

LESSON PLAN

January 2007

COURSE TITLE: Surface Rescue Swimmer
Courses, A-050-0500

CLASSIFICATION: Unclassified

LESSON PLAN NUMBER: 4.5

LESSON TOPIC: Aviation Life Support
Systems

ALLOTTED LESSON TIME: 1.0 Classroom

INSTRUCTIONAL SUPPORT:

1 Classroom Instructor

INSTRUCTIONAL REFERENCES:

1. NAVAIR 13-1-6.2
2. NAVAIR 13-1-6.7
3. NTTP 3-50.1 Navy Search and Rescue Manual

INSTRUCTIONAL AIDS:

1. Trainee Guide
2. HGU Series Helmet Fixed Wing
3. HGU Series Helmet Rotor Wing
4. MBU-12 Oxygen Mask Assembly
5. RSSK/SKU

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 rescues, as outlined in NTTP 3-50.1 and OPNAVINST 3130.6 series, without injury to personnel or damage to equipment.

Enabling Objectives:

Completely supported by this lesson topic:

- 3.32 Explain the functional operation and hardware associated with various parachute harnesses.
- 3.33 List the types of harnesses as outlined in NTTP 3-50.1.
- 3.34 Describe the procedures for donning/doffing the following assemblies:
 - a. Helmet assemblies
 - b. RSSK assemblies
 - c. Oxygen mask assemblies
 - d. Survival vest/flotation assemblies

CRITERION TEST: Written test

6. CMU-33A/P (Non-ejection Seat) HOMEWORK: None
7. CMU-33/P (Ejection Seat)
8. LPU-21
9. LPU-30/MK-1
10. PCU-Series Torso Harness
11. NB-Series Back Pack type Parachute
Harness
12. USAF fittings and harnesses (classroom
make-up)

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.

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

a. Lesson Topic: Aviation Life Support Systems

Briefly outline material to be covered.

b. Major Teaching Points:

- (1) General Equipment
- (2) Flotation Devices
- (3) Backpack Parachute Removal
- (4) Torso Harness-style Parachute and Rigid Seat Survival Kit Release
- (5) Hoisting Attachment Points

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

PRESENTATION:

A. General Equipment

1. Anti-Exposure Suits

a. Imperial Wetsuit (quick-donning)

Show example

(1) Bright orange in color.

(2) Worn over the flight suit/clothing.

(3) Positive buoyancy may negate self righting features of MEDEVAC litter.

(4) Some have lifting "V" ring in the center of the chest.

2. Flight Helmets

Show examples of fixed wing and helicopter helmets.

a. Covered with high visibility reflective tape.

b. Provide limited flotation.

c. May hinder communications between survivor and rescuer.

d. Helmets are not removed until survivor is aboard rescue platform.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

3. Oxygen Masks

- a. Form fit to face.
- b. Attach to helmet with bayonet fitting.
- c. Oxygen supply hose connects to Rigid Seat Survival Kit (RSSK) or aircraft console.
- d. Always disconnect mask from helmet first to eliminate the possibility of suffocation.

B. Flotation Devices

1. Aircrew Flotation Devices

- a. Naval aircrew flotation is provided by an LPU series life preserver assembly attached to either an AIRSAVE CMU-33/P survival vest over a PCU-series torso harness.
- b. Providing flotation to the survivor is very important. There are three methods of inflating an LPU.
 - (1) Some jet aircrew may have an automatic inflation device, such as the FLU-8. This device is activated within 8-15 seconds upon immersion in the water, and will require no action on the part of the rescue swimmer.
 - (2) Manual inflation is accomplished by pulling the beaded handles located on outer seam of flotation.

Display an AIRSAVE CMU-33/P and PCU.

Display FLU-8.

Demonstrate.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (3) Oral inflation is accomplished by loosening the knurled knob on the inflation tube, holding it down with your teeth, and blowing into the tube. This method will require the most effort on the part of the rescue swimmer.

2. Other Flotation Assemblies

Show example and operation

- a. Worn by flight deck personnel and aircraft passengers.

- b. Inflated by CO₂ or orally.

- (1) Pull cord for CO₂ inflation.

Demonstrate.

- (2) Oral inflation.

Demonstrate.

C. Backpack Parachute

- 1. Large fixed wing aircraft crew (P-3, C-130) wear an NB-Series Back Pack Type Parachute with quick donning harness.

Show example of Back Pack type harness.

- a. Harness is worn over the AIRSAVE CMU-33A/P survival vest and flotation.

- b. Harness must be removed to separate the survivor from the parachute.

- c. Removed by releasing three quick ejector snaps, one at the chest, and one for each leg.

Demonstrate.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

D. Torso Harness-Style Parachute and Rigid Seat Survival Kit Release

1. Jet and E-2 aircrew wear a PCU-Series Torso Harness.
 - a. The torso harness is not removed during the rescue. The parachute must be separated from the torso harness.
 - b. For Navy gear, the parachute is separated by releasing the Koch fittings which attach the parachute risers to the harness.
 - (1) Most jet gear incorporates Sea Water Activated Release System (SEAWARS), which automatically release the Koch fittings upon immersion in salt water. This system poses no danger to the rescue swimmer and requires no action of the rescue swimmer.
 - (2) Manual release is accomplished by separating the male portion of the Koch fitting assembly (located on the right and left upper chest area) from the female ends (on the parachute risers).
 - c. A Rigid Seat Survival Kit/Seat Kit Unit containing a raft, oxygen, and survival gear is attached to the lap belt of the torso harness. E-2 aircraft, incorporates a lap belt type detachment from the RSSK.

Show example of torso harness.

Emphasize difference: Backpack - entire harness removed; PCU - parachute separates from harness.

Display Koch fittings.

Display SEAWARS.

Demonstrate manual release of the Koch fittings.

Show students mini-Koch fitting and operation.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(1) Disconnect oxygen hose from RSSK by lifting the knurled locking ring and pulling firmly on the supply hose.

Demonstrate.

(2) After ensuring the oxygen hose is disconnected, remove the RSSK by releasing the mini-Koch fittings located near the aviator's hips.

Demonstrate.

3. USAF/Other Parachute Harnesses

Display

a. USAF harnesses closely resemble Navy Backpack Type.

b. Risers may be attached with Frost, Koch, or J1 Capewell Fittings.

c. Seat kits may use mini-Koch fittings or a fitting closely resembling automotive lap belts.

E. Hoisting Attachment Points

1. For hoisting, the rescue hook or rescue swimmer's snap hook may be attached directly to the aviator in one of two ways:

a. Hoist via the gated "D" ring of an AIRSAVE CMU-33 series vest (if so equipped).

Demonstrate.

b. Hoist via the gated "D" ring of a PCU torso harness.

Demonstrate.

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

SUMMARY:

A. State Lesson Objectives

Turn to cover page for objectives.

B. Review Major Teaching Points

Briefly summarize.

APPLICATION:

Objective: To give students total familiarity with aviator's equipment by allowing hand's on experience.

Set Up: Station one - Jet gear. At least one mannequin (or stuffed flight suit) in AIRSAVE CMU-33/P over a PCU, parachute risers attached, RSSK attached, and helmet with oxygen mask.
Station two - Prop gear. At least one mannequin (or stuffed flight suit) in AIRSAVE CMU-33A/P in parachute back-pack.

Station three - other attachment devices. Labeled strips of webbing connected by (at a minimum) Frost fittings, J1 Capewell fittings, and the USAF fitting closely resembling automotive lap belts. (The objective is to demonstrate the wide variety of equipment used by other services and nations.)

Assign an equal number of students to each station. Students remove O₂ mask (as applicable), simulate inflating gear, release and connect appropriate attachment several times, simulate attaching rescue hook to harness. Students repeat until comfortable - ideally they should be able to do all steps with eyes closed. Instructor helps students visualize rescue scenario - where parachute would be, why oxygen mask is removed first, etc. Students rotate through stations. Announce when mannequins will be available for students to practice individually.

DISCUSSION POINT

EVALUATION: Written Test

ASSIGNMENT: None

RELATED INSTRUCTOR ACTIVITY