

# Aviation Rescue Swimmer School

Rescue Swimmer's Equipment  
LT 4.1



# Enabling Objectives

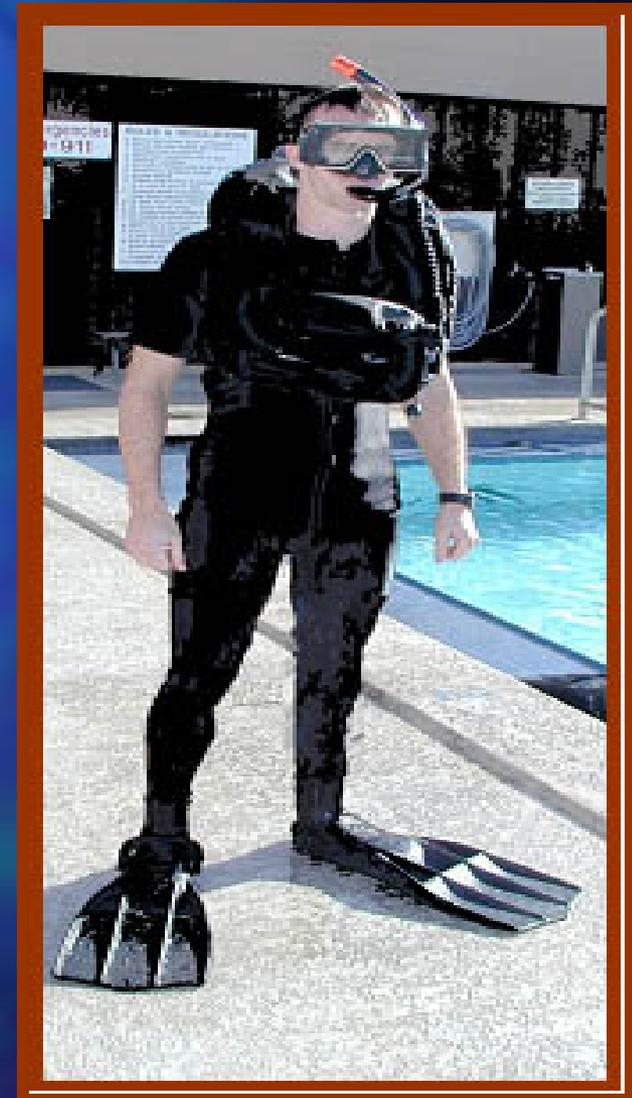
- State requirements for the maintenance of rescue swimmer's equipment per current NAVAIR 13-1-6 series manuals/Maintenance Requirements Cards (MRC's)
- Explain the functional operation of rescue swimmer's equipment per NWP 3-50.1:

# Enabling Objectives

- Wet Suit
- Mask, Fins, and Snorkel
- Rescue swimmer's harness
- LPU-28 (SAR-1)
- HBU-23
- Navy TRI-SAR Harness
- AN/PRC-149

# Rescue Swimmer's Equipment

- Wetsuit Ensemble
  - Preferred commercial grade.
  - Neoprene rubber sandwiched by non-chaffing nylon.
- Consists of:
  - Jacket with long sleeves.
  - Trousers, Farmer John type.
  - "Shorty" assembly.



# Wetsuit Ensemble

## ■ Booties

- Worn with fins to protect the feet.
- Worn at the discretion of the rescue swimmer, unless atmospheric conditions dictate otherwise.

## ■ Gloves

- Worn at the swimmers discretion.
- Shall be the five finger type.

# Wetsuit Ensemble

## ■ Hood

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

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

# Wetsuit Ensemble

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

# U.S. Divers Wrap Around Mask

- Allows rescue swimmers to see clearly underwater by providing an air space in front of the eyes.
- Double skirted for comfort and optimum seal.
- Wrap around offers a wide field of view and greater peripheral vision.

# U.S. Divers Wrap Around Mask

- Plastic adel clamp on top of mask provides means to attach the four inch General purpose Chemical Light to the swimmer.
- Mask fogging is prevented by coating the interior of all three lenses with commercial mask lens defogger, toothpaste, or saliva.

# U.S. Divers Wrap Around Mask

- 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.

# U.S. Divers Rocket Fins

- Fins provide greater propulsion, speed, power and mobility. U.S. Divers Rocket Fins are the only authorized fins.
- Slots or vents:
  - Redirect the flow of water through the fin and toward the tip.
  - Most efficient when used with the flutter kick.
  - Fins have a stiff blade which may cause calf cramps.

# U.S. Divers Snorkel

- Permits the rescue swimmer to breathe easily while working in the rotor wash from the aircraft.
- Barrel can be straight or gently curved.
- Flexible hose connects barrel to mouthpiece.
- Snorkel attaches to mask with a snorkel keeper.

# Aviation Rescue Swimmer's Harness HBU-23/P

- Provides a means to Hoist the rescue swimmer and aviator simultaneously from the water.
- Incorporates two lifting devices attached to the harness:



# Aviation Rescue Swimmer's Harness HBU-23/P

- Two-inch snap hook
  - Located on extension of chest strap.
  - Aviator's V-ring or D-ring is attached to swimmer's snap hook if swimmer and survivor are to be hoisted simultaneously.
- Lifting V-ring
  - Located between snap hook and chest strap.
  - Attaches to rescue hook.

# Aviation Rescue Swimmer's Harness HBU-23/P

- Has left and right riser pockets which contain the following equipment:
  - Two MK-124 Marine Smoke and Illumination Signal.
    - One in each riser pocket.
    - Used to signal for emergency pick up.
  - Two six inch General Purpose Chemical Lights for signaling or illumination of rescue devices.
    - Carried in the left riser pocket.

# Aviation Rescue Swimmer's Harness HBU-23/P

- Two four- inch High Intensity Chemical Light for use with the swimmers mask.
  - Carried in the right riser pocket.
- J-hook Knife
  - Used only as a last resort to cut shroud lines.
  - Carried in the right riser pocket.
  - Has curved end for safety.

# Aviation Rescue Swimmer's Harness HBU-23/P

- One Strobe Light
  - Located on right shoulder strap.
  - Used for emergency signaling by the swimmer.
  - Covered with a blue plastic film for swimmer identification.
- Scabbard Knife, attached to chest strap.

# LPU-28 (SAR-1)

- Provides emergency floatation for the rescue swimmer. SAR-1 may also be used to provide floatation for survivor.
- Provides a minimum of 30 pounds of buoyancy.
- Single cell construction
- Velcro on right shoulder is for attaching strobe light or the AN/PRC-149 to the LPU-28.

# LPU-28 (SAR-1)

- Storage pouch is in front.
- Normal inflation is through the oral inflation tube, emergency inflation is accomplished with CO<sub>2</sub> cartridge.
- Relief valve under storage pouch alleviates over inflation.

# LPU-28 (SAR-1)



# Navy Tri-Sar Harness

- The Tri-Sar Harness assembly may be worn in place of the HBU-23 swimmers harness.
- The Tri-Sar Harness is designed to combine the security of a full body harness with the comfort of a seat harness.

# Navy Tri-Sar Harness

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

# Navy Tri-Sar Harness

## NOTE

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

# Navy Tri-Sar Harness

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

# Navy Tri-Sar Harness

- Lifting V-ring
  - Located on waist strap
  - Attaches to the large end of the double rescue hook.
- Snap Hook
  - Located on the extension of the waist strap
  - Allows for the connection of the Aviators lifting V-ring or gated D-ring if swimmer and survivor are riding up simultaneously.

# Navy Tri-Sar Harness

- The vest includes three pocket for stowage of survival items:
  - Two Mk-124 Marine smoke and illumination signal.
    - Located in the bottom left pocket
  - Two, four inch high intensity chemical lights for use by the rescue swimmers that are located in bottom left pocket next to the MK-124's.

# Navy Tri-Sar Harness

- 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.
- J-hook Knife
  - Located in the lower left pocket

# Navy Tri-Sar Harness

- One strobe light
  - Located in the top left pocket next to oral inflation tube.
- Scabbard knife is located on the right side between the floatation folds.

# Navy Tri-Sar Harness



# AN/PRC-149 Rescue Swimmer's Radio

- 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.

# AN/PRC-149 Rescue Swimmer's Radio

- 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.

# AN/PRC-149 Rescue Swimmer's Radio

- Operates in voice transmitter mode on three manually selectable emergency frequencies. A triple frequency beacon-operating mode provides transmission on all three internationally recognized Search and Rescue frequencies.
- Consist of the following major components:

# AN/PRC-149 Rescue Swimmer's Radio

- Swimmer's Radio Control Unit (SRCU, voice box w/cable) connects to the 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.

# AN/PRC-149 Rescue Swimmer's Radio

- Main Electronics Housing: provides controls, LED displays, speaker, and a microphone.
- Blade Antenna Assembly: a stowable blade type VHF/UHF antenna. This assembly is removable for replacement purposes, or attaching the SRCU.

# AN/PRC-149 Rescue Swimmer's Radio

- 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 the right shoulder of LPU-28/Tri-Sar.

# AN/PRC-149 Rescue Swimmer's Radio

- Function switch has the following positions:
  - OFF
  - GPS (Global Positioning System)
  - 243.0, 121.5, 282.8 Voice
  - 243.0, 121.5, 406.025 Beacon
- SRCU designed for hands free operation. Press to talk (PTT) button can be operated with either hand or the chin

# AN/PRC-149 Rescue Swimmer's Radio

- 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 directly into speaker with the antenna length pointed generally vertical and perpendicular to the line of sight to the SAR aircraft.

# AN/PRC-149 Rescue Swimmer's Radio

- Has optional waterproof earphone for use in high ambient noise areas.
- Radio is completely waterproof, but does not float.
  - Receiver will function completely submerged as long as approximately one inch of the antenna is above the surface.
  - 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.

# AN/PRC-149 Rescue Swimmer's Radio



# Rescue Swimmer's Equipment Maintenance

## ■ Care and Preventative Maintenance

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

# Rescue Swimmer's Equipment Maintenance

- Inspection Intervals for Rescue Swimmers Equipment
  - By the swimmer prior to flight or deployment.
    - Look for signs of deterioration
      - Dry rot, Corrosion
      - Tears, Worn or Broken components
  - Quarterly by the paraloft.

# Summary

- Gloves shall be the \_\_\_\_\_ type.

- *Five finger*

- What percent of body heat is lost through the head?

- *60%*

# Summary

- The plastic adel clamp is used to attach the \_\_\_\_\_ inch chemlight.
- *Four*
- The two types of kicks used with the fins are what?

*Flutter/Dolphin kick*

Questions?