

**OUTLINE SHEET 4.1  
RESCUE SWIMMER’S EQUIPMENT**

**INTRODUCTION:**

During rescue operations the Rescue Swimmer has certain types of equipment that he/she will use to aid in the recovery of a survivor. This unit of instruction will describe the various types of equipment and the usage of each.

**ENABLING OBJECTIVES:**

- 3.25 State requirements for the maintenance of rescue swimmers equipment per current NAVAIR 13-1-6 series manuals/Maintenance Requirement Cards (MRC’s).
  
- 3.26 Explain the functional operation of rescue swimmer’s equipment per NWP 3-50.1:
  - 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
  - g. AN/PRC-149

**TOPICE OUTLINE:**

**RESCUE SWIMMER’S  
EQUIPMENT:**

- 1. Wetsuit Ensemble
  - Preferred commercial grade
  - Neoprene rubber sandwiched by non-chaffing nylon
  - Consist of:
    - Jacket with long sleeves.
    - Trousers, Farmer John type
    - “\_\_\_\_\_” assembly
    - Booties
      - a. Worn with fins to protect the \_\_\_\_\_.

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- b. Worn at the discretion of the rescue swimmer, unless atmospheric conditions dictate otherwise.

- Gloves

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

- Hood

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

- \_\_\_\_\_  
\_\_\_\_\_.

- Entire wetsuit shall be worn as per OPNAVINST 3710.7, specifically:
  - When water temperature is above \_\_\_\_ F and air temperature is above \_\_\_\_ F (wind chill corrected), full wetsuits shall be worn at the commanding officers' discretion.
  - Whenever the water temperature is below 50 F or air temperature is 32 F (wind chill corrected) or below, full \_\_\_\_\_ protection is mandatory.

2. 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 \_\_\_\_\_ vision
- Plastic adel clamp on top of mask provides means to attach the \_\_\_\_\_ High Intensity Chemical Light to the swimmer
- Mask fogging is prevented by coating the interior of all three lenses with commercial mask lens defogger, toothpaste, or \_\_\_\_\_.

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- Mask \_\_\_\_\_ tied off on either the left or right shoulder strap of the rescue swimmers harness and \_\_\_\_\_ passed through the \_\_\_\_\_ of the SAR-1 Vest. The mask shall not be tied off to the LPU-28.
  
- 3. U.S. Divers Rocket Fins
  - Fins provide greater propulsion, speed, power and mobility. U.S. Divers Rocket Fins are the only \_\_\_\_\_ fins.
    - 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
  - Permits the rescue swimmer to breathe easily while working in the \_\_\_\_\_ from the aircraft.
  - Barrel can be straight or gently curved.
  - Flexible hose connects barrel to mouthpiece.
  - Snorkel attaches to mask strap with a snorkel keeper.
  
- 5. Aviation Rescue Swimmer's Harness HBU-23/P
  - Provides a means to hoist the rescue swimmer and aviator \_\_\_\_\_ from the water
  - Incorporates two lifting devices attached to the harness
  - Two-Inch snap hook
    - Located on extension of chest strap
    - Aviator's \_\_\_\_\_ or \_\_\_\_\_ is attached to swimmer's strap hook if swimmer and survivor are to be hoisted simultaneously.



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- Provides a minimum of \_\_\_\_\_ lbs of buoyancy.
- Single cell construction
- Velcro on right shoulder is for attaching strobe light or the \_\_\_\_\_ to the LPU-28.
- Storage pouch is in front.
- Normal inflation is through the \_\_\_\_\_ inflation tube, emergency inflation is accomplished with CO2 cartridge
- Relief valve under storage pouch alleviates over inflation.

7. Navy Tri-Sar Harness (Diagram 4.1-1)

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

**NOTE**

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

- The flotation bladder is encased entirely in a heavy weight, puncture/abrasion-resistant nylon cover.
- The flotation can be removed easily when flotation is not required
- Tri-Sar harness incorporates two lifting devices that are attached to the harness:
  1. Lifting V-ring:
    - a. Located on waist strap
    - b. Attaches to the large end of the double rescue hook.

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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
  
- The vest includes three pocket for stowage of survival items:
  1. Two Mk-124 Marine smoke and illumination signal.
    - a. Located in the bottom left pocket
  
  2. 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.
  
  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
    - 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
  - 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.

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- 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.
- 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:
  - 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.
  - 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.
- 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.
- Function switch has the following positions:
  - Off
  - GPS (Global Positioning System)
  - 243.0, 121.5, 282.8 Voice

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➤ 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.
- 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.
- 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.

**RESCUE SWIMMER'S  
EQUIPMENT  
MAINTENANCE:**

1. Care and Preventative Maintenance
  - \_\_\_\_\_ 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 \_\_\_\_\_ spray lubricant.

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- Do not expose mask, fins, and snorkel to direct \_\_\_\_\_ unnecessarily as this will accelerate the deterioration of the silicone rubber.

2. Inspection Interval for Rescue Swimmers Equipment

- By the swimmer prior to flight to deployment
  - Look for signs of deterioration
    - a. Dry rot, Corrosion
    - b. Tears, Worn or Broken components
- Quarterly by the paraloft