

State of Oregon  
Department of Public Safety Standards and Training

**NFPA Rope Rescue - Operations**  
Task Book

Task Book Assigned To:	
Name	DPSST Fire Service #
Agency Name	Date Initiated
Signature of Agency Head or Training Officer	Date Completed

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Additional copies of this document may be downloaded from the DPSST web site:  
<http://www.oregon.gov/DPSST/FC/FireCertFormFree.shtml>

Revised January 2018

# NFPA Rope Rescue - Operations Signature Page

A copy of the applicant's training must be included with the DPSST NFPA Technical Rescuer application when applying for **NFPA Rope Rescue – Operations** certification. Only a certified NFPA Technical Rescuer in that specialty area may sign off the Task Book.

**Attest:** The information contained in this Task Book is true and correct to the best of my knowledge. I understand that falsification of information on this document is subject to penalty under ORS 162.055, et al, and ORS 162.305 and is cause to deny or revoke DPSST fire service professional certification(s).

<b><u>NFPA Rope Rescue Task Book Assigned To:</u></b>		
_____ Signature	_____ Printed Name	_____ DPSST Fire Service #
_____ Agency Name		_____ Date Initiated
_____ Signature of Certified Technician	_____ Printed Name of Certified Technician	_____ Date Completed

**Technical Rescuer Evaluators:** Each Evaluator must document the following information:

<b>Evaluator: Level of Technical Rescuer certification:</b>			
<input type="checkbox"/> Tower	<input type="checkbox"/> Rope - Operations	<input type="checkbox"/> Rope – Technician	
<input type="checkbox"/> Structural Collapse	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Vehicle	<input type="checkbox"/> Trench
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Swiftwater	<input type="checkbox"/> Dive	<input type="checkbox"/> Surf
			<input type="checkbox"/> Machinery
			<input type="checkbox"/> Watercraft
<b>Sections of chapter signed off by Evaluator:</b>			
___5	___6	___7	___8
___11	___12	___16	___17
___18	___20		
_____ Signature of Evaluator	_____ Printed Name of Evaluator	_____ DPSST Fire Number	_____ Date

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Task Book Qualification Record Books (Task Book) have been developed for various certification levels within the Oregon Department of Public Safety Standards and Training (DPSST) system. Each Task Book lists the job performance requirements (JPRs) for the specific certification level in a format that allows a candidate to be trained and evaluated during three (3) sequential sessions. Successful performance of all tasks, as observed and recorded by a qualified and approved evaluator will result in the candidate's eligibility for DPSST certification.

To become certified at a specific level, the applicant must successfully complete the job performance requirements in sequence. Before a job performance evaluation can be taken, all requisite knowledge and skills must be satisfied. In addition, all relative task book evaluations must be checked off by the evaluator. When all prescribed requirements have been met, an application for Certification will be forwarded to DPSST. All certificates are mailed to the Training Officer at his/her Fire Service Agency.

### **TASK BOOK SPECIFICATIONS:**

To successfully complete this task book, only an evaluator certified as an NFPA Rope Rescue may sign off on the JPR's. 'Requisite Knowledge' sections may be completed during class and signed by the instructor. 'Requisite Skills' sections may be conducted and signed at the candidate's fire agency.

### **NFPA TASK BOOK INFORMATION:**

The JPRs covered in this Task Book meet or exceed all NFPA published standards for this certification level at the time of this publication. Mention of NFPA and its standards do not, and are not intended as adoption of—or reference to—NFPA standards. For more information on the complete job performance requirements and data, see the individual DPSST Task Book for that certification level.

### **NOTE TO FIRE SERVICE AGENCIES:**

These JPRs serve as general guidelines. As such they are not intended to replace specific sequences of apparatus or equipment operation that may be outlined by manufacturer specifications. At all times, standard operating procedures of the Fire Service Agency in which the evaluation is being conducted will govern. Fire Service Agencies should have available for evaluators a copy of manufacturer specifications and the Fire Service Agencies standard operational guidelines.

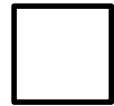
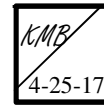
**\*A vertical line (|) to the left of the document indicates a change from the previous standard.**

### **HOW TO EVALUATE PERFORMANCE:**

Each JPR has one to three corresponding box(es) to the right in which to confirm a candidate's success. The evaluator must indicate successful passing by the candidate of each JPR by initialing and dating (see example on the following page).

### **Example:**

**5.1.1 Recognize the need for support resources, given a specific type of rescue incident, so that a resource cache is managed, scene lighting is provided for the tasks to be undertaken, environmental concerns are managed, personnel rehabilitation is facilitated, and the support operation facilitates rescue operational objectives.**



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# TASK BOOK QUALIFICATION RECORD

FOR THE CERTIFICATION LEVEL OF

## NFPA Rope Rescue

Prior to becoming certified in this position, the sample candidate must successfully complete the following Job Performance Requirements (JPR). For each JPR there are requisite knowledge and skill requirements. The evaluator must initial and date in the box provided to indicate the meeting of those requirements before the firefighter may proceed.

**5.1 Awareness Level.** The job performance requirements defined in 5.1.1 through 5.1.7 shall be met prior to awareness level qualification in rope rescue.

**5.1.1 Recognize the need for support resources, given a specific type of rescue incident, so that a resource cache is managed, scene lighting is provided for the tasks to be undertaken, environmental concerns are managed, personnel rehabilitation is facilitated, and the support operation facilitates rescue operational objectives.**

**(A) Requisite Knowledge.** Equipment organization and tracking methods, lighting resource type(s), shelter and thermal control options, and rehab criteria.

**(B) Requisite Skills.** The ability to track equipment inventory, identify lighting resources and structures for shelter and thermal protection, select rehab areas, and manage personnel rotations.

**5.1.2 Recognize incident hazards and initiate isolation procedures, given scene control barriers, personal protective equipment (PPE), requisite equipment, and available specialized resources, so that all hazards are identified, resource application fits the operational requirements, hazard isolation is considered, risks to rescuers and victims are minimized, and rescue time constraints are taken into account.**

**(A) Requisite Knowledge.** Resource capabilities and limitations, types and nature of incident hazards, equipment types and their use, isolation terminology, methods, equipment and implementation, operational requirement concerns, common types of rescuer and victim risk, risk/benefit analysis methods and practices, and types of technical references.

**(B) Requisite Skills.** The ability to identify resource capabilities and limitations, identify incident hazards, assess

victim viability (risk/benefit), utilize technical references, place scene control barriers, and operate control and mitigation equipment.

**5.1.3 Recognize needed resources for a rescue incident, given incident information, a means of communication, resources, tactical worksheets, personnel accountability protocol, applicable references, and standard operating procedures, so that references are utilized, personnel are accounted for, necessary resources are deployed to achieve desired objectives, incident actions are documented, rescue efforts are coordinated, the command structure is established, task assignments are communicated and monitored, and actions are consistent with applicable regulations.**

**(A) Requisite Knowledge.** Incident management system; tactical worksheet application and purposes; accountability protocols; resource types and deployment methods; documentation methods and requirements; availability, capabilities, and limitations of rescuers and other resources; communication problems and needs; communications requirements, methods, and means; types of tasks and assignment responsibilities; policies and procedures of the agency; and technical references related to the type of rescue incident.

**(B) Requisite Skills.** The ability to implement an incident management system, complete tactical worksheets, use reference materials, evaluate incident information, match resources to operational needs, operate communications equipment, manage incident communications, and communicate in a manner so that objectives are met.

**5.1.4 Initiate a discipline-specific search, given hazard-specific PPE, equipment pertinent to search mission, an incident location, and victim investigative information, so that search parameters are established; the victim profile is established; the entry and exit of all people either involved in the search or already within the search area are questioned and the information is updated and relayed to command; the personnel assignments match their expertise; all victims are located as quickly as possible; applicable technical rescue concerns are managed; risks to searchers are minimized; and all searchers are accounted for.**

(A) **Requisite Knowledge.** Local policies and procedures and how to operate in the site-specific search environment.

(B) **Requisite Skills.** The ability to enter, maneuver in, and exit the search environment and provide for and perform self-escape/self-rescue.

**5.1.5\* Perform ground support operations for helicopter activities, given a rescue scenario/incident, helicopter, operational plans, PPE, requisite equipment, and available specialized resources, so that rescue personnel are aware of the operational characteristics of the aircraft and demonstrate operational proficiency in establishing and securing landing zones and communicating with aircraft personnel until the assignment is complete.**

(A) **Requisite Knowledge.** Ground support operations relating to helicopter use and deployment, operation plans for helicopter service activities, type-specific PPE, aircraft familiarization and hazard areas specific to helicopters, scene control and landing zone requirements, aircraft safety systems, and communications protocols.

(B) **Requisite Skills.** The ability to provide ground support operations, review standard operating procedures for helicopter operations, use PPE, establish and control landing zones, and communicate with aircrews.

**5.1.6 Initiate triage of victims, given triage tags and local protocol, so that rescue versus recovery factors are assessed, triage decisions reflect resource capabilities, severity of injuries is determined, and victim care and rescue priorities are established in accordance with local protocol.**

(A) **Requisite Knowledge.** Types and systems of triage according to local protocol, resource availability, methods to determine injury severity, ways to manage resources, and prioritization requirements.

(B) **Requisite Skills.** The ability to use triage materials, techniques, and resources and to categorize victims correctly.

**5.1.7 Assist a team in operation of the haul line of a rope mechanical advantage system raising operation, given rescue personnel, an established rope rescue**

system, a load to be moved, and an anchor system, so that the movement is controlled; a reset is accomplished; the load can be held in place when needed; commands are followed in direction of the operation; and potential problems are identified, communicated, and managed.

(A) **Requisite Knowledge.** Principles of mechanical advantage, operation of a haul line in a raising operation, personnel assignments, and operational commands.

(B) **Requisite Skills.** The ability to recognize operational commands and identify safety concerns during raising operations.

**6.2 Operations Level.** The job performance requirements defined in Section 5.1 and 5.2.1 through 5.2.27 shall be met prior to operations-level qualification in rope rescue.

**5.2.1 Perform size up a rescue incident, given background information and applicable reference materials, so that the type of rescue is determined, the number of victims is identified, the last reported location of all victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, search parameters are identified, and information required to develop an incident action plan is obtained.**

(A) **Requisite Knowledge.** Types of reference materials and their uses, availability and capability of the resources, elements of an action plan and related information, relationship of size-up to the incident management system, and information gathering techniques and how that information is used in the size-up process.

(B) **Requisite Skills.** The ability to read technical rescue reference materials, gather information, relay information, and use information gathering sources.

**5.2.2\* Inspect and maintain hazard-specific PPE, given clothing or equipment for the protection of the rescuers, cleaning and sanitation supplies, maintenance logs or records, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, so that damage, defects, and wear are identified and reported or repaired, equipment functions as designed, and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.**



(A) **Requisite Knowledge.** Functions, construction, and operation of PPE; use of recordkeeping systems of the AHJ; requirements and procedures for cleaning, sanitizing, and infectious disease control; use of provided assembly and disassembly tools; manufacturer and department recommendations; pre-use inspection procedures; and ways to determine operational readiness.

(B) **Requisite Skills.** The ability to identify wear and damage indicators for PPE; evaluate operational readiness of PPE; complete logs and records; use cleaning equipment, supplies, and reference materials; and select and use tools specific to the task.

**5.2.3\* Inspect and maintain rescue equipment, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, equipment replacement protocol, and organizational standard operating procedure, so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement protocol are correctly disposed of and changed.**

(A) **Requisite Knowledge.** Functions and operations of rescue equipment, use of recordkeeping systems, manufacturer and organizational care and maintenance requirements, selection and use of maintenance tools, replacement protocol and procedures, disposal methods, and organizational standard operating procedures.

(B) **Requisite Skills.** The ability to identify wear and damage indicators for rescue equipment, evaluate operation readiness of equipment, complete logs and records, and select and use maintenance tools.

**5.2.4\* Demonstrate knots, bends, and hitches, given ropes, webbing, and a list of knots used by the agency, so that the knots are dressed, recognizable, and backed up as required.**

**(A) Requisite Knowledge.** Knot efficiency, knot utilization, rope construction, and rope terminology.

**(B) Requisite Skills.** The ability to tie representative knots, bends, or hitches for the following purposes:

- (1) End-of-line loop
- (2) Midline loop
- (3) Securing rope around desired objects
- (4) Joining rope or webbing ends together
- (5) Gripping rope

**5.2.5 Construct a single-point anchor system, given life safety rope and other auxiliary rope rescue equipment, so that the chosen anchor system fits the incident needs, meets or exceeds the expected load, and does not interfere with rescue operations, an efficient anchor point is chosen, the need for redundant anchor points is assessed and used as required, the anchor system is inspected and loaded prior to being placed into service, and the integrity of the system is maintained throughout the operation.**

**(A) Requisite Knowledge.** Application of knots, rigging principles, anchor selection criteria, system safety check procedures, rope construction, and rope rescue equipment applications and limitations.

**(B) Requisite Skills.** The ability to select rope and equipment; tie knots; rig systems; evaluate anchor points for required strength, location, and surface contour; and perform a system safety check.

**5.2.6 Construct a multiple-point anchor system, given life safety rope and other auxiliary rope rescue equipment, so that the chosen anchor system fits the incident needs, the system strength meets or exceeds the expected load and does not interfere with rescue operations, equipment is visually inspected prior to being put in service, the nearest anchor point that will support the load is chosen, the anchor system is system safety checked prior to being placed into service, the**

**integrity of the system is maintained throughout the operation, and weight will be distributed between more than one anchor point.**

**(A)\* Requisite Knowledge.** Relationship of angles to forces created in the rigging of multiple-point anchor systems, safety issues in choosing anchor points, system safety check methods that allow for visual and physical assessment of system components, methods to evaluate the system during operations, integrity concerns, weight distribution issues and methods, knots and applications, selection and inspection criteria for hardware and software, formulas needed to calculate safety factors for load distribution, and the concepts of static loads versus dynamic loads.

**(B) Requisite Skills.** The ability to determine incident needs as related to choosing anchor systems, select effective knots, determine expected loads, evaluate incident operations as related to interference concerns and setup, choose anchor points, perform a system safety check, and evaluate system components for compromised integrity.

**5.2.7 Conduct a system safety check, given a rope rescue system and rescue personnel, so that a physical/visual check of the system is made to ensure proper rigging, a load test is performed prior to life-loading the system, and verbal confirmation of these actions is announced and acknowledged before life-loading the rope rescue system.**

**(A) Requisite Knowledge.** System safety check procedures, construction and operation of rope rescue systems and their individual components, use of PPE, equipment inspection criteria, signs of equipment damage, principles of rigging, and equipment replacement criteria.

**(B) Requisite Skills.** The ability to apply and use PPE, inspect rope rescue system components for damage, assess a rope rescue system for configuration, secure equipment components, inspect all rigging, and perform a system safety check.

**5.2.8 Place edge protection, given life safety rope or webbing traversing a sharp or abrasive edge, edge protection, and other auxiliary rope rescue equipment, so that the rope or webbing is protected from abrasion**

**or cutting, the rescuer is safe from falling while placing the edge protection, the edge protection is secure, and the rope or webbing is securely placed on the edge protection.**

**(A) Requisite Knowledge.** Materials and devices that can be used to protect ropes or webbing from sharp or abrasive edges, fall protection measures, dangers associated with sharp or abrasive edges, and methods for negotiation of sharp or abrasive edges.

**(B) Requisite Skills.** The ability to select protective devices for rope and webbing, provide personnel fall protection while working near edges, secure edge protection, and secure ropes or webbing in a specific location.

**5.2.9\* Construct a belay system, given life safety rope, anchor systems, PPE, and rope rescue equipment, so that the system is capable of arresting a fall, a fall will not result in system failure, the system is not loaded unless actuated, actuation of the system will not injure or otherwise incapacitate the belayer, the belayer is not rigged into the equipment components of the system, and the system is suitable to the site and is connected to an anchor system and the load.**

**(A) Requisite Knowledge.** Principles of belay systems, capabilities and limitations of various belay devices, application of knots, rigging principles, and system safety check procedures.

**(B) Requisite Skills.** The ability to select a system, tie knots, perform rigging, attach to anchor system and load, don and use task-specific PPE, and perform a system safety check

**5.2.10 Operate a belay system during a lowering or raising operation, given an operating lowering or raising mechanical advantage system, a specified minimum travel distance for the load, a belay system, and a load, so that the potential fall factor is minimized, the belay device system is not actuated during operation of the primary rope rescue system, the belay system is prepared for actuation at all times during the operation, the belayer is attentive at all times during the operation, the load's position is continually monitored, and the**

**belayer moves rope through the belay device as designed.**

(A) **Requisite Knowledge.** Application and use of belay devices, proper operation of belay systems in conjunction with normal lowering and raising operations, and operational commands.

(B) **Requisite Skills.** The ability to tend a belay system as designed, tie approved knots, assess system effectiveness, properly attach a belay line to a belay device, don and use task-specific PPE, perform a system safety check, and manage and communicate belay system status effectively.

**5.2.11\* Belay a falling load in a high-angle environment, given a belay system and a dropped load, so that the belay line is not taut until the load is falling, the belay device is actuated when the load falls, the fall is arrested in a manner that minimizes the force transmitted to the load, the belayer utilizes the belay system as designed, and the belayer is not injured or otherwise incapacitated during actuation of the belay system.**

(A) **Requisite Knowledge.** Application and use of belay devices, effective emergency operation of belay devices to arrest falls, use of PPE, and operating procedures.

(B) **Requisite Skills.** The ability to operate a belay system as designed, tie approved knots, use task-specific PPE, recognize and arrest a falling load, and communicate belay system actuation.

**5.2.12 Construct a fixed rope system, given an anchor system, a life safety rope, and rope rescue equipment, so that the system constructed can accommodate the load, is efficient, and is connected to an anchor system and the load, and a system safety check is performed and the results meet the incident requirements for descending or ascending operations.**

(A) **Requisite Knowledge.** Knot selection, calculating expected loads, incident evaluation operations as related to interference concerns and setup, rigging principles, system safety check procedures, and methods of evaluating system components for compromised integrity.

**(B) Requisite Skills.** The ability to select effective knots, calculate expected loads, use rigging principles, evaluate incident operations as related to interference concerns and setup, perform a system safety check, and evaluate system components for compromised integrity.

**5.2.13\* Ascend a fixed rope in a high-angle environment, given an anchored fixed rope system, a specified minimum distance for the rescuer, a system to allow ascent of a fixed rope, a structure, a belay system, a life safety harness worn by the person ascending, and PPE, so that the person ascending is secured to the fixed rope in a manner that will not allow him or her to fall; the person ascending is attached to the rope by means of an ascent control device(s) with at least two points of contact; injury to the person ascending is minimized; the person ascending can stop at any point on the fixed rope and rest suspended by his or her harness; the system will not be stressed to the point of failure; the person ascending can convert his or her ascending system to a descending system; obstacles are negotiated; the system is suitable for the site; and the objective is reached.**

**(A) Requisite Knowledge.** Task-specific selection criteria for life safety harnesses and systems for ascending a fixed rope, PPE selection criteria, design and intended purpose of ascent control devices utilized, rigging principles, techniques for high-angle environments, converting ascending systems to descending systems, and common hazards posed by maneuvering and harnessing.

**(B) Requisite Skills.** The ability to select and use rescuer harness, a system for ascending a fixed rope, and PPE for common environments; attach the life safety harness to the rope rescue system; configure ascent control devices to form a system for ascending a fixed rope; make connections to the ascending system; maneuver around existing environment and system-specific obstacles; convert the ascending system to a descending system while suspended from the fixed rope; and evaluate surroundings for potential hazards.

**5.2.14\*** Descend a fixed rope in a high-angle environment, given an anchored fixed-rope system, a specified minimum travel distance for the rescuer, a system to allow descent of a fixed rope, a belay system, a life safety harness worn by the person descending, and PPE, so that the person descending is attached to the fixed rope in a manner that will not allow him or her to fall; the person descending is attached to the rope by means of a descent control device; the speed of descent is controlled; injury to the person descending is minimized; the person descending can stop at any point on the fixed rope and rest suspended by his or her harness; the system will not be stressed to the point of failure; the system is suitable for the site; and the objective is reached.

(A) **Requisite Knowledge.** Task-specific selection criteria for life safety harnesses and systems for descending a fixed rope; PPE selection criteria; design, intended purpose, and operation of descent control devices utilized; safe rigging principles; techniques for high-angle environments; and common hazards posed by maneuvering and harnessing.

(B) **Requisite Skills.** The ability to select and use rescuer harness, a system for descending a fixed rope, and PPE for common environments; attach the life safety harness to the rope rescue system; make attachment of the descent control device to the rope and life safety harness; operate the descent control device; maneuver around existing environment and system-specific obstacles; and evaluate surroundings for potential hazards.

**5.2.15** Demonstrate the ability to escape from a jammed or malfunctioning device during a fixed rope descent in a high-angle environment, given an anchored fixed-rope system with a simulated malfunctioning descent control device, a system to allow escape from the malfunctioning device, a belay system, a life safety harness worn by the person descending, and PPE, so that the person descending is attached to the fixed rope in a manner that will not allow him or her to fall; the person descending is attached to the rope by means of a descent control device; the means for escape will allow the rescuer to escape either upward or downward from the malfunctioning descent control device; injury

**potential to the rescuer is minimized; the system will not be stressed to the point of failure; the system is suitable for the site; and the objective is reached.**

**(A) Requisite Knowledge.** Task-specific selection criteria for escape equipment and methods used for escape from a malfunctioning descent control device; PPE selection criteria; design, intended purpose, and operation of escape systems utilized; safe rigging principles; techniques for high-angle environments; and common hazards posed by malfunctioning descent control devices.

**(B) Requisite Skills.** The ability to select and use rescuer harness, a system for escaping a malfunctioning descent control device, and PPE for common environments; attach the life safety harness to the rope rescue system; make attachment of the descent control device to the rope and life safety harness; attach and operate the escape system to remove the rescuer from the malfunctioning descent control device while maintaining patent attachment to the fixed rope and belay; use the escape system to maneuver upward or downward from the malfunctioning descent control device; and evaluate surroundings for potential hazards.

**5.2.16 Construct a lowering system, given an anchor system, life safety rope(s), descent control device, and auxiliary rope rescue equipment, so that the system can accommodate the load, is efficient, is capable of controlling the descent, is capable of holding the load in place or lowering with minimal effort over the required distance, and is connected to an anchor system and the load.**

**(A) Requisite Knowledge.** Capabilities and limitations of various descent control devices, capabilities and limitations of various lowering systems, application of knots, rigging principles, and system safety check procedures.

**(B) Requisite Skills.** The ability to tie knots; perform rigging; attach to descent control device, anchor system, and load; and perform a system safety check.

**5.2.17\* Direct a lowering operation in a high-angle environment, given rescue personnel, an established lowering system, a specified minimum travel distance for the load, and a load to be moved, so that the movement is controlled, the load can be held in place**



**when needed, operating methods do not stress the system to the point of failure, rope commands are used to direct the operation, and potential problems are identified, communicated, and managed.**

**(A) Requisite Knowledge.** Application and use of descent control devices, capabilities and limitations of various lowering systems in a high-angle environment, operation of lowering systems in a high-angle environment, personnel assignments, and operational commands.

**(B) Requisite Skills.** The ability to direct personnel, use operational commands, analyze system efficiency, manage movement of the load in a high-angle environment, identify safety concerns in a high-angle environment, and perform a system safety check.

**5.2.18 Construct a simple rope mechanical advantage system, given life safety rope, carabiners, pulleys, rope grab devices, and auxiliary rope rescue equipment, so that the system constructed can accommodate the load, is efficient, and is connected to an anchor system and the load.**

**(A) Requisite Knowledge.** Principles of mechanical advantage, capabilities and limitations of various simple rope mechanical advantage systems, application of knots, rigging principles, and system safety check procedures.

**(B) Requisite Skills.** The ability to select rope and equipment, tie knots, choose and rig systems, attach the mechanical advantage system to the anchor system and load, and perform a system safety check.

**5.2.19\* Direct a team in the operation of a simple rope mechanical advantage system in a high-angle raising operation, given rescue personnel, an established rope rescue system incorporating a simple rope mechanical advantage system, a specified minimum travel distance for the load, a load to be moved, and an anchor system, so that the movement is controlled, a reset is accomplished, the load can be held in place when needed, operating methods do not stress the system to the point of failure, commands are used to direct the operation, and potential problems are identified,**

**communicated, and managed.**

**(A) Requisite Knowledge.** Principles of mechanical advantage, capabilities and limitations of various simple rope mechanical advantage systems and high-angle raising operations, correct operation of simple rope mechanical advantage systems, personnel assignments, and operational commands.

**(B) Requisite Skills.** The ability to direct personnel effectively, use operational commands, analyze system efficiency, identify safety concerns, and perform a system safety check.

**5.2.20 Construct a compound rope mechanical advantage system, given a load, an anchor system, life safety rope, carabiners, pulleys, rope grab devices, and rope rescue equipment, so that the system constructed accommodates the load and reduces the force required to lift the load, operational interference is factored and minimized, the system is efficient, a system safety check is completed, and the system is connected to an anchor system and the load.**

**(A) Requisite Knowledge.** Determination of incident needs as related to choosing compound rope systems, the elements of efficient design for compound rope systems, knot selection, methods for reducing excessive force to system components, evaluation of incident operations as related to interference concerns and setups, rope commands, rigging principles, system safety check procedures, and methods of evaluating system components for compromised integrity.

**(B) Requisite Skills.** The ability to determine incident needs as related to choosing compound rope systems, select effective knots, calculate expected loads, evaluate incident operations as related to interference concerns and setups, perform a system safety check, and evaluate system components for compromised integrity.

**5.2.21\* Direct the operation of a compound rope mechanical advantage system in a high-angle environment, given a rope rescue system incorporating a compound rope mechanical advantage system and a load to be moved, and a specified minimum travel**

**distance for the load, so that a system safety check is performed; a reset is accomplished, and the movement is controlled; the load can be held in place when needed; operating methods do not stress the system to the point of failure; operational commands are clearly communicated; and potential problems are identified, communicated, and managed.**

**(A) Requisite Knowledge.** Methods to determine incident needs, types of interference concerns, rope commands, system safety check protocol, procedures for continued evaluation of system components for compromised integrity, common personnel assignments and duties, common and critical commands, methods for controlling a load's movement, system stress issues during operations, and management methods for common problems.

**(B) Requisite Skills.** The ability to determine incident needs, evaluate incident operations as related to interference concerns, complete a system safety check, continually evaluate system components for compromised integrity, direct personnel effectively, communicate commands, analyze system efficiency, manage load movement, and identify concerns.

**5.2.22 Negotiate an edge while attached to a rope rescue system during a high-angle lowering and raising operation, given a rope rescue system, a specified minimum travel distance for the rescuer, life safety harnesses, an edge to negotiate during the lower and raise, and specialized equipment necessary for the environment, so that risk to the rescuer is minimized; the means of attachment to the rope rescue system is secure; and all projections and edges are negotiated while minimizing risks to the rescuer or equipment.**

**(A) Requisite Knowledge.** Techniques and practices for negotiating existing projections and edges along the travel path while suspended from operating rope-based lowering and raising mechanical advantage systems and common hazards imposed by those projections and edges.

**(B) Requisite Skills.** The ability to select and use rescuer harness and PPE for common environments, attach the life safety harness to the rope rescue system, maneuver across existing projections and an edge along the travel path, and evaluate surroundings for potential hazards.

**5.2.23 Access, assess, stabilize, package, and transfer victims, given diagnostic and packaging equipment and an actual or simulated EMS agency, so that rescuers and victim are protected from hazards, the victim's injuries or illnesses are managed, and the victim is delivered to the appropriate EMS provider with information regarding the history of the rescue activity and victim's condition.**

**(A) Requisite Knowledge.** Victim and scene assessment methods; victim treatment, immobilization, and packaging methods; and medical information management and communication methods.

**(B) Requisite Skills.** The ability to use victim immobilization, packaging, and treatment methods appropriate to the situation and provide victim transfer reports, both verbally and in written format.

**5.2.24 Direct a litter-lowering and litter-raising operation in a low-angle environment, given rescue personnel, litter tender(s), an established lowering/mechanical advantage system, a specified minimum travel distance for the load and a victim packaged in a litter to be moved, so that the litter is attached to the lowering/raising and belay systems, movement is controlled; litter tender(s) are used to manage the litter during the lower and raise, the litter can be held in place when needed; operating methods do not stress the system to the point of failure; rope commands are used to direct the operation; and potential problems are identified, communicated, and managed.**

**(A) Requisite Knowledge.** Application and use of lowering and mechanical advantage system in the low-angle environment, capabilities and limitations of various lowering and mechanical advantage systems in a low-angle

environment, litter tender functions and limitations in the low-angle environment, management of a litter in a low-angle environment during raises and lowers, personnel assignments, and operational commands.

**(B) Requisite Skills.** The ability to direct personnel, use operational commands, analyze system efficiency, manage movement of the litter in a high-angle environment, identify safety concerns in a high-angle litter operation, and perform a system safety check.

**5.2.25\* Operate as a litter tender in a low-angle lowering or raising operation, given a rope rescue system, a specified minimum travel distance for the litter tender, life safety harnesses, litters, bridles, and specialized equipment necessary for the environment, so that risks to victims and rescuers are minimized; the means of attachment to the rope rescue system is secure; and the terrain is negotiated while minimizing risks to equipment or persons.**

**(A) Requisite Knowledge.** Task-specific selection criteria for life safety harnesses, PPE selection criteria, variations in litter design and intended purpose, low-angle litter attachment principles, techniques and practices for low-angle environments, and common hazards imposed by the terrain.

**(B) Requisite Skills.** The ability to select and use rescuer harness and PPE for common environments, attach the life safety harness to the rope rescue system, maneuver across the terrain, manage the litter while suspended from the rope rescue system, and evaluate surroundings for potential hazards.

**5.2.26\* Direct a litter-lowering or litter-raising operation in a high-angle environment, given rescue personnel, an established lowering/mechanical advantage system, a specified minimum travel distance for the load, a victim packaged in a litter to be moved, and a means for negotiating edges and projections along the travel path, so that the litter is attached to the lowering/raising and belay systems, an edge is negotiated during a lower and raise; tag lines are used to manage the litter during the lower and raise; the litter can be held in place when needed; operating methods do not**

**stress the system to the point of failure; rope commands are used to direct the operation; and potential problems are identified, communicated, and managed.**

**(A) Requisite Knowledge.** Application and use of lowering and mechanical advantage system in the high-angle environment, capabilities and limitations of various lowering and mechanical advantage systems in a high-angle environment, use of tag lines for management of litter position during high-angle lowers and raises, personnel assignments, and operational commands.

**(B) Requisite Skills.** The ability to direct personnel, use operational commands, analyze system efficiency, manage movement of the litter in a low-angle environment, identify safety concerns in a low-angle environment, and perform a system safety check.

**5.2.27\* Terminate a technical rescue operation, given an incident scenario, assigned resources, and site safety data, so that rescuer risk and site safety are managed, scene security is maintained and custody transferred to a responsible party, personnel and resources are returned to a state of readiness, recordkeeping and documentation occur, and post event analysis is conducted.**

**(A) Requisite Knowledge.** Incident Command functions and resources, hazard identification and risk management strategies, logistics and resource management, personnel accountability systems, and AHJ-specific procedures or protocols related to personnel rehab.

**(B) Requisite Skills.** Hazard recognition, risk analysis, use of site control equipment and methods, use of data collection and management systems, and use of asset and personnel tracking systems.