation pad assembly strap, and one foot restraint assembly.

c. Procedure for securing survivor:

Demonstrate each procedure as it is presented.

- (1) The rescue swimmer shall guide the survivor into the positioned litter by using the collar tow or equipment carry.
- (2) Once positioned, the swimmer shall take the top restraint strap from the front of the litter and secure it around the survivor's chest. The strap is pulled loose from the right side, placed under the arms but over the chest, and attached to the fitting on the left.
- (3) Next, working from the chest strap down, secure the rest of the restraint straps.
- (4) Properly adjust foot restraint assembly.
- (5) Once the restraint straps are secured, attach the chest pad over the survivor's arms. The rescue swimmer may encounter some difficulty if survivor has flotation; however, flotation shall not be removed. Instead, remove chest pad from litter and continue with rescue. If practical swimmer will return chest

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

pad back to helicopter when hoisted.

- (6) Secure head restraint assembly if possible. Don't remove survivor's helmet if neck/back injury is suspected.

4. General Litter Procedures:

Demonstrate procedures.

- a. Signal for litter. (Trail line will come out first.)

WARNING

The weight bag shall be deployed so as not to strike rescue swimmer or survivor.

- b. The hoist operator shall deploy the trail line ensuring that it is attached to the litter. The gloves shall be tied on by a slip knot located just above the weight bag.

WARNING

The rescue swimmer shall wear trail line or authorized rescue swimmer gloves with leather palms in order to prevent rope burns to the hands.

- c. Put on gloves.
- d. The Rescue Swimmer shall pull on the trail line gently until the entire line is deployed.
- e. Signal "thumbs-up" indicating ready for litter.
- f. Use the trail line to control the litter and

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- pull it into position as it is lowered.
- g. Allow rescue device to touch water.
 - h. Disconnect hoisting slings from rescue hook, placing hoisting slings outside litter. Do not allow hoisting slings to foul restraining straps.
 - i. Position survivor on litter, adhering to warning regarding survivor's buoyancy and the self righting feature of the litter.
 - j. Secure survivor using procedures appropriate to the litter.
 - k. Ready the Rescue Litter hoisting sling and signal the aircraft to move in for pick-up.
 - l. Hook the Rescue Litter hoisting sling (both sides) to the large hook.
 - m. Conduct pre-hoisting safety check, ensuring survivor is securely within litter, litter is attached to large hook, tending line is attached to the proper side of the litter (aircraft dependent), sling cables are in correct positioning, swimmer is wearing gloves, and cable is clear and not wrapped around the litter or swimmer.
 - n. Signal for up-hoist.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

NOTE

Extreme care shall be utilized during train line evolutions in shallow waters. Cease hoisting immediately if the weighted bag becomes snagged on the bottom. Hoisting when this occurs may cause possible harm to personnel and/or equipment.

- o. Swimmer remains in water, taking a slight strain on trail line, stabilizing the hoist, and keeping the litter oriented parallel to the longitudinal axis of the rescue platform. Upon reaching the rescue platform, maneuver survivor aboard per platform specific procedures.
- p. When the litter is at the aircraft entrance, the swimmer shall use the trail line to maneuver the litter such that the survivor enters headfirst.

NOTE

The confined space in the H-60 cabin requires the litter to enter feet first in order for the crewman to properly attend to the survivor.

- q. With the litter and trail line on board, the crewman shall lower the hoist cable and recover Rescue Swimmer.

F. Rescue Seat

Display device.

- 1. Two folding flukes for sitting.
- 2. Bright orange flotation collar for high visibility.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

3. Swimmer or survivor must lower the flukes.
4. Two adjustable yellow safety straps with friction adjusters.
5. Used for both land and sea rescue.
6. Night-time illumination.
 - a. Chemlights are attached to the rescue hook equipment ring.
7. Procedures for use:
 - a. Signal for device.
 - b. Allow device to ground.
 - c. Pull down fluke and have survivor sit on it, facing the rescue seat.

Demonstrate hand signal for device.

Note

If survivor is wearing an inflated LPU life preserver, the waist lobes may need to be disconnected prior to attaching the adjustable safety trap.

- d. Pass adjustable safety straps under rider's arms and around their back and secure strap to the v-ring tighten until survivor is secured against flotation collar.
- e. Have the survivor wrap arms and legs around the flotation collar.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- f. Perform final safety check.
- g. Signal for "up-hoist".

Note

If the rescue swimmer elects to be hoisted with the survivor, the rescue swimmer shall wear the adjustable safety strap in the same manner as the survivor.

G. Night utilization of Rescue Devices.

Normal hook up procedures are used at night.
Chemlights are attached as appropriate.

WARNING

Due to low visibility at night, the Rescue Swimmer must pay particular attention to ensure all safety straps, harnesses, etc., are properly installed. Failure to do so could result in injury or death to the survivor/Rescue Swimmer.

H. Rescue Equipment Inspection

- 1. Visual Inspection Prior to Use
 - a. Inspect fabric for cuts, deterioration, and abrasion.
 - b. Inspect seams for proper adhesion and stitching.
 - c. Inspect all hardware for security of attachment, corrosion, damage, wear, and if applicable, ease of operation.
 - d. Check for sharp edges and projections.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- e. Ninety day inspection cycle for equipment conducted by maintenance personnel.

WARNING

Unauthorized modification to, and deviation from, prescribed life support and survival equipment by individual crewmembers could create unknown safety hazards.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

SUMMARY:

A. State Lesson Objectives

Turn to cover page for objectives.

B. Review Major Teaching Points

Briefly summarize.

APPLICATION:

Initial students practice procedures dry-land until comfortable.

Instructor demonstrate proper procedures in placing a survivor into the rescue net

Students place "survivor" into the following rescue devices in a day and night pool environment.

Instructor demonstrate proper procedures in placing a survivor into the rescue seat

- a. Double Rescue Hook
- b. Modified Rescue Strop
- c. Rescue Litter/SAR MEDEVAC Litter

Break initial students into small groups for dry land practice.

Students practice skills in water under observation and instruction of an in-water instructor. Instructor demonstrates skills as required.

EVALUATION: Job sheet checklist 4-3.

ASSIGNMENT: None