

**CHAPTER 11**  
**HELICOPTER SPECIAL OPERATIONS**  
**REVISED AUGUST 2023**  
**TABLE OF CONTENTS**

<u>GENERAL</u> .....	11-3
<u>EXTERNAL LOAD OPERATIONS</u> .....	11-3
<u>TRAINING AND CERTIFICATION</u> .....	11-3
Initial Certification/Documentation .....	11-5
Certification Renewal.....	11-5
<u>MISSION ACCEPTANCE</u> .....	11-5
<u>MISSION PLANNING AND AIRCRAFT PREPARATION</u> .....	11-6
<u>STAGING AREA SELECTION AND PREPARATION</u> .....	11-7
<u>APPROVED KNOTS, LIFTING DEVICES, AND EQUIPMENT</u> .....	11-7
<u>EQUIPMENT</u> .....	11-7
Safety Harness.....	11-7
Hearing Protection.....	11-8
Eye Protection .....	11-8
Hand Protection.....	11-8
Head Protection.....	11-8
Officer Safety Equipment.....	11-8
<u>COMMUNICATIONS</u> .....	11-9
Communication Radios .....	11-9
Communication Procedures .....	11-9
<u>SHORT HAUL OPERATIONS</u> .....	11-13
Phases of Operation.....	11-13
Operations.....	11-13
<u>RESCUE HOIST OPERATIONS</u> .....	11-16
Phases of Operation.....	11-16
Operations.....	11-16
<u>DEPLOYMENT OF WATER RESCUE PERSONNEL (HELOCASTING)</u> .....	11-18
General.....	11-18
Policy.....	11-18
Mission Acceptance.....	11-18
Mission Planning and Aircraft Preparation.....	11-19
Staging Area Selection and Preparation.....	11-19
Phases of Operation.....	11-19
Operations.....	11-20
<u>SINGLE SKID, HOVERING LOAD, OR OFF-LOAD OF HELICOPTER</u> .....	11-22
General.....	11-22

Mission Planning and Aircraft Preparation.....	11-22
Operations.....	11-23
<u>EQUIPMENT INSPECTIONS AND MAINTENANCE</u> .....	11-23
<u>SAFETY</u> .....	11-23
Actions During an Engine Failure or Power Loss .....	11-23
Emergency Jettison Procedures (Short Haul Load) .....	11-24
Emergency Cable Cut Procedures (Rescue Hoist Operations) .....	11-24
Precautionary Measures and Practices .....	11-25

## ANNEXES

<u>A</u> – APPROVED KNOTS, EQUIPMENT, AND DEVICES .....	11-27
<u>B</u> – SHORT HAUL OPERATIONS CHECKLIST .....	11-33
<u>C</u> – RESCUE HOIST OPERATIONS CHECKLIST .....	11-37
<u>D</u> – HELICOPTER HAND SIGNALS .....	11-41
<u>E</u> – PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS) .....	11-43
<u>F</u> – PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS).....	11-49
<u>G</u> – PERFORMANCE STANDARDS (HELOCASTING).....	11-55
<u>H</u> – PERFORMANCE STANDARDS (SINGLE SKID AND HOVER OFF-LOAD OPERATIONS).....	11-59
<u>I</u> – PERFORMANCE STANDARDS (RESCUE EQUIPMENT).....	11-63
<u>J</u> – CHP 334, RESCUE EQUIPMENT INSPECTION LOG (EXCLUDING RESCUE HOIST & CARGO HOOK).....	11-79
<u>K</u> – CHP 335, ROPE USE LOG .....	11-81
<u>L</u> – EQUIPMENT INSPECTION AND CARE.....	11-83
<u>M</u> – CHP 93SAR, SEARCH AND RESCUE CREWMEMBER EVALUATION.....	11-87
<u>N</u> – CHP 93SARNC, SEARCH AND RESCUE NON-CREWMEMBER EVALUATION.....	11-89



## CHAPTER 11

### HELICOPTER SPECIAL OPERATIONS

1. GENERAL. For the purpose of this manual, helicopter special operations are defined as an external load to include hoist and short haul, helocasting, single skid, and hover load and off-load operations. All equipment used for external load operations shall be used in accordance with the manufacturer's recommendations and guidelines established in this chapter.

2. EXTERNAL LOAD OPERATIONS. An external load is defined as a load that extends or is carried outside the aircraft fuselage. An external load includes a load attached to the cargo hook or rescue hoist, including the attaching hardware. Departmental personnel trained, certified, and current in departmental helicopter external load operations may conduct these operations in accordance with their restrictions. Ground personnel, used for various external load operations, shall be properly trained and should receive a thorough mission and safety briefing prior to conducting the operation.

a. Only Federal Aviation Administration (FAA) approved cargo hook and/or hoist systems and equipment identified in this chapter or specifically approved by the Office of Air Operations (OAO) in writing shall be used (Annex A).

b. Each unit shall designate a unit external load coordinator with the concurrence of the chief flight officer. Unit external load pilot training shall be conducted by a unit training pilot or the departmental chief helicopter pilot.

c. Night external load operations shall be in compliance with Highway Patrol Manual (HPM) 100.7, Air Operations Manual, Chapter 12, Night Vision Goggle Operations and Training Policy.

d. When accepting an external load mission, the flight crew shall follow notification procedures as described in this chapter and their unit's Standard Operating Procedures (SOP).

e. Only persons being trained or who are necessary for the mission shall be onboard the aircraft.

3. TRAINING AND CERTIFICATION.

a. All departmental personnel tasked with conducting external load operations shall be required to satisfactorily complete departmental external load training and



certification of maneuvers to be used, prior to conducting those operations. Training shall be conducted by the chief pilot, chief flight officer, unit training pilot, unit external load coordinator, or alternate external load coordinator.

b. Pilots shall receive familiarization training on flight officer and ground support duties for external load operations.

c. The FAA, Advisory Circular 00-1.1B, Public Aircraft Operations, defines a “qualified non-crewmember” as someone whose presence is required to perform a government function associated with the flight. In this context, the term “government function” refers to operations addressed in this chapter. All nondepartmental personnel acting in this capacity shall be supervised by a crewmember during all airborne operations.

(1) A qualified non-crewmember’s training shall be conducted by the chief pilot, chief flight officer, unit training pilot, unit external load coordinator, or alternate external load coordinator. Training may also be conducted by a departmental crewmember that has been properly trained, has no restrictions, has approval from the aerial supervisor, and with concurrence of the unit external load coordinator. Training shall include:

(a) A thorough familiarization of the equipment to be used, proper pre- and post-use inspections (this includes all harnesses, straps, ropes, and devices used to provide safety to human life, as well as the rescue hoist).

(b) Knowledge of applicable policies and procedures contained in this chapter and its annexes.

(c) Practical exercises during which personnel demonstrate proficiency with the techniques and procedures contained in this chapter and its annexes, and are specific to the tasks required to assist in search and rescue operations with and under the supervision of CHP crewmembers.

(2) All training shall be documented on a CHP 93SARNC, Search and Rescue Non-Crewmember Evaluation, and kept on file at the Division air unit.

(a) When training multiple personnel from an allied agency, a single CHP 93SARNC may be completed, along with the attached roster of personnel trained. If an unsatisfactory rating is given for an individual, a single CHP 93SARNC shall be completed for that individual.

(b) Training shall be conducted annually, at a minimum. Air units may train nondepartmental personnel more often, given the needs of the Division.

d. Initial Certification/Documentation.

(1) Pilot initial certification and documentation shall be conducted by the chief pilot, designee, or the unit training pilot and the unit external load coordinator, with the concurrence of the chief pilot, and documented on a CHP 93D, Helicopter Training Checkride Evaluation, only after they satisfactorily demonstrate the necessary skills and knowledge for the maneuver(s) to be used (Annexes E, F, G, H, and I).

(2) Flight officer initial certification shall be conducted by the chief pilot, designee, or the unit training pilot and the unit external load coordinator, with the concurrence of the chief pilot or chief flight officer, and documented on a CHP 93SAR, Search and Rescue Crewmember Evaluation, only after they satisfactorily demonstrate the necessary skills and knowledge for the maneuver(s) to be used (Annexes E, F, G, H, and I).

e. Certification Renewal. Once certified, crewmembers shall be required to satisfactorily perform one of each of the external load operation maneuvers to be used semiannually. Currency for each external load operation maneuver shall be performed every 90 days. Conducting a mission satisfies currency requirements. All certification and currency shall be documented on a CHP 93SAR.

(1) Pilot recertification and currency requirements, other than missions, shall be conducted by the unit training pilot, associate training pilot, chief pilot, or their designee.

(2) Flight officer recertification and currency requirements, other than missions, shall be conducted by the unit external load coordinator and/or the unit training pilot, chief flight officer, or their designee.

4. MISSION ACCEPTANCE.

a. Safety shall be the primary consideration during all helicopter special operations.

b. The flight crew must be departmentally qualified and certified for the special operation to be performed.

c. The crew must assess the need to conduct the operation. Special operations may be conducted when authorized by the unit's SOP and this chapter, necessary to save a human life, minimize human suffering, recover a body that cannot be reasonably removed by other means, or during training. Live lift missions should be carefully considered.

5. MISSION PLANNING AND AIRCRAFT PREPARATION. The crew is responsible for aircraft preparation, checking equipment condition, proper equipment rigging, determining aircraft performance, and mission planning.

a. Annex B or C checklists shall be used.

b. Performance planning, and weight and balance requirements:

(1) The pilot shall compute performance planning and complete a CHP 93N, Helicopter Load Calculation. A CHP 93N does not need to be completed if the helicopter is equipped with a Vehicle and Engine Management Display (VEMD). The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations or missions that would normally require a CHP 93N be completed.

(2) The pilot shall ensure the load does not exceed the aircraft's gross weight and remains within the longitudinal and lateral center of gravity (CG) limitations.

c. All unnecessary items for the mission being performed shall be removed from the aircraft.

d. Necessary items shall be secured.

e. Doors may be removed or locked open, in accordance with the flight manual.

f. The helicopter shall be equipped with an FAA approved cargo hook or cargo swing with both electrical and manual releases, and/or with an FAA approved rescue hoist with a cable cut device.

(1) The crew shall ensure the cargo hook or hoist is properly attached to the aircraft.

(2) Circuit breakers for the aircraft's rescue hoist pyrotechnic cable cutter device shall be armed during all departmental rescue hoist operations.

(3) For short haul operations, the crew shall check both load release methods for proper function. When a short haul lift line is used, a swivel may be used.

This does not preclude the use of a second swivel at the cargo hook end. Cargo hook to load attach point lift line distance shall not exceed 150 feet.

(4) Only departmentally approved (auto-lock) "D" carabiners, that meet the National Fire Protection Association 1983 general use standards, shall be used for all metal-to-metal attachments.

(5) During live human short haul loads, the electrical cargo release shall be disarmed.

(6) During live human short haul loads, a safety line (belly band) shall be used. The belly band shall be attached to the lift line at the cargo hook and routed between the skids and through the passenger compartment. The safety line must be within immediate reach of the flight officer. The flight officer must have a device within reach capable of quickly cutting through the safety line, should an in-flight emergency develop requiring the load to be jettisoned.

(7) An engineered safety line may be used in accordance with the manufacturer's guidelines.

(8) Center of Gravity Considerations: If CG prohibits routing by the methods listed in 5.f.(3)-(7), the safety line shall be tethered to a suitable hard point inside the passenger compartment.

6. STAGING AREA SELECTION AND PREPARATION. The site should be free of debris and obstructions. Consideration should be given to approach and departure paths, size, and environmental factors.

7. APPROVED KNOTS, LIFTING DEVICES, AND EQUIPMENT. Approved knots, lifting devices, and equipment are contained in Annex A.

8. EQUIPMENT. All departmental personnel shall use only OAO approved equipment while conducting helicopter special operations. Equipment to be used shall be checked and verified by crewmembers prior to attachment to the aircraft or hoist.

a. Safety Harness.

(1) Except during flight officer loading and unloading during single skid operations, the safety harness is required to be worn by the flight officer during all special operations. The safety harness is intended to secure the flight officer in the helicopter while allowing freedom of movement.

(2) Attachment to two of the helicopter's hard points is required utilizing the approved carabiners with a minimum two stage locking system. For over water missions, attachment to a single hard point is acceptable to allow for egress during an emergency.

(3) The pilot shall visually confirm the flight officer's attachment to two of the helicopter's hard points.

b. Hearing Protection.

(1) Flight helmets shall be worn by crewmembers during special operations.

(2) Aircraft headsets, or similar ear protectors, provide adequate hearing protection for ground crew personnel, but helmets are strongly recommended.

(3) When possible, ear plugs should be provided for all involved ground personnel.

c. Eye Protection.

(1) Many potential eye hazards exist during special operations. Areas of particular concern are flying dust, debris, and equipment malfunction such as cables and straps.

(2) Crewmembers wearing flight helmets shall wear the visor down.

(3) Goggles should be used by non-crewmembers. They should be clean, in good repair, and the lens free of scratches.

d. Hand Protection. Ground crew personnel and the flight officer should wear heavy leather gloves during external load operations.

e. Head Protection. Except for water rescue operations, crewmembers attached to the lift line shall wear a departmental flight helmet. All nondepartmental personnel should be provided with a rescue helmet prior to being attached to the lift line.

f. Officer Safety Equipment. Air operations personnel are not required to carry their weapon while exiting the aircraft during external load operations. During these types of operations, the crewmember should take into consideration the reason for the operation, tactical concerns, equipment, and other extenuating circumstances that would require having a weapon. If a weapon is left in the aircraft, it should be secured in a departmentally approved holster attached to the harness with a Molle attachment. Special attention should be given to holster and equipment entanglement.



## 9. COMMUNICATIONS.

### a. Communication Radios.

(1) Proper communications between the aircraft and ground rigging crew are of vital importance during any external load operation. Various radios can be used for this purpose, to include:

- (a) The CHP extender.
- (b) Aircraft/ground communication radio or intercom system.
- (c) Allied agency portable radios.

(2) Only required radios should be monitored, all others should be muted.

### b. Communication Procedures.

(1) Ground crew to aircraft hand signals (Annex D).

- (a) Advisory only, the pilot has the final authority for aircraft movement.
- (b) Should be briefed to the ground crew. They should also be briefed on the proper positioning and of hazards inherent to the operation.

(2) Air to ground communications.

- (a) Radio channel selection agreed upon and understood by all involved in the operation.
- (b) Lost communication procedures briefed by crew and understood by all involved in the operation, if the mission permits.

(3) Nonverbal Communications.

(a) Nonverbal communications are a necessity in external load operations and can be utilized by all persons in the operation. The following are representative signals for ground crew, hoist rider, and hoist operator.

(b) Ground Personnel.

1 All CHP personnel assisting in ground operations shall have a "plus" sign (+) marking on top of their helmet to assist in nonverbal communications. All non-CHP personnel assisting in ground operations should have a plus sign (+) marking on top of their helmet to assist in nonverbal communications.

2 Nodding head (up and down) indicates a rider is connected and is ready to be lifted.

3 Shaking head (side to side) indicates the need for more slack in the hoist cable.

4 Dual arm swing (side to front) indicates 10 feet of clearance from the ground or any observed hazard.

5 Single arm movement with clinched fist at shoulder level indicates hold.

(c) Hoist Rider.

1 Nodding head (up and down) indicates connected and ready to be lifted.

2 Shaking head (side to side) indicates the need for more slack in the hoist cable.

3 Heel clicks (heels together) indicates 10 feet of clearance from the ground or top of any observed hazard.

4 Dual arm swing (side to front) indicates 10 feet of clearance from the ground or top of any observed hazard.

5 Single arm movement with clinched fist at shoulder level indicates hold. Rider should then point in the direction of desired placement.

6 Cable shake indicates rider should look at hoist operator to receive instruction.

(d) Hoist Operator.

1 Nodding head (up and down) indicates rider is connected and begin to take slack out of the cable.

2 Shaking head (side to side) indicates more cable is needed to reach rider or ground crew.

3 Heel clicks (heels together) indicates rider is 10 feet from the ground or any observed hazard.

4 Dual arm swing (side to front) indicates that rider is 10 feet from the ground or any observed hazard.



5 Single arm movement with clinched fist at shoulder level indicates hold.

6 Cable shake indicates intention to lower rider from brace position to the ground.

(4) Cockpit voice command terminology.

(a) Communication is the most important aspect of the team. The purpose is to create a spatial relationship or “paint the picture” and describe everything happening in, around, and below the aircraft.

(b) All control movements in response to commands are meant to be small unless specific distances are given (i.e., “slide left 5”).

(c) No more than two commands should be given at one time.

(d) Use the countdown method for commands (i.e., “slide left 5, 4, 3, 2, 1, hold”). The cadence is not a distance. Cadence is based on the operator’s judgement of aircraft movement at the moment the command is started. The tone and tempo of the cadence directly relates to pilot inputs on the controls.

(e) Before directing the pilot to move the aircraft in any direction, the flight officer shall visually confirm that the aircraft is clear to move in that direction, and shall inform the pilot that the aircraft is clear for the intended movement (i.e., “main and tail rotor are clear to slide left, slide left 5, 4, 3 ...” or; “rotors and aircraft are clear to descend, come down 5, 4, 3 ...”). If the direction is not within view, the flight officer shall advise the pilot and ask if the aircraft is clear for the intended movement. (i.e., “we need to slide right 5, are we clear to slide right?”)

(f) All commands have a start, travel, and hold. All commands initiated must be closed (i.e., “forward in 3, 2, 1, hold your forward”).

(g) Compound movements should be used whenever possible to eliminate “stair-step” movements. The primary (larger) movement should always precede the secondary (smaller) movement. For example, if the aircraft needs to move more left than forward (i.e., “move left and forward 3, 2, 1, hold your forward, continue left 3, 2, 1, hold”).

(h) Commands:

1 Left-pilot – moves aircraft to the left while maintaining heading.



- 2 Right-pilot – moves aircraft to the right while maintaining heading.
- 3 Forward-pilot – moves aircraft forward while maintaining heading.
- 4 Back-pilot – moves aircraft backwards while maintaining heading.
- 5 Up-pilot – increases hover altitude while maintaining heading and position.
- 6 Down-pilot – decreases hover altitude while maintaining heading and position.
- 7 Hold-pilot – ceases any directional movement or altitude changes. If a drift is observed, inform the pilot and correct the movement in the opposite direction (i.e., “you’re drifting right, need you to slide left 3, 2, 1, hold”).
- 8 Clear to come out – advises pilot of the intention to move the rider outside the aircraft fuselage.
- 9 Safety on – advises pilot that the safety strap is attached to rider/device.
- 10 Safety off – advises pilot the safety strap is disconnected from the rider/device.
- 11 Brace – advises pilot the rider is lowered to skid level in preparation for hoisting.
- 12 One off – advises pilot the rescuer is disconnected from the hoist hook.
- 13 One on – advises pilot the rescuer is connected to the hoist hook.
- 14 Taking an empty hook – advises the pilot that a load is not attached to the hoist hook.
- 15 Hook in hand – advises the pilot the hoist operator, or rescuer has the hook in hand. The hoist operator shall not leave an unattended cable at the door of the aircraft.

16 Taking the load – advises the pilot the slack in the cable is coming out and to prepare to take the load.

17 Clear for easy up and forward – advises the pilot to initiate a slow positive rate of climb and forward rate of movement.

18 Clear to maneuver, clear for forward flight – advises the pilot that the rescuer/device is secured in the aircraft and formally hands aircraft command back to the pilot.

19 Jettison load – pilot releases the load using the hook release (sling load operations).

20 Cut cable or cut load – flight officer or pilot (as applicable) activates the cable cutter device (hoist operations).

21 Tagline away – advises pilot tagline separation from rescue device.

## 10. SHORT HAUL OPERATIONS.

### a. Phases of Operation: (Annex E).

(1) Hook-Up Phase. The hook-up phase begins when the helicopter arrives at the staging area or rescue site. The helicopter is maneuvered over a previously rigged load, and the load is engaged in the hook-up device.

(2) Transport Phase. The transport phase begins when the helicopter lifts the load and moves it from the hook-up site to the release site.

(3) Release Phase. The release phase begins upon the helicopter's arrival at the release site. The helicopter is maneuvered into position over the previously selected site and lands or detaches the load.

### b. Operations.

#### (1) Methods of hook-up and release:

(a) The most favorable method employs a flight officer, or an additional pilot in the aircraft, to give the pilot directions to help position the aircraft over the load, and to assist in clearing the aircraft from obstacles, terrain, and hazards.

(b) A second method employs a ground crew signal person. This person directs the pilot in the hook-up and release of the load from a position on the ground in close proximity to the hook-up/release site. They may also act as a hook-up and release person.

1 Ground to air communication is desirable at the hook-up site. If nondepartmental personnel are utilized at the pick-up site, they should be briefed by the crew on the use of standardized hand signals and radio terminology.

(2) Hook-Up Phase:

(a) After the pilot loses sight of the prospective load on short final, they maneuver the helicopter over the load by following the directions given by the flight officer.

(b) When the pilot advises they have lost sight of the load, the flight officer begins to give directions to the pilot to assist them in positioning the aircraft over the load.

(c) Use of nonweighted short haul line is permitted only when deployed or retrieved from within the aircraft at a hover, by the flight officer utilizing a retrieval line. Flight with the short haul line is permitted, provided a minimum 5-pound weight is attached at or near the load end of the line.

(d) A safety line (belly band) shall be utilized whenever a live human load is carried on the short haul line.

(e) The flight officer shall observe the load attachment procedure and confirm, to the best of their ability, it is being performed correctly.

(f) The flight officer shall report when the load is attached.

(3) Transport Phase:

(a) The pilot shall ensure the aircraft limitations are not exceeded.

(b) The flight officer or ground signal person directs the helicopter upward until slack has been taken out of the short haul line and advises the pilot that the load is ready to be lifted.

(c) The pilot lifts the load off the ground to a 5-foot hover while checking power and controllability, then advises the flight officer, "Power and controllability is good, continue."

(d) The flight officer shall:

- 1 Report when the load breaks ground.
- 2 Advise the pilot on the position of the load. After the pilot advises that power is good, then the flight officer continues to give directions to the pilot to assist in raising the load until it is clear of obstacles.
- 3 Advise the pilot when the aircraft and load are clear of all obstacles and are cleared for forward flight.
- 4 Continue to observe the load at all times during the flight and advise the pilot of any unusual conditions, oscillations, or loss of the load.

(4) Release Phase:

(a) The pilot shall:

- 1 Ensure operating limitations are not exceeded.
- 2 Complete a prelanding check.
- 3 Advise the flight officer of their intentions and give a brief description of the planned approach path and termination point within the release site. The pilot should identify all barriers and obstructions.
- 4 Advise the flight officer when on final approach.
- 5 Advise the flight officer upon losing sight of the release point, then follow the flight officer's directions to position the aircraft over the intended release point.
- 6 Release the load when directed.

(b) The flight officer or ground signal person shall:

- 1 Confirm positive verbal communication if using radios.
- 2 Establish visual contact if using hand signals.
- 3 Advise the pilot when the load is clear of barriers for descent.



4 When the pilot advises they have lost sight of the intended release point, the flight officer begins to give directions to the pilot to assist in positioning the aircraft.

5 Continue directing the pilot until the load is on the intended surface.

6 Advise the pilot when the load is clear for release, report when the load is released, and report when the attaching devices are clear.

7 If the load is released by ground personnel, the flight officer shall recover the short haul line into the aircraft when applicable.

8 Clear the aircraft for departure or give instructions to assist the pilot with a safe descent and landing at the release site.

## 11. RESCUE HOIST OPERATIONS.

### a. Phases of Operation: (Annex F).

(1) Hook-Up Phase. The hook-up phase begins when the helicopter arrives at the staging area or rescue site. The helicopter is maneuvered over a previously rigged load, and the load is engaged in the hook-up device.

(2) Transport Phase. The transport phase begins when the helicopter lifts the load and moves it from the hook-up site to the release site.

(3) Release Phase. The release phase begins upon the helicopter's arrival at the release site. The helicopter is maneuvered into position over the previously selected site and lands or detaches the load.

### b. Operations.

#### (1) Hook-Up Phase.

(a) After the pilot advises they have lost sight of the load, the flight officer begins to give directions to the pilot to assist them in positioning the aircraft over the load.

(b) The flight officer shall lower the hoist cable over the target to be lifted, while keeping the pilot informed of operational progress.

(c) The flight officer shall observe the load attachment procedure and attempt to confirm, to the best of their ability, it is being performed correctly.

(2) Transportation Phase.

(a) The pilot shall:

- 1 Ensure aircraft limitations are not exceeded.
- 2 After the flight officer takes the slack out of the hoist cable and informs the pilot the load is ready to be lifted, the flight officer will begin to take the load, simultaneously confirming with the pilot that power and controllability are satisfactory. If the pilot confirms the load can be safely lifted, the pilot will inform the flight officer they are cleared to hoist the load.
- 3 With the load outside of the helicopter, limit speed to 40 knots.

(b) The flight officer shall:

- 1 Give continuous verbal directions to the pilot during the lift.
- 2 Take slack out of the hoist cable, and then advise the pilot the load is ready to be hoisted.
- 3 After receiving a "clear to hoist" reply from the pilot, the flight officer hoists the load using the pendant control and maintains control of the load during the hoist operation, ensuring it clears all obstacles including those on the helicopter (skids, antennas, etc.).
- 4 Advise the pilot when the hoist has been completed, and the load is either inside the aircraft, or secured to the outside.
- 5 Clear the aircraft for forward flight.
- 6 Continue to monitor the load at all times during the flight and advise the pilot of any unusual conditions.

(3) Release Phase.

(a) The pilot shall:

- 1 Ensure operating limitations are not exceeded.
- 2 Complete a prelanding check.
- 3 Advise the flight officer of their intentions and give a brief description of their planned approach path and termination point

within the release site. The pilot should identify all barriers and obstructions.

4 Advise the flight officer when on final approach.

5 Advise the flight officer when they lose sight of the intended release point, then follow the flight officer's instructions to position the aircraft over the release point.

(b) The flight officer shall:

1 If possible, confirm positive radio communication between all parties involved in the operation.

2 When the pilot advises they have lost sight of the intended release point, the flight officer begins to direct the pilot over the release site.

3 Advise the pilot when they are ready to lower the load and obtain a verbal confirmation from the pilot.

4 Give continuous verbal directions to the pilot during the hoist operation.

5 Lower the hoist load, ensuring the load clears all obstacles, including those on the helicopter.

6 Advise the pilot when the load is on the ground, has been released from the hoist cable, and when the cable is retracted and secured; or give instructions to assist the pilot with a safe descent and landing at the release point.

7 Clear the aircraft for departure.

## 12. DEPLOYMENT OF WATER RESCUE PERSONNEL (HELOCASTING).

a. General. For the purpose of this manual, helocasting will consist of deploying certified departmental or allied agency emergency water rescue personnel from a departmental helicopter while it is at a stabilized hover. After initial certification, departmental personnel are required to recertify annually (Annex G).

b. Policy. Helocasting is permitted in accordance with provisions of this manual. No more than one person per side shall be on the skids.

c. Mission Acceptance:

- (1) Safety shall be the primary consideration during helocasting operations.
- (2) The crew must be qualified and current for the mission to be performed.
- (3) Only equipment authorized by OAO may be used.
- (4) The crew shall, if possible, notify their supervisor prior to accepting a helocasting mission.
- (5) Helocasting missions are not authorized at night.

d. Mission Planning and Aircraft Preparation.

- (1) The crew is responsible for aircraft preparation, checking mission equipment condition, checking rigging, and mission planning.

(a) Performance planning, and weight and balance requirements.

1 The pilot shall compute performance planning and complete a CHP 93N. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N be completed.

2 The pilot shall ensure the load does not exceed the aircraft's gross weight, and the aircraft remains within the longitudinal and lateral CG limitations during all aspects of this operation.

(b) Unnecessary items shall be removed from the aircraft.

(c) All necessary items shall be secured.

(d) Doors may be removed or locked open, if desired, in accordance with the flight manual.

e. Staging Area Selection and Preparation. The site should be free of debris and obstructions. Consideration should be given to approach and departure paths, size, and environmental factors.

f. Phases of Operation.



(1) Load-Up Phase. The load-up phase begins when the helicopter arrives at the staging area, a mission briefing is conducted by the flight crew, to include safety information, emergency procedures, a check of the rescue teams training, certification, and equipment.

(2) Transport Phase. The transport phase begins when the helicopter lifts the rescuers and transports them to a location near the victims.

(3) Deployment Phase. The deployment phase begins upon the helicopter's arrival at the release site. The helicopter is maneuvered into a stabilized hover position near the victims, and the rescuers are deployed.

g. Operations.

(1) Load-Up Phase.

(a) After the crew has computed the aircraft hover out of ground effect performance, and confirmed the mission can be safely completed, they shall brief the water rescue members of the mission requirements and their responsibilities, ensuring the crew's directions are clear and will be followed.

(b) The flight crew shall wear flotation devices, along with helicopter emergency egress device vests, and shall remove any unnecessary gear during all helocasting operations.

(c) Unnecessary persons will not be carried in the aircraft during helocasting operations.

(d) The flight officers shall ensure any water rescuers are properly secured in the aircraft and briefed on the mission prior to take-off.

(2) Transport Phase.

(a) The pilot shall:

1 Ensure aircraft limitations are not exceeded.

2 After the flight officer confirms the water rescuers are properly briefed and secured in the aircraft, the pilot can continue with the departure.

(b) The flight officer shall:

- 1 Give a comprehensive safety briefing and ensure the rescuers are properly trained, equipped, and understand the required hand signals and safety procedures.
- 2 Assist the pilot with traffic avoidance and rotor clearance during all phases of the flight.
- 3 After receiving a "clear to deploy" from the pilot, the flight officer directs the rescuers onto the skids and then will visually ensure the area below the aircraft is clear of all obstacles prior to giving the signal for the rescuers to deploy from the skids.
- 4 Advise the pilot when the deployment has been completed and the rescuers have given the "OK."
- 5 Clear the aircraft for forward flight.
- 6 Continue to monitor the rear area of the aircraft at all times during flight and advise the pilot of any unusual conditions.

(3) Deployment Phase.

(a) The pilot shall:

- 1 Ensure operating limitations are not exceeded.
- 2 Complete a prelanding check.
- 3 Advise the flight officer of their intentions and give a brief description of their planned approach path and termination point within the deployment area. The pilot should identify all barriers and obstructions.
- 4 Advise the flight officer when on final approach.
- 5 Advise the flight officer when they have arrived at the intended release point, then follow the flight officer's instructions to position the aircraft over the deployment point.

(b) The flight officer shall:

- 1 Confirm positive verbal communication has been established between all parties involved in the operation.

2 When the pilot advises they have arrived over the intended deployment point and has established a hover, the flight officer will direct the rescuers onto the skids.

3 Advise the pilot when the rescuers are on the skids and ready for deployment. When the pilot indicates they are ready, the flight officer will deploy the rescuers into the water.

4 After the rescuers are in the water, and have indicated they are OK, the flight officer will advise the pilot to depart the area.

### 13. SINGLE SKID, HOVERING LOAD, OR OFF-LOAD OF HELICOPTER.

a. General. Single skid, hover loading, or off-loading of departmental helicopters by departmentally trained and certified pilots and flight officers is permitted whenever the terrain beneath the aircraft prohibits a normal two skid landing. This operation may be conducted at night only if the crew has satisfactorily completed night one skid and hover load/off-load operations training within the six months preceding the mission (Annex H).

b. Mission Planning and Aircraft Preparation.

(1) All involved personnel shall be briefed by the crew prior to executing the maneuver.

(2) The flight officer's cyclic and collective controls shall be removed and stored if the flight officer is to load or unload to/from the front seat position.

(3) The crew is responsible for aircraft preparation, checking mission equipment condition, and planning.

(a) Performance planning, and weight and balance requirements:

1 The pilot shall compute performance planning and complete a CHP 93N. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N be completed.

2 The pilot shall ensure the load does not exceed the aircraft's gross weight, and the aircraft remains within the longitudinal and lateral CG limitations during all aspects of this operation.



(b) Interior items shall be secured.

(c) Doors may be removed or locked open, if desired, in accordance with the flight manual.

c. Operations.

(1) Hover. At a hover, the hover height should be such to allow personnel to step off or on rather than jumping.

(2) Single Skid. The pilot will use normal slope landing techniques and maintain outside reference to ensure the aircraft's level attitude throughout the maneuver.

(3) If the flight officer is assisting the loading or off-loading from within the aircraft, they shall be securely tethered to the aircraft.

14. EQUIPMENT INSPECTIONS AND MAINTENANCE. Helicopter cargo hooks, hoists, rescue equipment, and any related attaching equipment shall be inspected by the crew prior to and following its use (preflight and postflight). Additionally, all rescue and related attaching equipment, excluding the helicopter cargo hook and hoist, shall be inspected quarterly, or when required by the manufacturer, by the unit external load coordinator. The inspection shall be logged on a CHP 334, Rescue Equipment Inspection Log (Excluding Rescue Hoist & Cargo Hook) (Annex J), and retained at the unit. A CHP 335, Rope Use Log (Annex K), shall be maintained at the unit for each in-service short haul line. The helicopter cargo hook and hoist, if applicable, shall be inspected by an FAA mechanic semiannually, or sooner if required by the equipment manufacturer. This inspection shall be logged in the aircraft logbook. Annex L contains the recommended equipment inspection and care.

15. SAFETY.

a. Actions During an Engine Failure or Power Loss.

(1) Prior to the operation, a thorough briefing of emergency procedures shall be conducted for all ground personnel, qualified non-crewmembers, and crewmembers.

(2) The briefing should include the following engine failure/crash landing precautions and procedures:

(a) The ground crew signal person normally faces the helicopter from a position in front of, and on the side of the aircraft. This person should maintain eye contact with the pilot at all times during the hook-up.

(b) When an emergency occurs during an external load operation, the helicopter and the ground personnel must move in opposite directions to clear the hook-up/release point. Unless prohibited by barriers, the helicopter should move to the right front, while the ground crew moves to the left of the helicopter (directions are given as viewed from the pilot's seat).

(c) The hook-up/release personnel should attempt to remain on the left side of the load (as viewed from the pilot's seat) so that during an emergency they can move to the left rear of the aircraft without having to go around the load. If time does not permit the crew to move left, they should lie flat on the ground.

(d) After the ground personnel have cleared the immediate hazard area, they should lie flat on the ground with their head away from the helicopter and cover their head with their arms until the helicopter has come to rest and the rotors have stopped.

(e) If the emergency is a partial power loss during a hoist operation with a live load on the line, the flight officer should lower the load to the ground and then give consideration to cutting the cable. For a non-live load, if the pilot advises to cut the cable, the flight officer should cut it as soon as the ground personnel are clear of the load. If a partial power loss occurs with a sling load on the cargo hook, the flight officer should inform the pilot when ground personnel are clear so they may jettison the load.

b. Emergency Jettison Procedures (Short Haul Load). Prior to the mission, the crew shall establish the manner in which the load will be jettisoned in the event of an emergency. The command is "cut, cut, cut."

(1) In performing a live human lift with the electrical release system disabled, the manual release system and the flight officer's cutting device will be utilized to jettison the load.

(2) With other loads, it is recommended that the electrical release be tried first, then the manual release if necessary.

(3) The ground crew and flight officer should be familiar with additional methods of releasing the load, including cutting belly-band and retrieval line, should it become necessary.

c. Emergency Cable Cut Procedures (Rescue Hoist Operations). Prior to a mission, the crew shall establish the manner in which the load shall be jettisoned in the event of an emergency. The commands are “cut, cut, cut.”

d. Precautionary Measures and Practices.

(1) The ground crew shall be advised of the possibility of static buildup during hook-ups.

(2) The following precautions should be taken during all special operations:

(a) Overflying buildings and open-air assemblies of persons is prohibited except in a life-threatening emergency.

(b) Prolonged flights along roadways shall be avoided.

(c) Roads should be crossed at a 90-degree angle to reduce exposure.

(d) Increase altitude during wire crossing to ensure load clearance.

(e) The load should be delivered to the nearest suitable prearranged staging area.

(3) Additional precautions when lifting live human loads shall include:

(a) The victim shall be lifted only to an altitude necessary to remain clear of obstacles (short haul).

(b) The victim shall be moved to the nearest safe landing site. Exposure time and distance shall be kept to a minimum.

(c) Circuit breakers (not fuses) for the electrical sling load release shall be pulled during all live human load operations.

(4) Entangled Hoist Cable. The flight officer must remain constantly alert to ensure the cable does not become entangled on immovable objects on the ground. If tangled, an attempt should be made to retrace the steps needed to untangle the cable. Extreme care should be exercised when applying tension to the cable. If it should break, it could whiplash into the helicopter or rotors. The tension applied could also exceed the performance capability, or CG limits of the aircraft, causing controllability problems. As a last resort, the cable may have to be cut.

(5) Load Swing. If swing action of the load is not stopped immediately, the movement may increase to unmanageable proportions. Swings must be

managed by the hoist operator by manipulating the hoist cable to control load movement. For example, a technique is to follow the load out with the cable hand to the furthest point in the pendulum and then follow the load as it comes back to the aircraft through center. This may have to be repeated several times to cease all movement. After all movement has been arrested, the hoist operator must remain in control of the load as it is retrieved to the aircraft.

(6) Load Spins. If the load begins to spin, it is often due to poor rider position. Rotor flow dynamics can also play a role in a load beginning to spin. Spins can be managed first by good rider position. The rider may put out the opposite hand in the direction of the spin to stop (e.g., if spinning to the right, left hand out at waist level to bring spin under control). The hoist operator should inform the pilot of a spin and initiate forward flight with a positive rate of climb to induce parasitic drag and bring the spin under control.

(7) Load Rotation. Off-axis rotation, elliptic, or oval-shaped. If the load begins to rotate, one direction must be managed first and then the other (e.g., control forward and aft movement first, then control lateral movement). Last resort is to ground the load if movement cannot be controlled. Never bring an uncontrolled load to the aircraft. Remember, forward flight and a positive rate of climb will assist the hoist operator in controlling unwanted movement.

(8) Loss of Power to Hoist. Follow the manufacturer's recommendations outlined in the flight manual supplement.

(9) Runaway Hoist. Follow manufacturer's recommendations outlined in the flight manual supplement.

(10) Cable Damage. If any portion of the cable comes into contact with a stationary object or in contact with the aircraft skid during a hoist operation, damage to the cable can occur. The cable shall be inspected after each use or if there is suspicion of cable damage.

- (a) Broken wire—complete mission, retire cable.
- (b) Broken strand—discontinue hoist, retire cable.
- (c) Kink—complete mission, retire cable.

## ANNEX A

### APPROVED KNOTS, EQUIPMENT, AND DEVICES

1. GENERAL. All equipment and devices used shall be in compliance with the standards set forth in the National Fire Protection Association (NFPA) 1983 Standard on Life Safety Rope and Equipment for Emergency Services which specifies a minimum performance standard for rescue equipment. All stainless steel or aluminum carabiners must meet NFPA 1983 general use requirements.

#### 2. HARNESSES.

a. Internal restraint worn by flight officer in the aircraft:

(1) Currently approved equipment by OAO.

b. Worn by flight officer on lift line or hoist:

(1) Currently approved equipment by OAO.

c. Victim:

(1) Rescue bag.

(2) Rescue vest.

(3) Rescue strop.

(4) Billy Pugh.

d. Worn by flight officer on lift line for water rescues:

(1) Current approved equipment by OAO.

#### 3. OFFICE OF AIR OPERATIONS APPROVED RESCUE EQUIPMENT.

a. Billy Pugh rescue net (P/N: X-841-F).

b. Rescue Airbag.

c. Rescue Vest.

d. Rescue Strop.

## ANNEX A

### APPROVED KNOTS, EQUIPMENT, AND DEVICES *(continued)*

- e. Cinch Collar.
  
- 4. INTERNATIONAL CORDAGE CARGO NET (2,000-pound capacity, 12 by 12 feet).
  
- 5. STAINLESS STEEL OR ALUMINUM SWIVEL.
  
- 6. CARABINERS.
  - a. Auto locking design and two stage carabiner minimum.
  - b. Both steel and aluminum meeting the NFPA 1983 general use specifications are approved.
  
- 7. RESCUE LITTER OR COMPARABLE DESIGNED BASKET, EXCLUDING SOLID SIDED LITTERS.
  
- 8. LIFT LINES.
  - a. Short haul line: Made with 9/16 inch braid on braid kernmantle construction. Solid Dyneema core with high tenacity polyester sheath and integrated reflective tracer with an ultraviolet protective coating. Rope is rescue orange to be easily identified as a live human rope. Also known as a “soft steel” short haul line.
  - b. Hoist cable.
  
- 9. SAFETY LINES (BELLY-BAND).
  - a. With kernmantle lift line.
  - b. An engineered safety line may be used in accordance with the manufacturer’s guidelines.
  
- 10. RETRIEVAL LINE (7/16’ STATIC KERNMANTLE).
  
- 11. ALLIED AGENCY EQUIPMENT.

## ANNEX A

### APPROVED KNOTS, EQUIPMENT, AND DEVICES (*continued*)

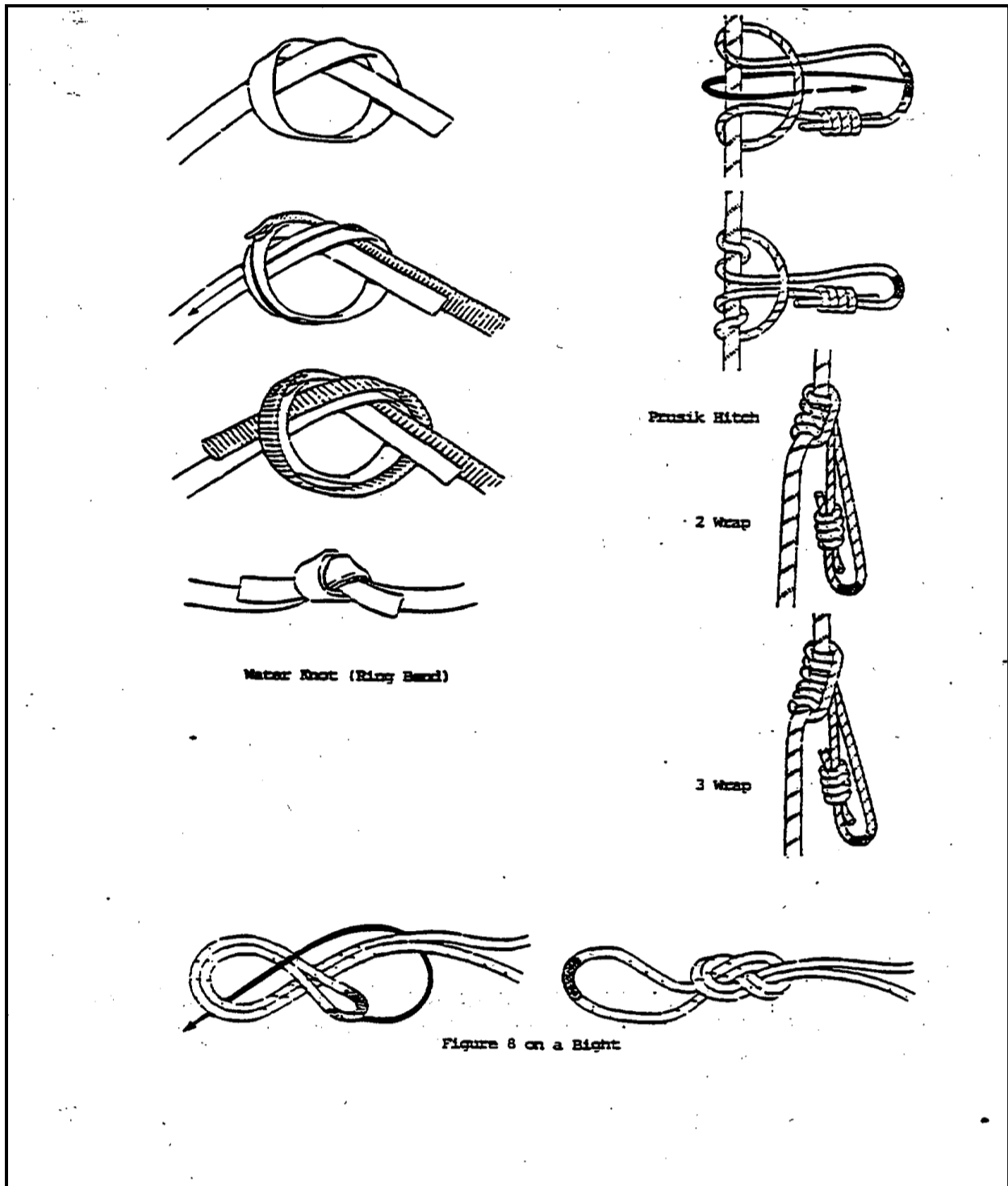
- a. Equipment utilized by agencies with whom the unit has previously trained (within the past two years) or that has been previously inspected by unit personnel and determined to meet our minimum requirements.
- b. The Office of Emergency Services–Urban Search and Rescue trained and certified personnel and equipment.
- c. Department of the Interior trained and certified personnel and equipment.

#### 12. KNOTS.

- a. Figure 8 on a bight.
- b. In-line (directional) Figure 8.
- c. Double Figure 8 on bight.
- d. Prusik hitch.
- e. Water knot (ring bend).

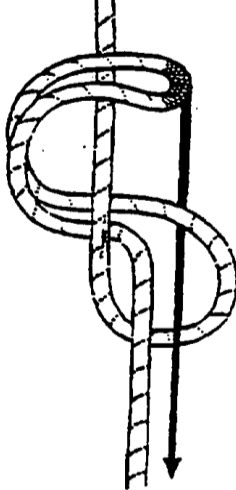
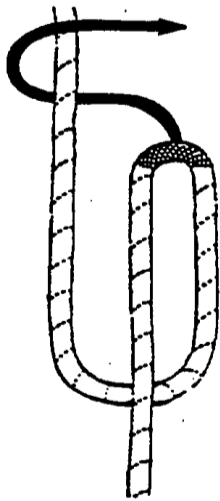
ANNEX A

APPROVED KNOTS, EQUIPMENT, AND DEVICES (continued)

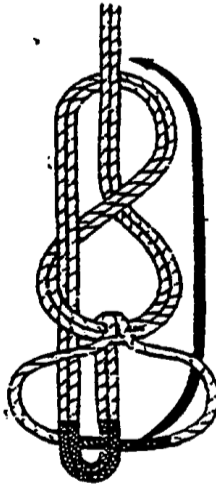
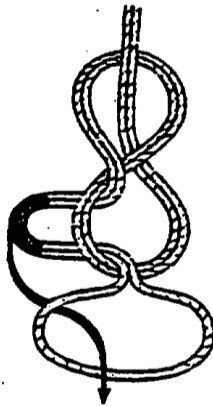
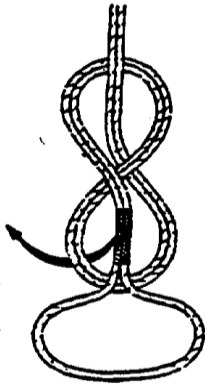


ANNEX A

APPROVED KNOTS, EQUIPMENT, AND DEVICES *(continued)*



In-Line (Directional) Figure 8



Double Figure 8 on a Right

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX B

### SHORT HAUL OPERATIONS CHECKLIST

1. Crewmembers qualified and current.
2. Office of Air Operations authorized equipment only.
3. Supervisor should be notified, in compliance with the unit SOP.
4. No night operations.
5. Hover out of ground effect power computed and available.
6. Weight and balance within limits:
  - a. Longitudinal.
  - b. Lateral.
  - c. Gross weight.
7. Cargo hook properly installed, preflighted, and operationally checked:
  - a. Check for general condition, proper safeties, and serviceability.
  - b. Check operation of electrical, manual, and release mechanisms.
8. Preflight mission equipment/rigging. Double check flight officer's safety harness and its attachment points/connections.
9. Crew/mission briefing completed:
  - a. Mission procedures.
  - b. Communication procedures:
    - (1) Radio.

## ANNEX B

### SHORT HAUL OPERATIONS CHECKLIST (*continued*)

- (a) Frequencies.
  - (b) Call signs.
  - (c) Lost communications procedures.
  - (d) Terminology.
- (2) Hand signals.
10. Emergency procedures briefed:
- a. Engine failure/power loss: Aircraft to right front/crew to left rear.
  - b. Jettison non-live load.
  - c. Static electricity brief:
    - (1) Key CHP radio.
    - (2) Ground line/cable prior to touching.
  - d. Load oscillations: Assess conditions and maneuver as appropriate.
11. Staging area selection/preparation:
- a. Size.
  - b. Approach/departure paths.
  - c. Wind.
  - d. Weather.
  - e. Dust/snow/debris.
  - f. Density altitude.
  - g. Visibility (low sun).

## ANNEX B

### SHORT HAUL OPERATIONS CHECKLIST (*continued*)

- h. Obstructions/terrain/hazards/barriers/wires.
  - i. No unnecessary personnel in the area.
12. Non-live loads: Sling load release armed below 300 feet above highest obstacle.
13. Live loads:
- a. Circuit breaker pulled if so equipped (do not pull fuses).
  - b. Keep victim(s) at a low altitude.

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX C

### RESCUE HOIST OPERATIONS CHECKLIST

1. Crewmembers qualified and current.
2. Office of Air Operations authorized equipment only.
3. Supervisor should be notified, if possible.
4. Night operations per HPM 100.7, Chapter 12.
5. Hover out of ground power computed and available.
6. Weight and balance within limits:
  - a. Longitudinal.
  - b. Lateral.
  - c. Gross weight.
7. Rescue hoist properly installed, preflighted, and operationally checked:
  - a. Check for general condition, proper safeties, and serviceability.
  - b. Check operation of unit.
  - c. Preflight cable cutter device.
  - d. Skid guards in proper location.
8. Preflight mission equipment/rigging. Double check flight officer's safety harness and its attachment points/connections.
  - a. Tag line procedures briefed (if applicable).



## ANNEX C

### RESCUE HOIST OPERATIONS CHECKLIST (*continued*)

9. Crew/mission briefing completed:
  - a. Mission procedures.
  - b. Communication procedures:
    - (1) Radio.
      - (a) Frequencies.
      - (b) Call signs.
      - (c) Lost communications procedures.
      - (d) Terminology.
    - (2) Hand signals.
10. Emergency procedures briefed:
  - a. Cable cut procedures.
    - (1) Cut non-live loads.
    - (2) Flight officer lowers live load to the ground.
  - b. Static electricity brief:
    - (1) Key CHP radio.
  - c. Entangled cable: Caution tension!
  - d. Unwanted movement:
    - (1) A thorough review of unwanted movement and cable management procedures.
11. Staging area selection/preparation.
  - a. Size.

## ANNEX C

### RESCUE HOIST OPERATIONS CHECKLIST (*continued*)

- b. Approach/departure paths
- c. Wind.
- d. Weather.
- e. Dust/snow/debris.
- f. Density altitude.
- g. Visibility (low sun).
- h. Obstructions/terrain/hazards/barriers/wires.
- i. Unnecessary personnel shall not be in the area.
- j. Circuit breakers for the aircraft's rescue hoist pyrotechnic cable cutter device shall be armed during all departmental rescue hoist operations.

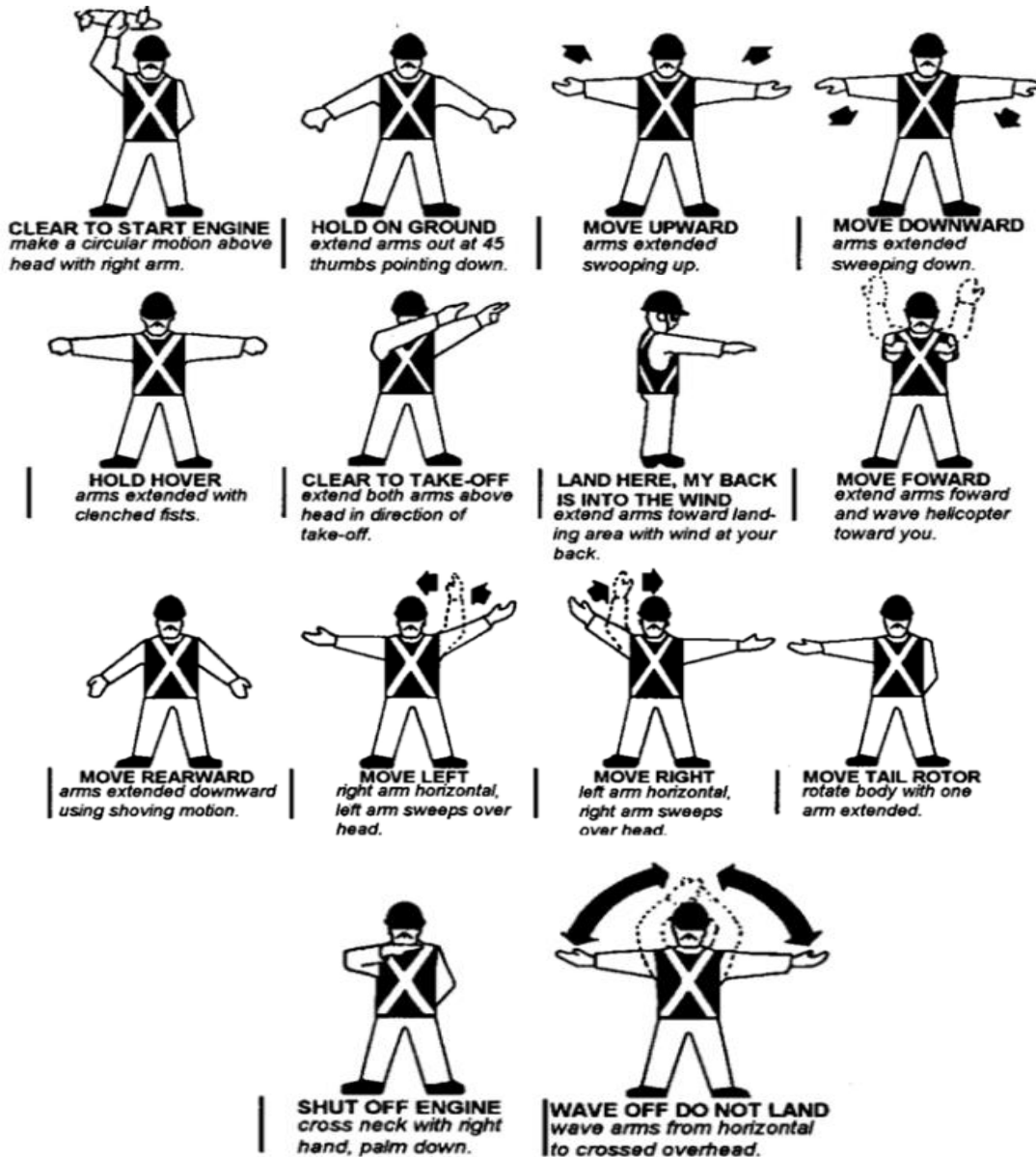


THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX D

### HELICOPTER HAND SIGNALS

These signals are advisory and the pilot is under no obligation to obey them. Conditions beyond the control of the pilot or factors unknown to the ground signal person may make it necessary or advisable to disregard these signals. When these signals are used it is important the signal person position themselves beyond the path of the main rotor where they may be readily observed by the pilot.



## ANNEX D

### HELICOPTER HAND SIGNALS (*continued*)

The loss of radio communication between the pilot and rescue personnel, during any phase of a mission, does not indicate an automatic “abort mission.” Hand signals by both ground and flight crew may be used during the mission. It is imperative that rescue personnel on the ground assisting with any phase look up at the flight officer during the critical phases of the operation, so that these hand signals may be clearly communicated.



**MOVE UPWARD**



**MOVE DOWNWARD**



**HOLD HOVER**



**MOVE FORWARD**



**WAVE-OFF/DON'T LAND**



**OKAY**

## ANNEX E

### PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS)

1. TASKS. Perform short haul operations.
  
2. CONDITIONS. This task shall be performed in a departmental helicopter with an operational rescue cargo hook installed and all preflight inspections completed. All required briefings, a CHP 93N and a weight and balance shall be completed prior to the mission. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N be completed.
  
3. STANDARDS.
  - a. Pilot. Correctly complete weight and balance for the mission.
    - (1) Without error, perform a preflight inspection of the cargo hook per the flight manual and/or appropriate supplements.
    - (2) Properly conduct a thorough crew briefing.
    - (3) Properly perform the cargo hook procedures as stated in the aircraft manual and supplements.
    - (4) Hook-Up Phase.
      - (a) Pilot positions aircraft over the load using:
        - 1 Outside reference points.
        - 2 Radar altimeter.
        - 3 Directions received from flight officer.
        - 4 Maintain stabilized hover over the load during the hook-up phase.
    - (5) Transport Phase.
      - (a) Maintain vertical ascent heading  $\pm 10$  degrees.
      - (b) Do not allow drift to exceed  $\pm 5$  feet.

## ANNEX E

### PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS) (*continued*)

- (c) Upon departure maintain ground track alignment with takeoff direction.
- (d) Maintain selected airspeed  $\pm 10$  knots indicated air speed.
- (e) Maintain rate of climb appropriate for conditions.
- (f) Maintain safe load obstacle clearance.
- (6) Release Phase.
  - (a) Maintain a constant approach angle and ensure the load clears all obstacles.
  - (b) Maintain ground track alignment with the selected approach path.
  - (c) Execute a smooth controlled termination over the intended point of landing.
  - (d) Maintain vertical descent heading  $\pm 10$  degrees.
- (7) Crew Coordination. Maintain a safety-oriented attitude throughout operation.
- b. Flight Officer.
  - (1) Using standardized phraseology and clear, concise communication, keep the pilot advised of the aircraft's position in relation to obstacles and terrain, and direct the pilot in the positioning of the aircraft.
  - (2) Maintain airspace surveillance and situational awareness.
  - (3) Monitor the load and rigging throughout the mission.
  - (4) Maintain a safety-oriented attitude throughout the operation.
- 4. DESCRIPTION.
  - a. Crew Actions.

## ANNEX E

### PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS) (*continued*)

- (1) All crewmembers shall assist in clearing the aircraft and will provide adequate warning of obstacles, unusual drift, or altitude changes. They should announce when their attention is focused inside the aircraft.
  - (2) The pilot will take commands from the flight officer after the aircraft is over the load. These commands will be given in reference to the nose of the aircraft, for example, "right two" or "down two."
  - (3) The pilot will monitor the cockpit instruments.
  - (4) The flight officer will assist the pilot in clearing the aircraft.
  - (5) The flight officer shall wear a safety harness and securement straps that will be attached to two internal hard points. Prior to the external load operation, the flight officer will position themselves as necessary to maintain a clear, unobstructed view of the load. After the load is in sight, the flight officer will give the pilot commands that will assist them in centering the aircraft over the load. Communications should be concise and specific. The pilot and flight officer should not be monitoring any nonessential outside communications during short haul operations.
- b. Procedures.
- (1) Hook-Up Phase. Except for live human loads, arm the cargo hook release system. If utilized, observe the hand and arm signals from the signal person to position the helicopter over the load. Signals from a ground signal person are advisory only. Apply cyclic, collective, and pedals as required to remain vertically clear of obstacles and centered over the load. When the signal person indicates the load is hooked-up, slowly apply collective until all slack is taken out of the sling. Make necessary corrections with the cyclic to remain centered over the load. Maintain heading with the pedals. Apply additional collective to raise the load vertically to approximately 5 feet above ground level (AGL). Monitor aircraft instruments to ensure that aircraft limitations are not exceeded. Complete a power and aircraft controllability check. Complete a pre-takeoff check.
  - (2) Takeoff. Increase collective to climb vertically until clear of obstacles in the departure flight path. Maintain heading with the pedals. Maintain position with the cyclic. After reaching a safe altitude to clear the terrain/obstacles in the departure flight path, smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust pedals

## ANNEX E

### PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS) (*continued*)

as necessary to maintain the desired heading. Adjust the cyclic and collective as necessary to attain a constant angle of climb that will permit safe obstacle clearance. In the case of a live load, maintain a minimum altitude to safely clear obstacles and terrain. With a live load and a short distance to transport it, it may be best to hover below effective translational lift (ETL) to the release point. If a longer transport is required with a live load, maximum airspeed of 60 knots is recommended.

(3) Non-Live Loads. When above 100 feet AGL, or when the load is clear of obstacles, adjust power as required to establish the desired rate of climb and airspeed. Make small control movements to prevent load oscillations.

(4) Live Loads. During live loads, the electric cargo hook release shall not be armed at any time.

(5) Transport. Maintain the desired altitude with the collective and the desired flight path and airspeed with the cyclic. Maintain the aircraft in trim with the pedals. Make smooth control applications to prevent load oscillation. If a lateral load oscillation occurs, reduce airspeed. If a fore and aft oscillation occurs, begin a shallow bank while reducing airspeed.

(6) Approach and Load Release. When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. When the pilot loses sight of the intended release point, they should inform the flight officer that they have lost sight of the release point. At this point the flight officer will begin issuing commands to direct the pilot into position over the release point. Progressively decrease the rate of descent and forward airspeed until a stationary hover is attained with the load approximately five feet above the intended release point. If a go-around is necessary, it should be made before the load descends below obstacles or before decelerating below ETL. Slowly reduce the collective until the load rests completely on the ground, then release the load. If ground personnel are not available, confirm the load release by hovering to a point that is higher than the rope length.

(7) Hover out of ground effect (HOGE) power is required for this task. A HOGE power and controllability check should be accomplished prior to this task.

## ANNEX E

### PERFORMANCE STANDARDS (SHORT HAUL OPERATIONS) (*continued*)

(8) Before the mission, the crew should brief the hand and arm signals that will be used (Annex D).

(9) Before the mission, the pilot should brief the forced landing procedures. In case of a forced landing, the pilot will land the aircraft to the right front of the load. The signal person and hook-up personnel will move in the opposite direction (left rear) of the aircraft and lie face down on the ground (directions as viewed from the pilot's seat).

(10) Avoid flight over populated areas or along roadways.

(11) Night Considerations. Short-haul operations at night (end evening civil twilight to before morning civil twilight) are prohibited.

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX F

### PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS)

1. TASKS. Perform rescue hoist operations.
  
2. CONDITIONS. This task shall be performed in a departmental helicopter with an operational rescue hoist installed and all preflight inspections completed. All required briefings, a CHP 93N and a weight and balance shall be completed prior to the mission. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N be completed.
  
3. STANDARDS.
  - a. Pilot. Correctly complete weight and balance for the mission.
    - (1) Without error, perform a preflight inspection of the rescue hoist per the pilot's flight manual and/or appropriate supplements.
    - (2) Conduct a thorough crew briefing.
    - (3) Perform the rescue hoist procedures in the aircraft manual and supplements.
    - (4) Hook-Up Phase.
      - (a) Pilot positions aircraft over the load using:
        - 1 Outside reference points.
        - 2 Radar altimeter.
        - 3 Directions received from flight officer.
        - 4 Stabilized hover over the load during the hook-up phase.
    - (5) Transport Phase.
      - (a) Maintain vertical ascent heading  $\pm 10$  degrees.
      - (b) Do not allow drift to exceed  $\pm 5$  feet.

## ANNEX F

### PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS) (*continued*)

- (c) Upon departure maintain ground track alignment with takeoff direction. Maintain selected airspeed  $\pm$  10 knots indicated air speed.
- (d) Maintain rate of climb appropriate for conditions.
- (e) Maintain safe load obstacle clearance.
- (6) Release Phase.
  - (a) Maintain a constant approach angle and ensure the load clears all obstacles.
  - (b) Maintain ground track alignment with the selected approach path.
  - (c) Execute a smooth controlled termination over the intended point of landing.
  - (d) Maintain vertical descent heading  $\pm$  10 degrees.
- (7) Crew Coordination. Maintain a safety-oriented attitude throughout the operation.
- b. Flight Officer.
  - (1) Using standardized phraseology and clear, concise communication, keep the pilot advised of the aircraft's position in relation to obstacles and terrain, and direct the pilot in the positioning of the aircraft.
  - (2) Maintain airspace surveillance and situational awareness.
  - (3) Monitor the load and rigging throughout the mission.
  - (4) Maintain a safety-oriented attitude throughout the operation.
- 4. DESCRIPTION.
  - a. Crew Actions.
    - (1) The crew will conduct a thorough crew briefing and ensure all members of the crew are familiar with the emergency procedures and rescue hoist operations. They will assign duties, as necessary, to the flight officer.

## ANNEX F

### PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS) (*continued*)

(2) The pilot will perform the in-flight procedures according to the aircraft operations manual, appropriate supplements, HPM 100.7 and the unit's SOP.

(3) The pilot will clear the aircraft and, if necessary, be able to operate the rescue hoist if the aircraft is equipped with cyclic or collective mounted controls.

(4) All crewmembers shall assist in clearing the aircraft and will provide adequate warning of obstacles, unusual drift, or altitude changes. They should announce when their attention is focused inside the aircraft.

(5) The pilot will take commands from the flight officer after the aircraft is over the load. These commands will be given in reference to the nose of the aircraft for example, "right two" or "down two."

(6) The pilot will monitor the cockpit instruments.

(7) The flight officer will assist the pilot in clearing the aircraft.

(8) The flight officer shall wear a safety harness and securement straps that will be attached to two internal hard points. Prior to the hoist operation, the flight officer will position themselves as necessary to maintain a clear, unobstructed view of the load and operate the hoist. After the load is in sight, the flight officer will give the pilot commands that will assist them in centering the aircraft over the load. Communication should be concise and specific. The pilot and flight officer should not be monitoring any nonessential outside communications during external load operations.

(9) The pilot will note any discrepancies found during the preflight or post flight inspections on a CHP 395, Aircraft Maintenance Status & Fault Correction Report.

#### b. Procedures.

(1) Hook-Up Phase. If utilized, observe the hand and arm signals from the signal person to position the helicopter over the load. Signals from a ground signal person are advisory only. Apply cyclic, collective, and pedals as required to remain vertically clear of and centered over the load. When the signal person indicates the load is hooked-up, the flight officer will slowly take the slack out of the hoist cable. The pilot will make necessary corrections with the cyclic to remain centered over the load. Maintain heading with the pedals.

## ANNEX F

### PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS) (*continued*)

The flight officer will inform the pilot when the load is ready to break ground. The flight officer will take the load, simultaneously confirming with the pilot that power and controllability are satisfactory. The pilot will perform a power check and check for controllability, then the pilot will tell the flight officer the power is good, clear to hoist the load. The pilot will monitor aircraft instruments to ensure that aircraft limitations are not exceeded. As the flight officer is lifting the load, the flight officer will keep the pilot informed on clearing the aircraft, and the position of the load. Once the flight officer has secured the load inside, or to the outside of the aircraft, the flight officer will clear the aircraft and inform the pilot that the load and the aircraft are cleared for forward flight. The pilot will then complete a pre-takeoff check.

(2) Transport.

(a) Increase collective to climb vertically until clear of obstacles in the departure flight path. Maintain heading with pedals. Maintain position with cyclic. After reaching a safe altitude to clear the terrain/obstacles in the departure path, smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust the pedals as necessary to maintain the desired heading. Adjust the cyclic and collective as necessary to attain a constant angle of climb that will permit safe obstacle clearance. In the case of a live load that is secured outside of the aircraft, maintain a minimum altitude to safely clear the obstacles and terrain.

1 With a live load and a short distance to transport it, it may be best to hover (below ETL) to the release point.

(3) Enroute. Maintain the desired altitude with the collective, and the desired flight path and airspeed with the cyclic. Maintain the aircraft in trim with the pedals.

(4) Approach and Load Release. When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. When the pilot loses sight of the intended release point, the pilot should inform the flight officer that they have lost sight of the hoisting location. At this point the flight officer will begin issuing commands to direct the pilot into position over the hoisting location. Progressively decrease the rate of descent and forward airspeed until a stationary hover is attained above the obstacles (if a go-around

## ANNEX F

### PERFORMANCE STANDARDS (RESCUE HOIST OPERATIONS) (*continued*)

is necessary, it should be made before the aircraft descends or before decelerating below ETL).

(5) Hover out of ground effect power is required for this task. A HOGE power and controllability check should be accomplished prior to performing this task.

(6) Before the mission, the crew should brief the hand and arm signals that will be used (Annex D).

(7) Before the mission, the pilot should brief the forced landing procedures. In case of a forced landing, the pilot will land the aircraft to the right front of the load. The signal person and hook-up personnel will move in the opposite direction of the aircraft and lie face down on the ground.

(8) Avoid flight over populated areas or along roadways.

(9) Circuit breakers for the aircraft's rescue hoist pyrotechnic cable cutter device shall be armed during all departmental rescue hoist operations.

(10) Night Considerations. Night operations per HPM 100.7, Chapter 12.

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX G

### PERFORMANCE STANDARDS (HELOCASTING)

1. TASK. Perform helocasting operations.
  
2. CONDITIONS. This task shall be performed in a departmental helicopter with all preflight inspections completed. All required briefings, a CHP 93N and a weight and balance shall be completed prior to the mission. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N be completed. Hover out of ground effect power is required for this task. A HOGE power and controllability check of the aircraft shall be accomplished prior to performing this task.
  
3. STANDARDS.
  - a. Pilot. Correctly complete weight and balance for the mission.
    - (1) Load Up Phase.
      - (a) Pilot positions at the staging area.
      - (b) Conducts mission briefing.
      - (c) Verifies training, certification, and flight officer equipment.
    - (2) Directions received from flight officer.
    - (3) Transport Phase.
      - (a) Maintain vertical ascent heading  $\pm 10$  degrees.
      - (b) Do not allow drift to exceed  $\pm 5$  feet.
      - (c) Upon departure maintain ground track alignment with takeoff direction.
      - (d) Maintain selected airspeed  $\pm 5$  knots indicated air speed.
      - (e) Maintain rate of climb appropriate for conditions.
      - (f) Maintain safe load obstacle clearance.

## ANNEX G

### PERFORMANCE STANDARDS (HELOCASTING) (*continued*)

(4) Deployment Phase.

- (a) Maintain a constant approach angle and ensure the aircraft clears all obstacles.
- (b) Maintain ground track alignment with the selected approach path.
- (c) Execute a smooth controlled termination over the intended point of deployment.
- (d) Crew Coordination. Correctly perform crew-coordination actions.
- (e) Maintain vertical descent heading  $\pm 10$  degrees.
- (f) Maintain a safety-oriented attitude throughout the operation.

b. Flight Officer.

- (1) Using standardized phraseology and clear, concise communication, keep the pilot advised of the aircraft's position in relation to obstacles and terrain, and direct the pilot in the positioning of the aircraft.
- (2) Maintain airspace surveillance and situational awareness.
- (3) Monitor the load and rigging throughout the mission.
- (4) Maintain a safety-oriented attitude throughout the operation.

#### 4. DESCRIPTION.

a. Crew Actions.

- (1) All crewmembers shall assist in clearing the aircraft and will provide adequate warning of obstacles, unusual drift, or altitude changes. They should announce when their attention is focused inside the aircraft.
- (2) The pilot will take commands from the flight officer after the aircraft is over the rescue location. These commands will be given in reference to the nose of the aircraft for example, "right two" or "down two."

## ANNEX G

### PERFORMANCE STANDARDS (HELOCASTING) (*continued*)

- (3) The pilot will monitor the cockpit instruments.
  - (4) The flight officer will assist the pilot in clearing the aircraft.
  - (5) The flight officer shall wear a safety harness with flotation, helicopter emergency egress device, and a securement strap that will be attached to an internal hard point. Prior to the helocasting operations, the flight officer will identify and occupy a position with an ability to maintain a clear, unobstructed view of the rescuers. Communication should be concise and specific. The pilot and flight officer should not be monitoring any nonessential outside communication during helocasting load operations.
- b. Procedures.
- (1) Takeoff. Increase collective to climb vertically until clear of obstacles in the departure flight path. Maintain heading with the pedals. Maintain position with the cyclic. After reaching a safe altitude to clear the terrain/obstacles in the departure flight path, smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust pedals as necessary to maintain the desired heading. Adjust the cyclic and collective as necessary to attain a constant angle of climb that will permit safe obstacle clearance.
  - (2) Enroute. Maintain the desired altitude with the collective and the desired flight path and airspeed with the cyclic. Maintain the aircraft in trim with the pedals.
  - (3) Approach. When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. When the pilot loses sight of the intended release point, the pilot should inform the flight officer they have lost sight of the release point. At this point the flight officer will begin issuing commands to direct the pilot into position over the release point. Progressively decrease the rate of descent and forward airspeed until a stationary hover is attained with the aircraft approximately 15 feet above the intended release point of the rescuers.
  - (4) Night Helocasting. Helocasting operations at night are prohibited.

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX H

### PERFORMANCE STANDARDS (SINGLE SKID AND HOVER OFF-LOAD OPERATIONS)

1. TASK. Perform single skid and hovering loading and off-loading operations.
  
2. CONDITIONS. This task shall be performed in a departmental helicopter with all preflight inspections completed. All required briefings, a CHP 93N and a weight and balance shall be completed prior to the mission. A CHP 93N does not need to be completed if the helicopter is equipped with a VEMD. The VEMD shall be updated as to crew, fuel, and equipment weight prior to conducting operations/missions that would normally require a CHP 93N to be completed. Hover out of ground effect power is required for this task. A HOGE power and controllability check of the aircraft shall be accomplished prior to performing this task. Night training and certification is required for approval to conduct this task at night. A night certification is acceptable for completion of this task during the day.
  
3. STANDARDS.
  - a. Pilot.
    - (1) Hover.
      - (a) Maintain directional control and stationary over the desired location.
      - (b) Maintain an altitude (height) to allow personnel to step rather than jump on/off the skids.
      - (c) Approach to, and the departure from the area will be predicated upon the surrounding barriers. A HOGE performance is required for this maneuver.
      - (d) Crew Coordination. Correctly perform crew coordination actions.
  - b. Flight Officer.
    - (1) Maintain crew coordination throughout the task.
    - (2) Be properly tethered to the aircraft to prevent ejection.
    - (3) Monitor and assist with loading and unloading of aircraft.

## ANNEX H

### PERFORMANCE STANDARDS (SINGLE SKID AND HOVER OFF-LOAD OPERATIONS) (*continued*)

- (4) Ensure loaded passengers are properly secured prior to departure.
- (5) Perform crewmember duties.

#### 4. DESCRIPTION.

##### a. Crew Actions.

- (1) Crewmembers shall assist in clearing the aircraft and provide adequate warning of obstacles, unusual drift, or altitude changes. They should announce when their attention is inside the aircraft. They shall inform each other of any potentially unsafe situations not previously discussed.
- (2) The pilot will monitor the cockpit instruments.
- (3) The flight officer will assist the pilot in clearing the aircraft.
- (4) The flight officer shall wear a safety harness and securement straps that will be tethered to two internal hard points. Prior to commencing the single skid or the hovering load/off-load operation, the flight officer will position themselves, as necessary, to conduct the task. Communication and coordination shall be maintained with the pilot. The pilot and flight officer should not be monitoring any nonessential communication during these operations.

##### b. Procedures.

- (1) Approach/Departure. The approach to, and departure from the area will be predicated upon surrounding obstacles, terrain, and winds.
- (2) Hovering. The pilot shall maintain a stationary position above the desired area and at an altitude allowing stepping on or from the skids.
- (3) Single Skid Operations. The pilot shall utilize slope landing techniques to maintain heading, drift, and a level altitude throughout the maneuver.
- (4) Coordination. Personnel involved in this task must be thoroughly briefed prior to conducting the mission. Personnel must be loaded/unloaded slowly to avoid inducing excessive altitude deviations that could result in a dynamic rollover.

## ANNEX H

### PERFORMANCE STANDARDS (SINGLE SKID AND HOVER OFF-LOAD OPERATIONS) (*continued*)

(5) Night Hovering and/or Single Skid Load/Off-Load Operations. If departmentally trained and certified for night hovering and/or single skid load/off-load operations, the crew may conduct them at night.

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT)

1. GENERAL. The following tasks shall be performed and documented with all rescue equipment approved by OAO. All pilots, flight officers, and rescue technicians shall be familiar with the use of and application for each piece of rescue equipment prior to its use. Knowledge of each component's use and capabilities within the program is vital to a successful operation. Lack of knowledge regarding rescue equipment could result in mission failure, personal injury, or death.

2. TASK #1, CARABINERS.

a. Description.

- (1) Attaches two components together.
- (2) Attaches a load to an anchor point.
- (3) Attaches software to software.
- (4) Attaches equipment within a system.
  - (a) Can quickly connect and disconnect components in a safety critical system.
  - (b) Steel or aluminum of varying sizes.
  - (c) Meets National Fire Protection Act 1983 general use standards.
  - (d) Centering the load in line with the long (major) axis provides maximum strength.
    - 1 Anything other than a straight line pull along the long axis compromises strength.
    - 2 Cross Load—A carabiner is loaded on the minor axis or gate.
    - 3 Multidirectional Loading—The strength load in a multidirectional load varies on the angle between the axis of loading.

b. Standards.

- (1) Identify components of a carabiner and their function.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

- (2) Explain proper loading of a carabiner.
  - (3) Identify common errors associated with carabiner use.
  - c. Performance Evaluation.
    - (1) Exhibit proficient knowledge of the carabiner and its functions.
    - (2) Successfully demonstrate the use of carabiners and explain key points to the satisfaction of the instructor or aircrew.
  - d. Documentation.
    - (1) Training and evaluation shall be appropriately documented on CHP 93D, CHP 93SAR, or CHP 93SARNC.
3. TASK #2, DELTA SCREW LINK (TRI-LINK).
- a. Description.
    - (1) Used to secure or close a rescue harness.
    - (2) 7 millimeters (mm) galvanized steel.
    - (3) Working load limit (WLL) 625 kilograms (kg) or 1,375 pounds (lbs).
    - (4) Breaking strength 3,125 kg or 6,889 lbs.
    - (5) Withstands force in any direction.
  - b. Standards.
    - (1) Identify components of Delta Screw Link and their function.
    - (2) Explain proper loading of a Delta Screw Link.
    - (3) Identify common errors associated with Delta Screw Link use.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- c. Performance Evaluation.
    - (1) Exhibit proficient knowledge of Delta Screw Links and their use.
    - (2) Successfully demonstrate the use of a Delta Screw Link and explain key points to the satisfaction of the instructor or aircrew.
  - d. Documentation.
    - (1) Training and evaluation shall be appropriately documented on CHP 93D, CHP 93SAR, or CHP 93SARNC.
4. TASK #3, HUMAN ANCHOR PLATE WITH SAFETY LANYARD.
- a. Description.
    - (1) Constructed of billet aluminum for maximum strength.
    - (2) Attached hardware becomes easier to visualize, making safety checks more accurate.
    - (3) Serves as a collection point for personnel attachment and additional hardware or gear.
    - (4) Maximum WLL of 1,100 lbs.
  - b. Standards.
    - (1) Identify components of the human anchor plate (HAP).
    - (2) Explain proper loading of the HAP.
    - (3) Identify common errors associated with the HAP.
  - c. Performance Evaluation.
    - (1) Exhibit proficient knowledge of the HAP.
    - (2) Successfully demonstrate the use of a HAP and explain the key points to the satisfaction of the instructor or aircrew.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

5. TASK #4, COLLECTION RING OR BULL RING.

a. Description.

- (1) Collection point for gear and personnel attachments.
- (2) Constructed of forged alloy steel.
- (3) Maximum strength: 10,000 lbs.

b. Standards.

- (1) Identify key points of collection ring and its functions.
- (2) Explain proper loading of a collection ring.
- (3) Identify common errors associated with use of a collection ring.

c. Performance Evaluation.

- (1) Exhibit proficient knowledge of a collection ring and its uses.
- (2) Successfully demonstrate the use of a collection ring and explain key points to the satisfaction of the instructor or aircrew.

d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

6. TASK #5, HOIST WEIGHT BAG.

a. Description.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- (1) Used as a ballast to prevent unwanted movement and assist operator with more control.
- (2) A properly weighted hook extends cable life and prevents “milking” of the cable.
  - (a) Should be used during all hoist operations.
  - (b) Colored for high visibility weighing approximately 5 lbs.
  - (c) Multiple weights can be used.

#### b. Standards.

- (1) Identify key points of the hoist weight bag.
- (2) Explain proper use of the hoist weight bag.
- (3) Identify common errors associated with the use of a hoist weight bag.

#### c. Performance Evaluation.

- (1) Exhibit proficient knowledge of the hoist weight bag and its function.
- (2) Successfully demonstrate the use of a hoist weight bag and explain key point to the satisfaction of the instructor or aircrew.

#### d. Documentation.

- (1) Training and evaluation shall be appropriately documented on CHP 93D, CHP 93SAR, or CHP 93SARNC.

### 7. TASK #6, OFF-SET TAGLINE.

#### a. Description.

- (1) Load control system capable of handling a variety of rescue operations.
- (2) Kernmantle constructed 200 feet of 9.5mm high visibility sure-grip rope.
- (3) Quick release device used to release tagline.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

b. Standards.

- (1) Identify all components of the tagline system.
- (2) Explain proper use and function of the tagline.
- (3) Identify common errors associated with the use of a tagline.

c. Performance Evaluation.

- (1) Exhibit proficient knowledge of and the proper use and function of a tagline.
- (2) Successfully demonstrate the use of a tagline and explain key points to the satisfaction of the instructor or aircrew.

d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

8. TASK #7, QUICK RELEASE DEVICE (WEAK LINK).

a. Description.

- (1) Multipurpose quick release device and “weak-link” for tag lines used in helicopter operations.
- (2) Two stage, auto lock, carabiner provides easy one hand control.
- (3) Easy one-handed manual Ronstan quick release for jettisoning when under load.
- (4) Automatic “weak-link” separates at 400 lbs., freeing the aircraft from control of system and avoiding disaster.

b. Standards.

- (1) Identify key components of the quick release device.
- (2) Explain the proper use and function of the quick release device.



## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

(3) Identify common errors associated with the use of a quick release device.

c. Performance Evaluation.

(1) Exhibit proficient knowledge of the quick release device.

(2) Successfully demonstrate the use of a quick release device and explain key points to the satisfaction of the instructor or aircrew.

d. Documentation.

(1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

9. TASK #8, DONNING OF A FULL BODY HARNESS.

a. Description.

(1) Used to secure crewmembers during rescue operations.

(a) Flight officer to aircraft.

(b) Flight officer/rescuer to hoist hook.

(2) Full body for comfort and safety.

(3) Classified by Underwriters Laboratories (UL) to meet the harness requirements of NFPA 1983 Standard on Fire Service Life Safety Rope and Equipment for Emergency Services 2017 edition; Class III full body harness.

b. Standards.

(1) Incorrect donning of the rescue harness may result in fatal consequences of the rescuer or lead to the failure of the mission. All rescue harnesses will be safety checked by a trained rescuer after donning and prior to use.

(2) Place arms through chest harness (like donning a vest).

(3) Make adjustments to front straps, so that the dorsal attachment is in the middle of the back, at shoulder level.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- (4) Place “delta” through the attachment points at front of chest harness.
- (5) Close and tighten delta with secondary personal retention lanyard.
- (6) Secure top and bottom “cobra” buckles.
- (7) Adjust and tighten harness for proper fit, so that harness fits snug.
- (8) Secure all excess webbing by rolling and securing with hook and loop or tape.
- (9) Secure leg straps and adjust for proper fit.
- (10) Primary personal retention lanyard to be secured on lower attachment “D” ring (waist level).
- (11) Safety check. Have a second person inspect your harness ensuring the steps above have been completed.

#### c. Performance Evaluation.

- (1) Exhibit proficient knowledge of the rescue harness and the key points of donning a full body harness.
- (2) Demonstrate the donning of full body harness and explain the key components to the satisfaction of the instructor or aircrew.

#### d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

### 10. TASK #9, PERSONAL RETENTION LANYARD.

#### a. Description.

- (1) Connects to users harness and fixed anchors both on and off the aircraft.
- (2) Suited for hoist operations, skid work, crew, and spotter operations.
- (3) Minimum breaking strength (MBS) 3,200 lbs.



## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

(4) Carabiners MBS 5,000 lbs.

b. Standards.

- (1) Identify the key components of the personal retention lanyard.
- (2) Explain the proper use and function of the personal retention lanyard.
- (3) Explain and identify common errors associated with the use of the personal retention lanyard.

c. Performance Evaluation.

- (1) Exhibit proficient knowledge of the personal retention lanyard.
- (2) Identify key components of the personal retention lanyard.
- (3) Successfully demonstrate the use of a personal retention lanyard and explain all the components to the satisfaction of the instructor or aircrew.

d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

11. TASK #10, BILLY PUGH RESCUE NET (X-841-F).

a. Description.

- (1) Helicopter rescue net containing floatation. Can be used on land or in water.
- (2) Means of pick-up and transportation of personnel and or victims by helicopter.
- (3) Single person use with maximum weight of 500 lbs.

b. Standards.

- (1) Remove rescue net from carrying bag.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- (2) Open net by pulling up on "O" ring.
- (3) Once open, lock floor hinges by rotating locking sleeve inwards.
  - (a) Reassure and inform victim of procedure.
  - (b) Place device behind victim and have them move backward into the device until all the way inside.
  - (c) Victim may sit with legs crisscrossed or extended outside the device.
  - (d) Inform victim to hold onto side netting of the device.
  - (e) Ensure proper rigging and connect directly to hoist hook.
  - (f) Maintain positive cable management and signal up until slack is removed and device is lifted from the ground or water.
  - (g) A tagline may be used with this device if warranted.
- c. Performance Evaluation.
  - (1) Exhibit proficient knowledge of the Billy Pugh rescue net.
  - (2) Successfully demonstrate the use of a Billy Pugh rescue net and explain all the components to the satisfaction of the instructor or aircrew.
- d. Documentation.
  - (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

#### 12. TASK #11, USE OF RESCUE AIRBAG.

- a. Description.
  - (1) Carries a nonambulatory patient in a supine position from one location to another.
  - (2) Can be used in conjunction with other rescue equipment (e.g., backboard, stokes litter).

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- (3) Secures a patient and is stable in flight.
- (4) Lightweight (less than 15 lbs.) for rapid deployment and must be used with backboard or stokes litter.
- (5) Can accommodate up to a maximum of 500 lbs.

b. Standards.

- (1) Remove bag from carrying pack.
- (2) Place bag parallel to victim (head-to-head, foot-to-foot).
- (3) Lay straps with collection rig to either side of bag.
- (4) Unbuckle all exterior buckles.
- (5) Open hook and loop enclosure.
- (6) Open bag completely including head enclosure.
- (7) Unbuckle all interior straps.
- (8) Place tagline bag on ground in a secure location.
- (9) Utilizing backboard, stokes, or flat place patient into bag feet first.
- (10) Secure victim with interior buckles through backboard handholds, stokes rails, or around victim's body.
- (11) Tighten all interior straps.
- (12) Hook and loop airbag closed.
- (13) Secure foot flap.
- (14) Secure hood flap.
- (15) Fasten exterior buckles and tighten.
- (16) If using a tag line, secure with the quick release device to the bag.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

- (17) Gather both collection rings.
- (18) Confirm for proper rigging.
- (19) Connect to hoist hook directly or with carabiner.
- (20) Maintain positive cable management and signal up until slack is removed and bag comes off the ground.

c. Performance Evaluation.

- (1) Exhibit proficient knowledge of the rescue airbag.
- (2) Successfully demonstrate the use of the rescue airbag and explain all its components to the satisfaction of the instructor or aircrew.

d. Documentation.

- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

### 13. TASK #12, USE OF RESCUE VEST.

a. Description.

- (1) Quick donning device expedites the rescue by securing subject in a stable, semi-seated position for evacuation without the need to place them into a harness.
- (2) Device is contraindicated for patients with a spinal injury or those requiring litter evacuation.
- (3) Adjustable for small juvenile patients.
- (4) Can accommodate up to a maximum of 500 lbs.
- (5) Classified by UL to meet the rescue vest requirements of NFPA 1983 Standard on Fire Service Life Safety Rope and Equipment for Emergency Services 2017 edition; Class III rescue vest.

b. Standards.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

- (1) Prepare the vest for deployment.
  - (a) Identify the top of the vest.
  - (b) Capture the victim, reassure and inform the victim of the procedure.
  - (c) Open carabiner gate, removing the crotch strap and one shoulder attachment ring.
  - (d) Wrap vest around victim's shoulders, inserting one arm in each opening.
  - (e) Bring crotch strap attachment ring between victim's legs and up to the carabiner.
  - (f) Insert crotch strap attachment ring into carabiner.
  - (g) Insert remaining shoulder attachment into carabiner.
  - (h) Inform victim to hold onto side handles of the device.
  - (i) Connect the hoist hook to the carabiner on the rescue vest.
  - (j) Ensure for proper rigging and ensure carabiner is not cross loaded.
  - (k) Maintain positive cable management and signal up until slack is removed victim is lifted off the ground.
  - (l) A tagline may be used with this device if warranted.
- c. Performance Evaluation.
  - (1) Exhibit proficient knowledge of the rescue vest.
  - (2) Successfully demonstrate the use of the rescue airbag and explain all its components to the satisfaction of the instructor or aircrew.
- d. Documentation.
  - (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

#### 14. TASK #13, USE OF RESCUE STROP.

##### a. Description.

- (1) Constructed of lightweight Denier nylon with high visibility.
- (2) Rapid, safe means of hoisting a victim from water or steep terrain.
- (3) Use of friction buckle and adjustable safety strap to prevent the survivor from slipping out.
- (4) Working load limit 600 lbs.
- (5) Should be used as an attended device when possible.

##### b. Standards.

- (1) Place strong arm and head through the rescue strop and drape over the opposite shoulder.
- (2) Reassure and inform victim of the procedure.
- (3) Position in front of the victim.
- (4) If able, have the victim raise both arms above head.
- (5) Place rescue strop over the victim's head to just under the arms and have the victim lower arms to their side.
- (6) Center rescue strop on the victim's chest.
- (7) While holding both webbing straps, pull the slide buckle down to snug the rescue strop around the upper chest.
- (8) Remove the crotch strap from the pouch and pass it between the victim's leg and clip hook into the slide buckle.
- (9) Adjust the strap, leaving it slightly loose as the strap will pull up during lifting.
- (10) Ensure the rescue strop is tight and tucked firmly under the victim's armpits.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) (*continued*)

(11) Inform the victim to keep their arms down at all times and not to reach up.

(12) Ensure proper rigging and the rescue strop is not twisted.

(13) Maintaining positive cable management and signal up until slack is removed and feet come off the ground.

c. Performance Evaluation.

(1) Exhibit proficient knowledge of the rescue strop.

(2) Successfully demonstrate the use of the Rescue Strop and explain all its components to the satisfaction of the instructor or aircrew.

d. Documentation.

(1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

#### 15. TASK #14, CINCH COLLAR.

a. Description.

(1) Used to capture a victim from water or steep terrain.

(2) Do not attempt to bring victim into aircraft in a cinch collar.

(3) Should be used as a last resort for hypothermic victims.

(4) Easily placed over or stepped into by the victim.

(5) Cinches down on the victim when removed from the ground.

(6) Extremely uncomfortable. Caution should be used and exposure time limited when using this device.

(7) Should be used as an attended device whenever possible.

(8) Provides a small amount of floatation.

b. Standards.

## ANNEX I

### PERFORMANCE STANDARDS (RESCUE EQUIPMENT) *(continued)*

- (1) Place strong arm and head through the cinch collar. Drape cinch collar over the opposite shoulder.
  - (2) Reassure and inform the victim of the procedure.
  - (3) Position in front of the victim.
  - (4) If able, have the victim raise both arms above their head.
  - (5) Place the cinch collar over the victim's head and under both arms and have the victim lower their arms to their side.
    - (a) Cinch collar can be used from the front or back of the victim.
  - (6) Center and tighten the cinch collar on the victim.
  - (7) Ensure the cinch collar is tight and tucked firmly under the victim's armpits.
  - (8) Ensure proper rigging and the cinch collar is not twisted.
  - (9) Instruct the victim not to reach up during flight or attempt to pull themselves up.
  - (10) Maintaining positive cable management and signal up until the slack is removed and their feet come off the ground.
- c. Performance Evaluation.
- (1) Exhibit proficient knowledge of the cinch collar.
  - (2) Successfully demonstrate the use of the cinch collar and explain all its components to the satisfaction of the instructor or aircrew.
- d. Documentation.
- (1) Training and evaluation shall be appropriately documented on a CHP 93D, CHP 93SAR, or CHP 93SARNC.

## ANNEX J

### CHP 334, RESCUE EQUIPMENT INSPECTION LOG (EXCLUDING RESCUE HOIST & CARGO HOOK)

STATE OF CALIFORNIA DEPARTMENT OF CALIFORNIA HIGHWAY PATROL <b>RESCUE EQUIPMENT INSPECTION LOG</b> (Excluding Rescue Hoist & Cargo Hook) CHP 334 (Rev. 4-16) OPI 018							
Equipment	Date & Initials	Date & Initials	Date & Initials	Date & Initials	Date & Initials	Date & Initials	Date & Initials
Aerial Extraction Harness	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
CMC Special Ops Harness	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Aerial Non-Extraction Harness (HEED)	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Rescue Screamer Suit	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Rescue Bag	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Rescue Cinch Collar	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Rescue Strop	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Billy Pugh Rescue Net	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
International Cordage Cargo Net	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Aluminum Swivel	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Stainless or Aluminum Locking "D" Carabiners	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Stokes Rescue Litter or Comparable	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
100' Short Haul Lift Line	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
50' Short Haul Lift Line	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
7/16" Kern-Mantle Rope (Retrival Line)	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
Other OAO Approved Equipment (Specify)							
#1 CMC Tactical Tether (red)	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
#2 CMC ATR Strap (red)	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
#3 CMC Pick-off strap (blue)	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016	LO 4/16/2016
#4							
#5							
#6							

Destroy Previous Editions

Chp334\_0416.pdf

THIS PAGE INTENTIONALLY LEFT BLANK

# ANNEX K

## CHP 335, ROPE USE LOG

STATE OF CALIFORNIA  
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL  
**ROPE USE LOG**  
CHP 335 (Rev. 4-16) OPI 018

DATE IN SERVICE	ROPE NUMBER	LENGTH	COLOR
4/16/2019	#1	100 feet	Orange
MANUFACTURER		TENSILE STRENGTH	
CMC Rescue		11,700 lb	

Date	Incident / Location	How Used	Possible Damage	Inspection Results	Sign In
1	4/17/2018	Body recovery/Vernal Falls Yosemite	Operations	None noted	Remain in service LO
2	4/18/2018	Cleaning/Hangar	Inspection	Severe abrasions	Taken out of service LO
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

A) Detail use of rope ie: Operation, Training, Inspection or Cleaning.  
B) Document unusual occurrences ie: Impact Load, Severe Abrasion or Other Incident.

Destroy Previous Editions Chp335\_0416.pdf

THIS PAGE INTENTIONALLY LEFT BLANK

## ANNEX L

### EQUIPMENT INSPECTION AND CARE

1. GENERAL. All equipment used for external load operations shall be inspected and maintained in accordance with manufacturer's guidelines, industry standards, and guidelines outlined in this Annex.
  
2. BREEZE-EASTERN HOIST OR GOODRICH HOIST.
  - a. Crewmembers shall refer to the Breeze-Eastern Corporation's Operation and Maintenance Manual or Goodrich Manual for required inspections and maintenance.
  
3. CARGO HOOK.
  - a. Crewmembers shall refer to the applicable service instructions or supplemental for required inspections and maintenance.
  - b. If applicable, visually and by touch, inspect the cables and attaching hardware for fraying, kinks, burrs, gouges, corrosion, and signs of wear or damage.
  
4. SWIVELS.
  - a. Visually and by touch, inspect for cracks, distortion, corrosion, scratches, gouges, sharp edges, rough areas, and signs of wear or damage.
  - b. Proper function of the swivel shall be checked for stiffness and binding by rotating the swivel 360 degrees in all directions.
  - c. The swivel should be cleaned and dried to remove all foreign material and moisture.
  
5. AUTO LOCKING STEEL OR ALUMINUM CARABINERS.
  - a. Visually and by touch, inspect for cracks, distortion, corrosion, scratches, gouges, sharp edges, or rough areas that may abrade a rope.
  - b. Check the normal gate action and locking mechanism to ensure proper function. There should be no binding or stiffness.
    - (1) The carabiners should be cleaned and dried to remove all dirt and foreign

## ANNEX L

### EQUIPMENT INSPECTION AND CARE (*continued*)

material and moisture. Minor sharp edges may be smoothed with a fine abrasive cloth before cleaning. Lubricate all moving surfaces and all areas where protective plating has been scratched, using a preservative such as a rust inhibitor, or its equivalent, wipe off all surplus lubricant and store in a clean, dry place.

#### 6. STOKES LITTER (OR COMPARABLE).

a. Visually and by touch, inspect the welds and rivets for cracking, wear, and damage. Inspect the litter for cracks, distortion, corrosion, gouges, sharp edges, and signs of wear or damage.

b. The litter should be cleaned and dried to remove all dirt and foreign material. It should be stored in a cool, dry place.

#### 7. BILLY PUGH RESCUE NET. Visually and by touch, inspect the metal supports for cracks, distortion, corrosion, gouges, sharp edges, and signs of wear or damage. Inspect the netting for wear, cuts, frayed edges, broken stitching, and signs of wear or damage.

#### 8. FULL BODY HARNESSSES (YATES 361 OR CMC SPECIAL OPS).

a. Visually and by touch, inspect all webbing and mesh for wear, cuts, burns, frayed edges, broken stitching, and signs of damage.

b. Inspect to ensure all hardware (D-rings, buckles) are present and ensure they function properly. Visually and by touch, inspect the hardware for sharp edges, burrs, cracks, corrosion, burns, and other signs of wear or damage.

c. Store the harnesses in a cool, dry, clean environment out of direct sunlight.

d. Clean the harnesses with warm water and a mild detergent solution. Rinse thoroughly and wipe off hardware with a clean, dry cloth, and hang to dry out of direct sunlight. Do not force dry with heat.

(1) After a Fall: Rescue harnesses which have been subject to the forces of arresting a fall must be immediately removed from service and destroyed. Maximum capacity of the harnesses is 300 lbs.

## ANNEX L

### EQUIPMENT INSPECTION AND CARE (*continued*)

#### 9. RESCUE SCREAMER SUIT.

- a. Visually and by touch, inspect all webbing and mesh for wear, cuts, burns, frayed edges, broken stitching, or other damage.
- b. Inspect to assure all hardware (D-rings, buckles) are present and function properly. Visually and by touch, inspect the hardware for sharp edges, burrs, cracks, corrosion, bumps, and other signs of wear or damage.
- c. Store the rescue screamer suit in a cool, dry environment out of direct sunlight.
- d. Clean the rescue screamer suit with warm water and a mild detergent solution. Rinse thoroughly and wipe off hardware with a clean, dry cloth, and hang to dry out of direct sunlight. Do not force dry with heat.

#### 10. INTERNATIONAL CORDAGE CARGO NET.

- a. Visually and by touch, inspect the netting for wear, cuts, bumps, fraying, or other damage. Inspect the connecting ring for sharp edges, burrs, cracks, corrosion, wear, or signs of damage.
- b. Store the cargo net in a cool, dry environment out of direct sunlight.
- c. Clean the cargo net with warm water and a mild detergent solution. Rinse thoroughly and wipe off hardware with a clean, dry cloth, and hang to dry out of direct sunlight. Do not force dry with heat.

#### 11. KERNMANTLE ROPES.

- a. Visually and by touch, inspect the entire length of the rope for broken filaments, cut strands, diameter reduction by 5 percent from original diameter, hard and soft spots, abrasions, melted or discolored places in the rope, and rope core showing through the sheath.
- b. Keep ropes away from acids, alkalis, exhaust emissions, rust, oils, or other strong chemicals.

## ANNEX L

### EQUIPMENT INSPECTION AND CARE (*continued*)

c. Do not step on the rope at any time. This causes damage to the rope fibers and grinds grit and debris into the rope sheath and core. Be sure to protect the rope from sharp edges. The sharper the bend in a rope, the more of its strength will be lost. Use edge protectors or duct tape over compartment door edges to protect the rope.

d. The kernmantle lift line is a lifeline and shall not be used interchangeably as a utility line.

e. Wash kernmantle rope with warm water and an approved cleaner. Rinse thoroughly and hang out to dry out of direct sunlight. Do not force dry with heat.

(1) Rope can best be cleaned in a washing machine. Do not use a front-loading machine with a plastic window. Rope rubbing against the window will generate heat and melt the rope fibers. Run a rinse cycle through the washing machine prior to cleaning the rope to remove any residue of detergent and bleach. The rope should be daisy-chained or placed in a rope bag prior to putting it in the washer to prevent tangles, knots and damage. Use an approved cleaner and allow the rope to soak in the washer for 25-30 minutes after 1-3 minutes of agitation. Check the rope for any extra dirty spots and use a nylon brush to clean those spots. Allow the washer to complete its normal cycle. During the rinse cycle add a small amount of Downey fabric softener (three ounces is enough for a full washer or less water). The fabric softener will replace the lubricant the rope lost during use and washing. The rope should be dried by hanging it out of direct sunlight. Do not force dry the rope with heat. All washing should be entered on a CHP 335, Rope Use Log.

f. Rope should be kept in a rope bag for ultra-violet ray protection and cleanliness. Rope should only be put into storage when it is dry.

#### 12. NYLON WEB SAFETY LINE.

a. Visually and by touch, inspect for wear, frayed edges, cuts, bumps, or other signs of damage. Inspect the D-rings for cracks, burrs, distortion, corrosion, and wear, or other damage.

## ANNEX M

### CHP 93SAR, SEARCH AND RESCUE CREWMEMBER EVALUATION

STATE OF CALIFORNIA DEPARTMENT OF CALIFORNIA HIGHWAY PATROL		<b>SEARCH AND RESCUE CREWMEMBER EVALUATION</b>	
CHP 93SAR (New 5-19) OPI 018		FLIGHT DATE <b>09/13/2019</b>	OVERALL PERFORMANCE <input checked="" type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory
NAME <b>Larry O'Brien</b>	ID NUMBER <b>17085</b>	AIRCRAFT CHP NUMBER <b>H-20</b>	EVALUATION TYPE <input type="checkbox"/> Currency/Mission <input checked="" type="checkbox"/> Semi-annual Evaluation
TOTAL FLIGHT TIME <b>5.6</b>	MOUNTAIN HOURS <b>2.8</b>	GROUND INSTRUCTION HRS. <b>2.8</b>	

GRADING CRITERIA  
ALL: NR-Not Rated; D-Demonstrated  
INITIAL & REMEDIAL: 1-Unacceptable 2-Improvement needed 3-Meets 4-Exceeds 5-Outstanding  
RECURRENT, SEMIANNUAL, OTHER: NI-Needs Improvement; M-Meets; E-Exceeds

CRITICAL TASK	RATING	CRITICAL TASK	RATING
<b>A. BASIC KNOWLEDGE</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li>1. Written test score: <u>90%</u> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Satisfactory (80% or above)</li> <li><input type="checkbox"/> Unsatisfactory (79% or below)</li> </ul> </li> <li><input checked="" type="checkbox"/> 2. Federal Aviation Regulations</li> <li><input checked="" type="checkbox"/> 3. HPM 100.7, Chapter 11</li> <li><input checked="" type="checkbox"/> 4. Unit SOP</li> <li><input checked="" type="checkbox"/> 5. Allied agency MOU</li> <li><input checked="" type="checkbox"/> 6. Ingress/Egress procedures</li> <li><input checked="" type="checkbox"/> 7. Landing zone selection</li> <li><input checked="" type="checkbox"/> 8. Landing zone hazards</li> <li><input checked="" type="checkbox"/> 9. Personal protective equipment</li> <li><input checked="" type="checkbox"/> 10. General aircraft safety</li> </ul>		<b>E. GROUND OPERATIONS</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Passenger safety briefing</li> <li><input checked="" type="checkbox"/> 2. Scene management</li> <li><input checked="" type="checkbox"/> 3. Preflight mission planning</li> <li><input checked="" type="checkbox"/> 4. Safety briefing</li> <li><input checked="" type="checkbox"/> 5. Head signals</li> <li><input checked="" type="checkbox"/> 6. Hand signals</li> </ul>	
<b>B. PREFLIGHT/POST FLIGHT INSPECTIONS</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Daily preflight and use of checklist</li> <li><input checked="" type="checkbox"/> 2. Post flight inspection</li> <li><input checked="" type="checkbox"/> 3. EMS Equipment</li> <li><input checked="" type="checkbox"/> 4. ALSE Equipment</li> </ul>		<b>F. FLIGHT OPERATIONS</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Use of checklist</li> <li><input checked="" type="checkbox"/> 2. Cockpit coordination</li> <li><input checked="" type="checkbox"/> 3. Off site landing/departure</li> <li><input checked="" type="checkbox"/> 4. SAR techniques</li> <li><input checked="" type="checkbox"/> 5. Mission coordination</li> <li><input checked="" type="checkbox"/> 6. Judgement of clearances</li> <li><input checked="" type="checkbox"/> 7. Environmentally appropriate survival training</li> <li><input checked="" type="checkbox"/> 8. Multi-aircraft operations</li> <li><input checked="" type="checkbox"/> 9. Hazard identifications/mitigation</li> <li><input checked="" type="checkbox"/> 10. SAR flight risk assessment</li> <li><input checked="" type="checkbox"/> 11. Helicopter coordinator (HLCO) operations</li> <li><input checked="" type="checkbox"/> 12. Rider position</li> <li><input checked="" type="checkbox"/> 13. Brace position</li> <li><input checked="" type="checkbox"/> 14. Head signals</li> <li><input checked="" type="checkbox"/> 15. Hand signals</li> <li><input checked="" type="checkbox"/> 16. Heal clicks</li> </ul>	
<b>C. COMMUNICATIONS</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Proper radio communications</li> <li><input checked="" type="checkbox"/> 2. Non-verbal communications</li> <li><input checked="" type="checkbox"/> 3. ICS Concepts</li> <li><input checked="" type="checkbox"/> 4. Communications Management</li> </ul>		<b>G. SAFETY</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Go/No go</li> <li><input checked="" type="checkbox"/> 2. Knowledge of ALSE</li> <li><input checked="" type="checkbox"/> 3. Knowledge of human factors</li> <li><input checked="" type="checkbox"/> 4. Risk assessment</li> <li><input checked="" type="checkbox"/> 5. Crew Resource Management (CRM)</li> <li><input checked="" type="checkbox"/> 6. Safety Management System (SMS)</li> </ul>	
<b>D. SPECIAL EQUIPMENT ORIENTATION</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Harness (Don/Doff, Safety)</li> <li><input checked="" type="checkbox"/> 2. Carabiners</li> <li><input checked="" type="checkbox"/> 3. Hoist hook connect/Disconnect</li> <li><input checked="" type="checkbox"/> 4. Screamer/Hot seat</li> <li><input checked="" type="checkbox"/> 5. Bauman/Airbag</li> <li><input checked="" type="checkbox"/> 6. Tagline procedures</li> <li><input checked="" type="checkbox"/> 7. Billy Pugh rescue net</li> <li><input checked="" type="checkbox"/> 8. Rescue stop</li> <li><input checked="" type="checkbox"/> 9. Cinch collar</li> </ul>		<b>H. EMERGENCY PROCEDURES</b> <span style="float: right;">3</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1. Fire</li> <li><input checked="" type="checkbox"/> 2. Forced landing/Precautionary landing</li> <li><input checked="" type="checkbox"/> 3. Radio systems failure</li> <li><input checked="" type="checkbox"/> 4. Aircraft/Equipment failure</li> <li><input checked="" type="checkbox"/> 5. Emergency/Water egress procedures</li> <li><input checked="" type="checkbox"/> 6. Crew responsibilities during in-flight emergency</li> <li><input checked="" type="checkbox"/> 7. Hoist failure/Line entanglement</li> </ul>	

Page 1 of 2 No Prior Editions Chp93SAR\_0519.pdf

## ANNEX M

### CHP 93SAR, SEARCH AND RESCUE CREWMEMBER EVALUATION *(continued)*

STATE OF CALIFORNIA DEPARTMENT OF CALIFORNIA HIGHWAY PATROL	
<b>SEARCH AND RESCUE CREWMEMBER EVALUATION</b>	
CHP 93SAR (New 5-19) OPI 018	
CRITICAL TASK	RATING
<b>I. SPECIAL OPERATIONS</b> <input checked="" type="checkbox"/> 1. SAR recovery operations <input checked="" type="checkbox"/> 2. SAR Insert/Extract training <input checked="" type="checkbox"/> 3. SAR Connect/Disconnect to hoist and helicopter <input checked="" type="checkbox"/> 4. SAR Harness/Safety <input checked="" type="checkbox"/> 5. SAR hoist rider procedures <input checked="" type="checkbox"/> 6. SAR one skid, toe-in, hover off/on procedures <input checked="" type="checkbox"/> 7. Attended rescue procedures <input checked="" type="checkbox"/> 8. SAR recovery <input checked="" type="checkbox"/> 9. Human and Non-human external loads <input checked="" type="checkbox"/> 10. Special rescue considerations	<div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">3</div>
<b>J. OVERALL EVALUATION</b> <input checked="" type="checkbox"/> 1. Safety practices <input checked="" type="checkbox"/> 2. Collision avoidance <input checked="" type="checkbox"/> 3. Judgement <input checked="" type="checkbox"/> 4. Flight skills <input checked="" type="checkbox"/> 5. Planning <input checked="" type="checkbox"/> 6. Professional Demeanor <input type="checkbox"/> 7. Other: _____ <input type="checkbox"/> 8. Other: _____	<div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">3</div>
COMMENTS	
<b>FLIGHT RESTRICTIONS</b> None	
<input type="checkbox"/> None <small>TRAINEE SIGNATURE</small>	<input checked="" type="checkbox"/> Reviewed <small>SUPERVISOR'S INITIALS</small>
<input type="checkbox"/> Not Reviewed <small>EVALUATOR'S SIGNATURE</small>	<input type="checkbox"/> Not Reviewed <small>EVALUATOR'S ID NUMBER</small>
<small>Page 2 of 2</small>	
<small>No Prior Editions</small>	
<small>Chp93SAR_0519.pdf</small>	

## ANNEX N

### CHP 93SARNC, SEARCH AND RESCUE NON-CREWMEMBER EVALUATION

STATE OF CALIFORNIA DEPARTMENT OF CALIFORNIA HIGHWAY PATROL		<b>SEARCH AND RESCUE NON-CREWMEMBER EVALUATION</b>	
CHP 93SARNC (New 5-19) OPI 018		FLIGHT DATE <b>09/13/2019</b>	OVERALL PERFORMANCE <input checked="" type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory
NAME <b>Michelle Bentley</b>	TOTAL FLIGHT TIME <b>2.2</b>	AIRCRAFT CHP NUMBER <b>H-20</b>	EVALUATION TYPE <input type="checkbox"/> Initial <input type="checkbox"/> Other
AGENCY <b>Placer County Search and Rescue</b>		GROUND INSTRUCTION HRS. <b>1</b>	<input checked="" type="checkbox"/> Annual Evaluation
GRADING CRITERIA INITIAL, RECURRENT, OTHER: S-Satisfactory   U-Unsatisfactory			
<b>CRITICAL TASK</b>	<b>RATING</b>	<b>CRITICAL TASK</b>	<b>RATING</b>
<b>A. BASIC KNOWLEDGE</b>	<b>S</b> ▾	<b>E. SAFETY</b>	<b>S</b> ▾
<input checked="" type="checkbox"/> General Aircraft Safety		<input checked="" type="checkbox"/> Scene Management	
<input checked="" type="checkbox"/> Ingress/Egress Procedures		<input checked="" type="checkbox"/> SAR Techniques	
<input checked="" type="checkbox"/> Door Operation		<input checked="" type="checkbox"/> Multiaircraft Operations	
<input checked="" type="checkbox"/> Loading/Unloading of Victim or Personnel		<input checked="" type="checkbox"/> Hazard Identification/Mitigation	
<input checked="" type="checkbox"/> Helicopter Hand Signals		<input checked="" type="checkbox"/> Special Rescue Considerations	
<input checked="" type="checkbox"/> Personal Protective Equipment		<b>F. SPECIALIZED EQUIPMENT ORIENTATION</b>	<b>S</b> ▾
<input checked="" type="checkbox"/> Land Zone Selection		<input checked="" type="checkbox"/> Harness (Don/Doff, Safety)	
<input checked="" type="checkbox"/> Landing Zone Hazards		<input checked="" type="checkbox"/> Carabiners	
<b>B. COMMUNICATIONS</b>	<b>S</b> ▾	<input checked="" type="checkbox"/> Hoist Hook Connect/Disconnect	
<input checked="" type="checkbox"/> Proper Radio Communications		<input checked="" type="checkbox"/> Screamer/Hot Seat	
<input checked="" type="checkbox"/> Non-Verbal Communications		<input checked="" type="checkbox"/> Bauman/Airbag	
<b>C. GROUND OPERATIONS</b>	<b>S</b> ▾	<input checked="" type="checkbox"/> Tagline Procedures	
<input checked="" type="checkbox"/> Safety Briefing		<input checked="" type="checkbox"/> Billy Pugh Rescue Net	
<input checked="" type="checkbox"/> Head Signals		<input checked="" type="checkbox"/> Rescue Strop	
<input checked="" type="checkbox"/> Hand Signals		<input checked="" type="checkbox"/> Cinch Collar	
<b>D. FLIGHT OPERATIONS</b>	<b>S</b> ▾	<b>G. SPECIAL OPERATIONS</b>	<b>S</b> ▾
<input checked="" type="checkbox"/> Rider Position		<input checked="" type="checkbox"/> SAR Safety	
<input checked="" type="checkbox"/> Head Signals		<input checked="" type="checkbox"/> SAR Insert/Extract Training	
<input checked="" type="checkbox"/> Hand Signals		<input checked="" type="checkbox"/> SAR Connect/Disconnect to hoist and helicopter	
<input checked="" type="checkbox"/> Heel Clicks		<input checked="" type="checkbox"/> SAR Harness/Safety	
<input checked="" type="checkbox"/> Brace Position		<input checked="" type="checkbox"/> SAR Hoist Rider Procedures	
		<input checked="" type="checkbox"/> SAR One skid, Toe-In, Hover Off/On Procedures	
		<input checked="" type="checkbox"/> Attended Rescue Procedures	
		<b>H. EMERGENCY PROCEDURES</b>	<b>S</b> ▾
		<input checked="" type="checkbox"/> Aircraft/Equipment Failures	
		<input checked="" type="checkbox"/> Radio Systems Failure	
		<input checked="" type="checkbox"/> Emergency/Water Egress Procedures	
		<input checked="" type="checkbox"/> Hoist Failure/Line Entanglement	

ANNEX N

CHP 93SARNC, SEARCH AND RESCUE NON-CREWMEMBER EVALUATION  
(continued)

STATE OF CALIFORNIA  
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL  
SEARCH AND RESCUE NON-CREWMEMBER EVALUATION  
CHP 93SARNC (New 5-19) OPI 018

COMMENTS

FLIGHT RESTRICTIONS

<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Reviewed	<input type="checkbox"/> Not Reviewed	
TRAINEE SIGNATURE	ALLIED AUTHORITY	EVALUATOR'S SIGNATURE	EVALUATOR'S ID NUMBER