



**FIRESCOPE  
HOIST RESCUE GUIDELINES  
ICS 801**

**JANUARY 2019**

This Document contains information relative to the Incident Command System (ICS) component of the National Incident Management System (NIMS). This is the same Incident Command System developed by FIRESCOPE. Additional information and documentation can be obtained from the following source:

Cal OES FIRESCOPE  
Document Control  
2524 Mullberry Street  
Riverside, Ca 92501-2200  
(951) 782-4174  
Fax (951) 782-4239

## Table of Contents

<b>I. SUMMARY .....</b>	<b>1</b>
<b>II. DEFINITIONS and ACRONYMS .....</b>	<b>3</b>
<b>III. HOIST RESCUE EQUIPMENT STANDARDS .....</b>	<b>4</b>
<b>A. Aircraft Equipment Standards.....</b>	<b>4</b>
<b>B. Personnel Equipment Standards. ....</b>	<b>4</b>
<b>IV. PILOT and CREWMEMBER TRAINING STANDARDS .....</b>	<b>5</b>
<b>B. Hoist Rescue Crew Chief / Hoist Operator Experience Standards..</b>	<b>5</b>
<b>C. Rescue Technician Experience Standards.....</b>	<b>6</b>
<b>D. Rescue Helicopter Initial Training and Proficiency.....</b>	<b>6</b>
<b>E. Rescue Helicopter Recurrent Training. ....</b>	<b>7</b>
<b>V. HOIST RESCUE OPERATIONS.....</b>	<b>8</b>
<b>A. Pre-planning and Operational Guidelines .....</b>	<b>8</b>
<b>B. Standby Hoist Rescue Helicopter Need Assessment Tree .....</b>	<b>9</b>
<b>VI. NIGHT HOIST RESCUE OPERATIONS .....</b>	<b>11</b>
<b>A. Overview.....</b>	<b>11</b>
<b>B. Aircraft and Individual Equipment .....</b>	<b>11</b>

**C. Night Operations..... 11**

**VII. HOIST RESCUE SOURCES OF INFORMATION ..... 13**

## I. SUMMARY

**Purpose:** Provide guidelines for the use of agency aircraft for both daylight and night hoist rescue operations on emergency incidents to enhance Firefighter and public safety, operational effectiveness, standardization and fiscal prudence.

**Scope:** This document guides Pilots, Agency Aviation Managers, and Incident Command Personnel.

**Authority:** This document is designed to be a guide for the standardization of operations and the utilization of hoist rescue helicopters ordered through Federal Emergency Management Agency (FEMA), the Governor's Office of Emergency Services (OES), local government agencies, and specifically, Interagency Management Teams (IMT's) to fulfill the recommendations from the National Wildfire Coordinating Group (NWCG) guidance for the Dutch Creek Mitigation Measures.

**Background:** The very nature of an emergency incident places personnel in a hazardous environment where medical evacuation requires the employment of a large component of manpower, exposing more personnel to unplanned risk, or is very remote and requires an extended response and transport time. In specific situations, a hoist-rescue helicopter can provide the expeditious evacuation required, day or night. Due to the absence of a national helicopter hoist-rescue standard for Public Use agencies in the United States, the FIREScope Aviation Operations Specialist Group was asked to pool its experience and develop a guideline for the employment of hoist rescue helicopters on emergency incidents. In the same spirit of the FIREScope Night Flying Guidelines, the Hoist Rescue Guidelines will provide this guidance.

A Decision Tree matrix is provided to assist agencies and IMT's in the process of determining if the employment of a hoist-rescue helicopter is appropriate. Pre-planning and operational guidelines are provided to aid in ensuring risk mitigation strategies are in place, specific operational procedures have been briefed, and all parties have a clear understanding of the capabilities and limitations of helicopter hoist rescue operations for the particular incident.

The material and reference sources contained in this guideline will assist agencies in requesting and supporting helicopter hoist rescue operations.

**Minimum Capabilities:** An interagency carded or approved aircraft and aircrew capable of performing the rescue operation in a given environment, utilizing the helicopter rescue hoist, hovering out of ground effect, with the capability to lower a rescue technician and affect a hoist evacuation, perform pre-hospital evaluation and treatment of ambulatory or non-ambulatory victim(s), and transport the victim(s) to an appropriate level of medical care. The rescue module shall include the appropriate equipment, logistics, and personnel to support the mission.

**Recommendations:** The intent of this document is to serve as a guideline for Inter-agency helicopter hoist rescue operations. The information in this document is recommended to be used for evaluating the need for a hoist rescue helicopter and implementation of the operations contained within the scope of this document. It is the recommendation that all Inter-Agency helicopter hoist rescue operations be conducted within the guidelines set forth herein.

When helicopters are utilized to conduct rescue operations FIRESCOPE recommends the following guidelines:

- The rescue module consists of aircraft and personnel described in the Minimum Capabilities section above.
- Aircraft performance planning is complete and reflects the conditions and location where the rescue is expected to be performed.
- The appropriate equipment to complete the mission is onboard the aircraft, and the crew is proficient in its use.
- The hoist rescue crew utilizes Rescue Checklists in the conduct of their hoist rescue operation.
- The organization has a policy dictating that each crewmember shall be attached to the aircraft in some manner (strap, seatbelt, etc.) when any cabin door is open.
- Plan and brief the operation utilizing the PACE model: Primary, Alternate, Contingency, and Emergency, and verify each crewmember understands it. The briefing should include (as a minimum): hazards and mitigations identified by the associated FRAT and other pertinent information, rescue type to be performed and contingencies, ground contact information, communication frequencies (primary, alternate, and emergency), transport outcome (transfer to other transportation, or transport to a different location or hospital, etc.), and emergency considerations.
- Always attempt to complete the extraction by utilizing an operation exposing the victim and rescuers to the least amount of risk (may not involve a hoist evolution).

## II. DEFINITIONS and ACRONYMS

- Helicopter Hoist Rescue Operations: Utilization of a hoist-equipped helicopter to extract ambulatory and non-ambulatory victim(s).
- Operational Standards: Common methods, qualifications and minimum requirements regarding operations.
- Technical Standard Orders (TSO): Common methods, qualifications and minimum requirements regarding equipment.
- Training Standards: Common methods, qualifications and minimum requirements regarding training.
- Risk Assessment: The objective identification of hazards associated with a particular operation.
- Risk Management: The implementation of mitigation strategies is effectively decreasing or eliminating hazards associated with a particular operation.
- Safety Management System (SMS)
- Flight Risk Assessment Tool (FRAT)
- Federal Aviation Administration (FAA)
- Federal Emergency Management Agency (FEMA)
- National Incident Management System (NIMS)
- Governor's Office of Emergency Services (OES)
- Authority having jurisdiction (AHJ): Agency who retains jurisdiction of the incident.
- 1033 Program: a Federal program providing law enforcement agencies the ability to obtain excess government equipment.
- Federal Excess Property Program (FEPP): Federal program providing fire agencies the ability to obtain excess government equipment.
- Supplemental Type Certificate (STC): A type certificate issued by the FAA for modification of an aeronautical product from its original design.
- In accordance with (IAW)
- Rotorcraft Flight Manual (RFM)
- Interagency Helicopter Operations Guide (IHOG)
- Personal Protective Equipment (PPE)
- Incident Command System (ICS)
- Incident Management Team (IMT)
- Incident Commander (IC)
- Air Operations Branch Director (AOBD)
- National Wildfire Coordinating Group (NWCG)
- Geographic Area Coordination Center (GACC)

### **III. HOIST RESCUE EQUIPMENT STANDARDS**

#### **A. Aircraft Equipment Standards.**

- The rescue hoist installation and subsequent maintenance shall be completed IAW the appropriate FAA STC for that model hoist and aircraft, including the hoist, hoist provisions, associated wiring, switches, operation devices (pendant, cyclic control, etc.), and paperwork (RFM Supplement, Maintenance Manuals).
- Ex-military FEPP or 1033 Program aircraft with an internal or external military hoist shall have the hoist and associated equipment installed IAW the appropriate service Airworthiness Release and Military Standard (MIL- STD) and maintained IAW the appropriate Military Specification (MIL- SPEC) for the hoist and aircraft type, to include the appropriate supplemental paperwork located in the aircraft's Maintenance Manuals, Technical Manual or Operator's Manual.
- Incident hoist-rescue helicopters shall have the appropriate Survival Equipment on board IAW the most current IHOG, Survival Equipment requirements and maintenance, based on the operational environment.
- All helicopters conducting hoist rescue operations shall be equipped with a radar altimeter.

#### **B. Personnel Equipment Standards.**

- Personnel conducting hoist rescue operations shall have personal hoist-specific equipment IAW their organization's policies and procedures for the type and location of operation being (or expected to be) performed. Consideration should be given to the terrain, weather conditions, exposure, and survival requirements.
- In addition to the hoist-specific items referenced above each rescue, helicopter crewmember shall wear PPE appropriate for the mission IAW the most current IHOG guideline.



## IV. PILOT and CREWMEMBER TRAINING STANDARDS

### A. Pilot Experience Standards.

#### Minimums:

- |   |                  |
|---|------------------|
| • Pilot in Command – Helicopter                   | 1,500 hours      |
| • Helicopter – preceding 12 months:               | 100 hours        |
| • Night:  | 250 hours        |
| • Weight Class (ICS Type) Last 12 months:         | 100 hours        |
| • Make & Model (With manufacturer’s training):    | 25 hours         |
| • Make & Model (Without manufacturer’s training): | 50 hours         |
| • Make, Model & Series (Last 12 months):          | 10 hours         |
| • Typical Terrain/Mountainous Flying:             | 200 hours        |
| • Hoist Rescue Ground School:                     | agency specific  |
| • Hoist Rescue Flight Training:                   | agency specific  |
| • Day Hoist Currency:                             | agency specific* |
| • Night Hoist Currency:                           | agency specific* |

### B. Hoist Rescue Crew Chief / Hoist Operator Experience Standards.

- Completed S-271 (Interagency Helicopter Crewmember) training or agency-specific helicopter crewmember program.
- Hoist Rescue Ground School: agency specific
- Hoist Rescue Flight Training: agency specific
- Day Hoist Currency: agency specific\*\*
- Night Hoist Currency: agency specific\*\*
- Current and qualified to affect the rescue of ambulatory and non- ambulatory victims utilizing the appropriate rescue equipment and techniques IAW the organization’s mission profiles.
- Current ALS or BLS Certification
- Successfully completed organization’s Hoist Rescue Technician initial training.

### **C. Rescue Technician Experience Standards.**

- Completed S-271 (Interagency Helicopter Crewmember) training or agency-specific helicopter crewmember program.
- Hoist Rescue Ground School: agency specific
- Hoist Rescue Flight Training: agency specific
- Day Hoist Currency: agency specific\*\*
- Night Hoist Currency: agency specific\*\*
- Current and qualified to affect the rescue of ambulatory and non-ambulatory victims utilizing the appropriate rescue equipment and techniques IAW the organization's mission profiles.
- Current ALS or BLS Certification

### **D. Rescue Helicopter Initial Training and Proficiency.**

Proficiency differs from currency. Currency standards are minimum benchmarks addressing regulatory or policy requirements indicating a crewmember's authorization to perform a particular task. Proficiency in a task is demonstrated by a crewmember's ability to successfully accomplish the task, including aborting the task if necessary, based on the standards set by the organization, any time the task is performed.

Each organization should develop currency standards reflecting their personnel's proficiency needs considering the organization's mission scope and frequency exposure.

- Pilot and crewmember initial ground and flight training should be completed IAW the organization's policies and procedures and/or through a professional rescue training organization.
- The initial training should consist of training to an identified agency standard for each type of rescue operation the organization is authorized to perform IAW their policies and procedures.
- The training should include, at a minimum:
  - Safety Management System (SMS)
  - Performance planning
  - Flight Risk Assessment Tool (FRAT)
  - Crew Resource Management (CRM)
  - Basic rescue strategies, tactics, flight maneuvers and techniques
  - Hoist rescue emergency procedures
  - Agency specific authorized mission profile
  - A pilot and crewmember flight proficiency check

## **E. Rescue Helicopter Recurrent Training.**

- Recurrent training shall be based on the organization's mission profiles and shall be conducted and recorded IAW the organization's policies and procedures.

*\*Recommend following FAR Part 61*

*\*\*Recommend not to exceed 90 days*

## **V. HOIST RESCUE OPERATIONS**

### **A. Pre-planning and Operational Guidelines**

Agencies and IMTs need to evaluate the requirement for a hoist-rescue helicopter(s), supporting the Dutch Creek Protocols, to fulfill their mission statement of safeguarding against loss of life or serious injury to their personnel and associated civilians. Having several options for patient extraction will be the key to success for an incident within an incident, a hoist-rescue helicopter is one of those.

If employed, hoist rescue helicopters must be integrated into the Incident Action Plan (IAP) and specifically the Medical Plan. The aircraft availability and contact procedures for activation must be readily available and briefed to everyone on the incident, without exception, at every shift.

If the incident is large, requiring more than 30 minutes of flight time to get from one edge to the other, consider employing more than one hoist-rescue helicopter, or at least strategically place the aircraft where it can reasonably fly to the victim, conduct the extraction and have fuel to reach the appropriate medical facility or a pre-arranged LZ able to accommodate the rescue helicopter and a commercial air or ground ambulance (as appropriate), and reach a refuel location.

Institutional knowledge of the incident area will be key to determine if a hoist-rescue helicopter will be required, or if it can help. Many considerations are required for an appropriate decision to employ a hoist-rescue helicopter; weather conditions, smoke conditions, response type, fire behavior, topography, remoteness, flora health, aircraft availability and capabilities, and more. A typical hoist-rescue helicopter decision tree is located on the next page.

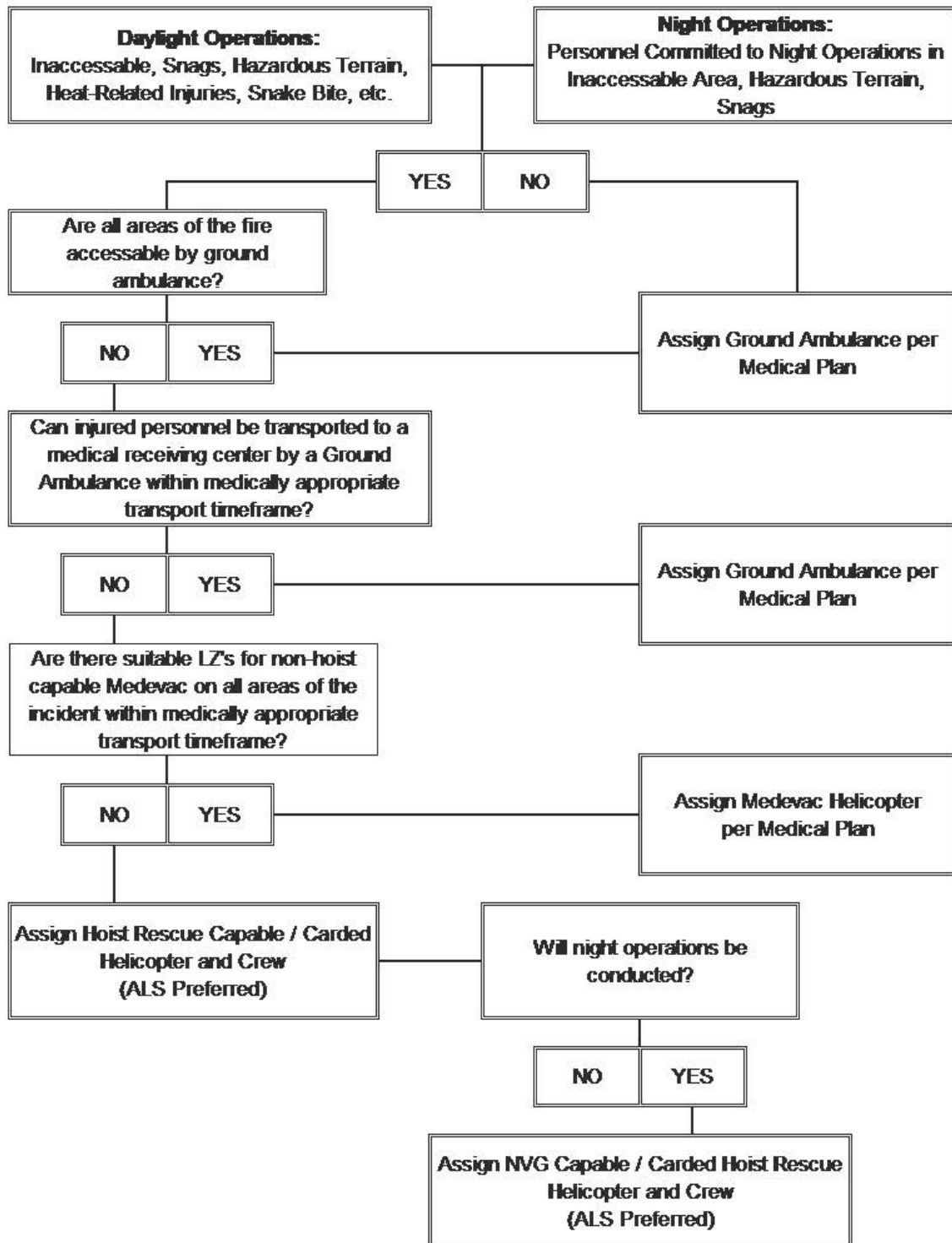
Incident management staff shall confirm communication has occurred with the receiving medical facility (or facilities) to ensure they are prepared for the arrival of the aircraft and patient(s). The State of California has a listing of hospital helipads throughout the state that is an excellent source document for planning and operational purposes (See VII, Hoist Rescue Sources of Information).

As an additional planning reference, keep in mind a hoist rescue helicopter does not require an LZ to perform an extraction. The extraction location needs to be large enough to accommodate the rescue personnel and equipment being hoisted; larger is better but not mandatory. Hoist site needs to be evaluated for potential hazards to both air and ground resources such as power lines or snags which could be impacted by rotor wash.

As in all helicopter rescue operations, it remains the responsibility of the Pilot in Command and Rescue Crew to maintain situational awareness through a continuous FRAT process, make informed decisions based on current information, and safely and efficiently complete, alter, or abort the mission if necessary.

## B. Standby Hoist Rescue Helicopter Need Assessment Tree

### Incident Potential: Is there potential for serious injury?



The Standby Hoist Rescue Helicopter Need Assessment Tree assists with determining whether there is potential for serious injury. The tree explains:

If daylight operations involve inaccessible location, snags, hazardous terrain, heat-related injuries, snake bite, etc. and/ or night operations involve personnel committed to night operations in inaccessible area, hazardous terrain or snags, the next step is to determine whether all areas of the fire are accessible by ground ambulance. If they are, assign ground ambulance per medical plan. If they are not, determine whether the injured person can be transported to a medical receiving center by a ground ambulance within a medically appropriate transport timeframe.

If the injured person can be transported to a medical receiving center by a ground ambulance within a medically appropriate transport timeframe, assign ground ambulance per medical plan. If the injured person cannot be transported to a medical receiving center by a ground ambulance within a medically appropriate transport timeframe, determine whether there are suitable LZs for non-hoist capable medevac on all areas of the incident within a medically appropriate transport timeframe. If yes, assign medevac helicopter per medical plan. If no, assign hoist rescue capable/carded helicopter and crew (ALS preferred).

From there, determine whether night operations will be conducted. If yes, assign NVG capable/carded hoist rescue helicopter and crew (ALS preferred).

## **VI. NIGHT HOIST RESCUE OPERATIONS**

### **A. Overview**

The guidelines in this section were developed from experience conducting night hoist rescue operations across a broad spectrum of agencies and incidents. Night hoist rescue operations, like their day-time counterpart, can be an extremely effective tool for insertion and extraction of personnel and equipment. Operating during darkness increases hazard exposure and adds complexity to hoist rescue operations, thorough and detailed pre-mission planning, risk assessment and mitigation, and operational proficiency as NVG hoist rescue aircrews are critical to achieving success. For night operations, the FIRESCOPE Hoist Rescue Guidelines should be utilized in conjunction with the FIRESCOPE Night Flying Guidelines (FNFG). This document is not intended to replace or supersede FNFG but supplement them about night hoist rescue operations in particular. It will be incumbent on the IMT or organization requesting a night-capable hoist rescue module to verify the module is properly equipped, qualified and current to conduct night hoist rescue operations as requested.

### **B. Aircraft and Individual Equipment**

In addition to the hoist-related equipment guidelines in section III, the aircraft lighting modifications and NVG TSO standard guidelines stated in the FNFG apply to all associated equipment involved with night hoist rescue operations. The equipment maintenance shall be accomplished IAW Federal Regulations and published standards. Federal Excess Property Program (FEPP) aircraft lighting modifications shall conform to the appropriate MILSPEC if the original lighting configuration is utilized or the appropriate STC for a commercially-installed lighting modification. External aircraft supplemental lighting shall conform to the agency's specific aircraft STC and be maintained IAW the manufacturer's specifications.

For night operations, individual supplemental lighting is appropriate and should provide adequate visibility enhancement without interfering with the NVG's operation. Additional PPE items providing night-time signal capabilities (i.e. strobe lights, Chem-sticks, etc.) are recommended in addition to the appropriate individual PPE, IAW the most current IHOG.

### **C. Night Operations**

The basic difference between day and night hoist rescue operations is the lack of ambient light available at night. Hoist rescue helicopter crews use active and passive illumination devices to aid in safely operating in the dark. The appropriate training and proficiency in the employment of these devices while steadily maneuvering the helicopter and deploying the rescue hoist in tactical situations represents the cornerstone ability to safely and efficiently conduct a night hoist

rescue. Including the personal and aircraft equipment previously discussed, additional guidelines to aid in ensuring successful mission accomplishment of night hoist rescue operations are presented below, and it is recommended agencies have policies reflecting the following guidelines and best practices:

1. Pilot and crew initial, advanced and recurrent training. Along with day hoist rescue proficiency, night proficiency must be accomplished, demonstrated and documented.
2. The aircraft and pilots must be inspected and approved (carded) to perform the requested mission.
3. Since obvious weather conditions obtained through visual means are unavailable at night, the night aircrew must have a system in place to monitor the weather for go, no-go decisions.
4. Prior to launch, the aircrew must have all the frequencies pertaining to the operation in hand and preferably loaded into the aircraft avionics (ground contact, airspace contact, hospital contact, etc.)
5. Prior to launch, the exact victim location (if available), or an identifiable area to search, pre-identified and coordinated primary and secondary medical transport locations, refuel coordination, and any airspace information must be in hand and preferably loaded into the aircraft avionics.
6. Prior to launch, a thorough flight risk assessment tool (FRAT) must be conducted and briefed, with continuous situational updates throughout the mission until completion.
7. Continuous communications with incident personnel, aerial supervision, or dispatch must be maintained during tactical operations.
8. Conduct an AAR as soon as practical with incident and/or agency management personnel facilitating systemic corrections as required.



## VII. HOIST RESCUE SOURCES OF INFORMATION

1. [FAA Advisory Circular \(AC\) 133-1A \(PDF\)](#); Rotorcraft External-Load Operations in Accordance with Federal Aviation Regulations Part 133. 10/16/79
2. [FAA 14 CFR Part 133 – Rotorcraft External-Load Operations](#). April 27, 2017
3. [FAA 8900.1 Change 240; Volume 3, General Technical Administration; Chapter 51, Part 133 External-Load Operations; Section 1, Guidelines for Certification and Surveillance of 14 CFR Part 133](#). 01/13/14
4. [FAA 8900.1 Change 240; Volume 3, General Technical Administration; Chapter 51, Part 133 External-Load Operations; Section 1, Introduction to Part 133 Related Tasks](#). 01/13/14
5. FAA Technical Standard Order (TSO) describes minimum performance standards (MPS) for a particular item. The FAA TSO for “human harnesses” is [TSO-C167, Personnel Carrying Device Systems \(PCDS\)](#); TSO Holder; Air Rescue Systems Corporation; P/N ARS338L/XL – Human Harness (PCDS); P/N ARS338S/M – Human Harness (PCDS)
6. [NFPA 1983: Standard on Life safety Rope and Equipment for Emergency Services](#)
7. [UTC Rescue Hoists](#)
8. [Breeze Eastern Rescue Hoists](#)
9. Hoist Rescue Training Organizations:
  - [Air Rescue Systems](#)
  - [Priority 1 Air Rescue](#)
  - [Air Rescue Concepts](#)
  - [Survival Systems Training](#)
10. Federal Qualification Guides:
  - [FEMA – Helicopter Search and Rescue Pilot \(PDF\)](#)
  - [FEMA – Helicopter Search and Rescue Technician \(PDF\)](#)
  - [FEMA – Helicopter Search and Rescue Crew Chief \(PDF\)](#)
  - [NIMS Guideline for the Credentialing of Personnel \(PDF\)](#)
11. [Interagency Helicopter Operations Guide \(IHOG\) \(PDF\)](#)
12. [DOI, Helicopter Short-Haul Handbook \(351 DM\) \(PDF\)](#)
13. [Helicopter Rescue and Response Association \(HRRA\)](#)
14. [FIRESCOPE](#)

15. [California Hospital Helipad Database](#)