

A publication of the
National Wildfire
Coordinating Group



Interagency Helicopter Rappel Guide

PMS 511

JULY 2016



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Interagency Helicopter Rappel Guide

JULY 2016
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This product is available electronically at: <http://www.nwcg.gov/publications/511>.

Previous editions: 2011, 2013

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CHAPTER 1 –INTRODUCTION

Purpose

The Interagency Helicopter Rappel Guide (PMS xxx) establishes NWCG standards for helicopter rappel and helicopter cargo letdown operations. The Interagency Helicopter Rappel Guide constitutes operational policy for those federal and state agencies who have adopted it as such through their respective directives systems.

The Interagency Helicopter Rappel Guide is a web-based document; published hardcopies are not available. The guide is available online at: http://www.nifc.gov/aviation/av_reference.html

The NWCG National Interagency Aviation Committee (NIAC), Interagency Helicopter Rappel Unit, is responsible for the maintenance of the Interagency Helicopter Rappel Guide and intends to keep it continuously updated. Updates will be communicated through established command and communications channels. However, end users are ultimately responsible for ensuring that they are accessing and utilizing the most current version of this publication.

Please direct comments or questions related to the Interagency Helicopter Rappel Guide to:

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Authority

Participating agency aviation manuals contain the authority for implementing this guide.

The Interagency Helicopter Rappel Guide (IHRG) is published with the concurrence and cooperation of the United States Department of Agriculture Forest Service (USDA FS), certain bureaus and offices within the United States Department of Interior (US DOI), and various state and local agencies.

Objectives

The objective of the Interagency Helicopter Rappel Guide (PMS 511) is to establish NWCG standards for helicopter rappel and helicopter cargo letdown operations.

Policies

Operations and procedures must comply with agency aviation policy, procurement documents, Interagency Helicopter Rappel Guide, and user-specific operations plans.

Agencies having specific missions with technical, equipment or procedural requirements not addressed in this guide will develop procedures specific to the need of the agency/bureau. These procedures must be approved by the individual agency/bureau. See appendices for agency specific operations plans/guides.

1 NOTE: It is essential that the user understand the use of language in the IHRG regarding
2 mandatory or optional compliance. The use of verbs “must” and “will” conveys required
3 compliance, the use of “ought” and “should” conveys required compliance except for
4 documented and justifiable reasons; and use of “may” and “can” conveys optional compliance.

5 **Risk Management**

6 All flight operations have a certain inherent degree of risk associated with them. Training and the
7 judicious use of available resources, including helicopters, can help reduce the degree of risk
8 associated with a particular mission. Effective risk management during operations will contribute
9 to successful mission outcomes. Risk assessment is the analysis of physical hazards and
10 operational procedures used to arrive at a GO/NO-GO decision.

11 **Responsibility**

12 An Interagency Helicopter Rappel Unit (IHRU) has been established; its members include
13 management representatives and specialists presently involved in the rappel and cargo letdown
14 programs. The responsibility of the Unit is to exchange ideas and techniques with all involved
15 throughout the program. Any revisions to the IHRG must be addressed to the IHRU. The IHRU
16 must maintain and approve operational procedures and equipment for this guide. The
17 Interagency Helicopter Rappel Guide will be revised every three (3) years or more frequently
18 if necessary.

19 **Utilization**

20 **Missions**

21 Rappelling and cargo letdown expand the capability of the helicopter and crew and may enhance
22 the overall safety, efficiency and effectiveness of an operation. These capabilities should be
23 considered when formulating response plans for a bureau, region, forest, park, etc.

24 **Response**

25 Initial response to an incident can be expedited when travel by conventional methods is time
26 intensive and arduous. Rappelling can be utilized under a variety of terrain conditions which
27 typically limit other access.

CHAPTER 2 –RAPPEL QUALIFICATIONS

NOTE: The certifying official at each level may require additional training of pilot, rappeller, spotter, or check spotter.

Pilot

Pilots must meet the requirements of the contracting document and must receive training on rappel operations and equipment. Pilots will be evaluated and approved by an agency Helicopter Inspector Pilot for long-line, rappel, and cargo letdown in accordance with the Interagency Helicopter Pilot Practical Test Standards. (IHPPTS)

Rappel Check Spotter

NOTE: Check spotters may suspend spotter or rappeller qualifications pending review at the next higher certifying level. Revocations of spotter/rappeller qualification will be determined at the appropriate State/Regional office.

Rappel Check Spotter Duties

- A. Initial spotter evaluation and certification.
- B. Monitor and provide oversight for rappel training.
- C. Monitor operations for standardization purposes

Rappel Check Spotter Position/Prerequisites

- A. Must have been a qualified spotter for three (3) seasons.
- B. Must have demonstrated ability as an instructor and assisted in training at least two (2) spotters.

Rappel Check Spotter Designation

Designation of Regional Check Spotters must be approved for model specific platforms annually by their Regional Helicopter Operations Specialist for Forest Service; by the State Aviation Manager for BLM; by the Area Manager for Bureau of Indian Affairs (BIA); or by the Regional Aviation Manager for National Park Service (NPS) in the form of a designation letter. Other agencies and bureaus not listed above must annually approve check spotters for their operations at a level in their organization commensurate with the positions above.

Rappel Check Spotter Proficiency

Each check spotter must maintain proficiency as a rappel spotter (see [Rappel Spotter Training](#)).

Rappel Check Spotter Annual Certification

Each check spotter must maintain currency as a rappel spotter (see [Rappel Spotter Annual Certification](#)).

Rappel Check Spotter Model Specific

If conducting an evaluation from a new platform or one they have never been qualified in, the check spotter must complete model specific spotter training prior to evaluating the spotter candidate. If previously qualified in the make and model they are doing the evaluation in but not current, the check spotter must complete all of the items required for model specific training EXCEPT the three (3) live rappels.

Rappel Spotter

Rappel Spotter Duties

- A. Safely deploy rappellers according to policy outlined in this guide.
- B. Ensure only standard procedures and equipment found in this guide are used and followed.
- C. Provide instruction and certification for initial rappeller candidates and spotter trainees.

Rappel Spotter Prerequisites

- A. Rappel Spotter Trainee Prerequisites
 1. One (1) fire season (90 days) of helicopter rappelling.
 2. Qualified as Helicopter Manager.
 3. Completion of 20 live rappels, with four (4) of those being operational.
 4. Other recommended training, Basic Supervision for First Line Supervisors, M-410 or equivalent, Contracting Officer Representative Level I, CRM, Risk Awareness (A-205) Ride along on rappel and or cargo missions.
- B. Rappel Spotter Certification Prerequisites
 1. Meet the training, experience, and certification requirements for a helicopter manager as stated in their agency policy.
 2. Currently qualified Incident Commander Type 4.
 3. Assist in instruction of rappel training.
 4. For a new program initiated within a bureau or agency, it will be the responsibility of the certifying officials and local managers to designate initial spotter trainees.

Rappel Spotter Training

Complete Helicopter Rappel Spotter Training Qualification Record and pass a final evaluation administered by a qualified check spotter.

The spotter trainee will be recommended for certification by a check spotter, reviewed by Regional Helicopter Operations Specialist for Forest Service; by the State Aviation Manager for BLM; by the Area Manager for BIA; or by the Regional Aviation Manager for NPS and certified by the local unit official. Other agencies and bureaus not listed above must approve spotters for their operations at a level in their organization commensurate with the positions above.

Rappel Spotter Annual Certification

Each year, to re-qualify, a spotter must:

- A. Meet fitness standards as outlined in prerequisites for rappeller candidates.
- B. Attend and/or instructor at an annual helicopter rappel training. This will include re-qualifying as a rappeller.
- C. Complete deployment of three (3) typically configured loads of rappellers with cargo from helicopter to the satisfaction of a qualified check spotter with experience in make and model being used. Typical terrain and a full complement of initial attack cargo must be utilized for at least one (1) of the three (3) loads.

Rappel Spotter Proficiency

Each spotter will make at least one (1) error-free helicopter or simulator (See Rappel Platform Training Simulator) spot in any 14 consecutive days. If a simulator spot is used to maintain proficiency during any 14 days period, a helicopter spot must be completed during the next 14-day cycle. If proficiency is lost, an error-free simulator or mock-up and helicopter proficiency spot must be completed prior to any operational spots. If two (2) proficiency spot periods pass (28 days), a qualified and current spotter with experience in make and model being used will insure the spotter is capable of performing the spot through the use of mock-ups or training spots.

Rappel Spotter Model Specific Training and Certification

Spotter must be evaluated in the make and model of helicopter that will be utilized. Spotter evaluators must be qualified and current in the make and model of helicopter being utilized.

The spotter will be briefed on and be familiar with:

- A. Rappel anchor and hard points for the specific model.
- B. Seating arrangement for rappellers and spotters.
- C. Rappel cargo placement/ location and deployment sequence and method.
- D. Exit procedures, sequences, and emergency procedures.
- E. Weight and Balance (including Center of Gravity Calculations) for the specific make and model of aircraft.

The spotter must, to the satisfaction of the evaluating spotter or check spotter:

- A. Demonstrate proficiency using mock-ups in the helicopter model to be used including:
 1. Preparing helicopter for rappel mission.
 2. Deploying both rappellers and cargo.
- B. Perform a minimum of three (3) training rappel cycles (one low, one medium, and one high, (see definitions Appendix I). Typical terrain and a full complement of initial attack cargo must be utilized for at least one (1) of the three (3) loads.

Rappeller

Rappeller Prerequisites:

Rappeller trainees, must meet the requirements for a Helicopter Crewmember Trainee as stated in their agency policy.

Rappeller Initial Training

All components of the rappel training must be completed in accordance with the agency/bureau approved Rappeller Training Syllabus to include the following:

A. Ground Training:

1. Rappeller trainee will complete ground training to include both ground and elevated platform training. Helicopter Mock-Up:
2. Rappeller Trainees will demonstrate a rappel sequence and emergency procedures from a helicopter on the ground as initiated by the spotter, until proficiency is demonstrated from all seating positions.

B. Helicopter Rappels:

1. Rappeller Trainees must complete a minimum of eight (8) live helicopter rappels without procedural error.

Rappeller Performance Based Requirements

To be qualified as a rappeller an individual must perform the following performance based rappel procedures from an elevated platform with the full weight of rope (or equivalent) suspended below the rappeller:

- A. Perform three (3) simulator exits.
- B. Perform three (3) simulator re-entries from the pre-rappel position on the skid/step.
- C. Untie three (3) knots during simulator rappels
- D. Complete three (3) emergency tie-off (ETO) procedures

Rappeller Proficiency

Each rappeller will make at least one (1) error-free helicopter rappel in any 14 consecutive days. If proficiency is lost, an error-free simulator or mock-up and helicopter proficiency rappel must be completed prior to any operational rappels. If two (2) proficiency rappel periods pass (28 days), the spotter will insure the rappeller is capable of performing the rappel through the use of mock-ups and training rappels.

NOTE: Proficiency for multiple aircraft type: If certified in multiple aircraft models, proficiency may be maintained from one model to another with mock-up and safety briefing review. The 1 in 14 day proficiency rappel must still occur from at least one model.

Mid-Season Error

During the operational season if a rappeller commits an error during a live rappel (proficiency or operational) the spotter will determine the severity of the error and take action in accordance with agency guidelines.

Annual Certification

To be certified as a rappeller, an individual who has qualified the previous year will:

- A. Meet fitness standards as outlined in prerequisites for a rappeller candidate.
- B. Attend basic helicopter safety refresher.
- C. Participate in an equipment and procedures review.
- D. Demonstrate knowledge of rappel principles.
- E. Complete the performance based requirements outlined above in 2.4.3.
- F. A rappeller will perform helicopter mock-up rappels and re-entry procedures as initiated by the spotter, until proficiency is demonstrated from all seating positions.
- G. Complete three (3) helicopter rappels without procedural error. Typical terrain must be utilized for at least one (1) of the three (3) rappels.
- H. Identify emergency situations and perform corrective actions without procedural error.

Rappeller Model Specific Training and Certification

A rappeller must be evaluated by a qualified spotter in each make and model of helicopter that will be utilized as an operating platform. A qualified spotter must be current in the make and model of helicopter being utilized.

- A. The rappeller will be briefed on and familiar with:
 1. Rappel anchor and hard points for the specific model.
 2. Seating arrangement for rappellers and spotters.
 3. Rappel cargo placement/ location and deployment sequence and method.
 4. Exit procedures, sequences, and emergency procedures.
- B. The rappeller will, to the satisfaction of the qualified spotter:
- C. Demonstrate proficiency as a rappeller using mock-ups in the helicopter model to be utilized.
- D. Perform a minimum of three (3) training rappel cycles (one low, one medium, and one high) with a full load of rappellers.

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CHAPTER 3 –RAPPEL EQUIPMENT

Equipment to be used in rappel operations will:

- A. Be certified by the National Fire Protection Association (NFPA), and/or
- B. Meet a standard set by the American National Standards Institute (ANSI), and/or
- C. Be approved by the Federal Aviation Administration (FAA), and/or
- D. Be identified on the Missoula Technology & Development Center (MTDC) Wildland Fire Helicopter Rappel website:
<http://www.fs.fed.us/t-d/programs/fire/rappel/equip/index.htm>

Alteration or modification of rappel equipment listed in this guide must have agency approval. Agencies having specific missions with technical equipment requirements which do not follow this guide must operate according to their agency approvals. (See Policies)

All equipment will be monitored during use for wear and stress related damage. Shortening the service life or removal from service of a special component may be done, as necessary, in order to maintain an adequate margin of safety in the program.

Rappel Platform Training Simulator

A rappel platform simulating the cabin area, seating positions, and skid heights of the helicopter utilized should be readily available to each rappel base, preferably at the rappel base. The purpose of the platform is to train rappellers and maintain proficiency in exit and emergency procedures.

Requirements for the simulator are:

- A. A minimum height of 20 feet above ground level. Rappeller experience will be greatly enhanced from a higher platform.
- B. Simulator should approximate the helicopter to be utilized as near as possible, i.e., cabin configuration, seating positions, skid height.
- C. The tower, stairs, platform, handrails, rappel anchor, and spotter tether attachment point must meet agency and Occupational Safety and Health Administration (OSHA) requirements for construction (Walking-working surfaces/1910).
- D. The rappel anchor and spotter tether anchor must meet OSHA standards for fall-arrest (Fall protection systems criteria and practices/1926.502, Safety belts, lifelines, and lanyards/1926.104).
- E. Rappel tower will be inspected annually and daily before any use. Program manager may delegate inspections. Example inspection forms can be found in Appendix F.

Note: See MTDC Tech. Tip 0857–2354–MTDC for more information on tower design and construction.

1 **Individual Rappeller/Spotter Equipment**

2 **See agency/bureau specific operations guides/plans for applicable approved rappel**
3 **equipment and standards.**

CHAPTER 4 –DOCUMENTS

All rappel logs are official documents and will be kept electronically (or on the forms contained in Appendix F). Rappel logs will be archived by the local unit for a minimum of seven (7) years

NOTE: All electronic records need to be backed up to an external drive or server. A hard copy of electronic record will be printed at least once annually.

NOTE: All rappel equipment that is removed from service (retired) must be destroyed to the point that it can no longer be utilized for its intended purpose. Any equipment that requires documentation must show retirement date on the "Equipment Log" when removed from service. All rappel equipment retired remains government property and should be handled according to policy.

Training, Certification, and Proficiency

For fire operations, copies of certifying and recertifying documentation will be maintained in individual permanent records and forwarded to the Incident Qualifications Certification Systems (IQCS) Account Manager.

Rappeller

The rappel crewmember training record will document each individual step in the training. Competency at each level of the training must be demonstrated by the trainee before the spotter will permit advancement to the next step. Each rappeller will maintain a record of training, proficiency and operational rappels. See Appendix F.

Spotter (Rappel and Cargo Letdown)

The Helicopter Rappel or Cargo letdown Spotter Qualification Record will document each individual step in the training. Competency at each level of the training must be demonstrated by the trainee before the spotter will permit advancement to the next step. Each spotter will maintain a record of training, proficiency and operational spots of rappellers and cargo. See Appendix F.

Rappel Unit Log

All rappels must be entered into a rappel unit log. Unit logs must be readily available for review. Information will be documented on Rappel Unit Log in Appendix F or documented electronically.

The spotter or rappel base manager will ensure information is entered into the logs in a timely manner and the logs are kept current.

Equipment Logs

All equipment requiring documentation will be assigned a unique identification number. The number will be retired with the piece of equipment. The following equipment must have a log assigned. See Appendix F.

Rope

- A. Documentation must be maintained for all rappel ropes. A log will be maintained from the date of purchase until the rope is removed from service. The rope log must be readily available for review. Each rope must have a unique identification number and be marked at both ends, one end marked "A" and the other end marked "B"
- B. All rope uses must be documented. After inspection, any irregularities will be noted and brought to the attention of the spotter. Documented information will dictate when to retire a rope from service. Use Rappel Rope Log in Appendix F or electronic equivalent.

Descent Device

Use and inspection of any descent device must be documented on a log. Each descent device must have a unique identification number. After each rappel, the descent device will be inspected for wear or deformity and remarks noted. When a descent device is retired, it must be destroyed to eliminate further use and documented

Rappeller / Spotter Harness

Harness will be inspected annually and recorded. Any deficiencies during pre-use inspections and or repairs or component replacement will be noted. The harness log form in Appendix F or electronic equivalent must be used for harness documentation.

Cargo Letdown Line

All cargo letdown line use must be documented. After inspection, any irregularities will be noted. Use the Letdown Line Log from Appendix F or electronic equivalent.

Rappel Tower Anchor

Use and inspection of rappel tower anchors must be documented. Example forms are located in Appendix F. Bases may use other forms, provided the forms provide at a minimum the information listed below.

- A. Date put in service
- B. ID number
- C. Remarks/problems
- D. Type of use (Helicopter or tower)
- E. Inspector's name/date inspected

CHAPTER 5 –RAPPEL OPERATIONS

Operational Responsibilities

The spotter will be responsible for coordinating all rappel activities (pre and post-rappel). Before departure the spotter must consider the operational factors and local unit recommendations that influence departing the base of operations configured or equipped.

Pre-Rappel Briefing

Prior to any rappel mission, the spotter must brief all personnel involved as to the nature of the mission and its location, and provide pertinent information to accomplish the rappel mission. The information should include environmental concerns (weather, wind, terrain landing areas, density altitude, etc.), individual responsibilities and incident specific information. Prior to any rappel operations the pilot and spotter will identify the performance limitations for that aircraft used. These limitations will ensure the performance is in the maximum continuous range. Before replying “Power is Good” during the following sequence, the pilot must ensure these limitations are not exceeded.

NOTE: Weight &Balance (W&B) calculations will be performed for standard rappel configurations and emergency rappel scenarios prior to the commencement of rappel operations each season. The purpose is to ensure the center of gravity (CG) will remain within limits. Because of the dynamic environment of the rappel operation where rappellers and spotters move inside and out of the aircraft in-flight, it may be possible, particularly in light helicopters, to exceed the aircraft’s CG limitations during rappel operations. In cases where it may be possible to exceed a CG limit during normal or emergency situations, W&B calculations will be performed prior to each rappel mission accounting for actual rappeller, spotter, and cargo weights. If a mission specific W&B calculation indicates the CG could be exceeded during any phase of the rappel operation the load configuration must be adjusted or the mission aborted. Calculation documentation must be maintained at base of operations.

Pre-Flight Procedures

Agency Specific Operation Plans at a minimum will address the following items below:

- Aircraft Configuration
- Seating Configuration
- Loading Cargo
- Anchor Inspection
- Rigging Anchor
- Buddy Check
- Rappeller / Spotter Check
- Boarding Sequence
- Rope Security

1 **In-Flight Procedures**

- 2 • Pre-Rappel Sequence
3 • Rappel sequence medium
4 • Rappel sequence light

5 **Post-Rappel**

- 6 • Administrative
7 • Post-rappel debriefing

1

Hand Signals

2

The following standard hand signals must be used:

3

A. Thumbs-Up

4

Used by rappellers and spotters to indicate, "I agree" or "I am O.K".



5

B. Remove Seatbelt

6

Imitate removing lap belt – spotter gives signal to each rappeller.



7

8

C. Move Into Position

9

10

11

Hands clasped at chest level with elbows out - signal given by spotter to rappellers to direct movement to pre-rappel position.



12

13

14

D. Begin Descent

Arm(s) extended with open palms down, sweeping downward motion – signal given by spotter to rappeller(s) directing rappeller(s) to unlock and begin rappel.



1
2
3
4
5

E. Spread Eagle

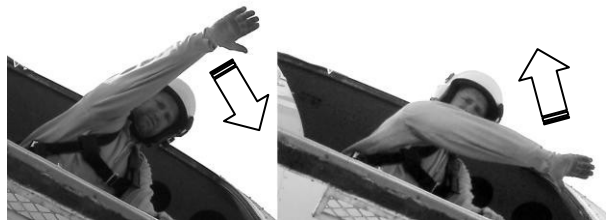
Arms and legs outstretched while looking up to establish eye contact with spotter – signal given by rappeller to spotter to indicate that rappeller has locked-off and further descent is not possible.



6
7
8
9

F. Begin ETO

Horizontal arm wave with outstretched arm – signal given by spotter to rappeller after rappeller has given spread eagle signal – signal indicates that rappeller should tie-off and cut rope below him/her and prepare to be lifted out.



10

11
12
13
14

G. Lift-Out

Upward motion with outstretched arms – signal given by rappeller to spotter to indicate that rope below rappeller has been cut and rappeller is ready to be lifted up. Signal is given until rappeller and rope are raised above all surrounding obstacles.



15

16
17
18
19
20
21

H. Clear to Flyaway

Both arms extended to front of body with palms together signal given by rappeller during lift-out and flyaway indicating that rappeller is clear of obstacles and pilot can begin forward flight.



- 1 I. **Bad Rope**
2 With one arm outstretched, slashing motion across outstretched
3 arm with other arm – signal given by rappeller to spotter to
4 indicate there is something wrong with the rope and spotter
5 should drop it.



- 6 J. **Discontinue Rappel**
7 Slashing motion across throat with one arm – signal given by
8 rappeller to spotter indicating bad rappel site, discontinue
9 rappel.



- 10 K. **Stop, Hold Position**
11 Arm(s) extended toward signal recipient with fist clenched
12 (palm toward recipient) – signal given normally by spotter
13 to rappeller(s) to stop and hold rappeller(s) in position prior
14 to the “begin descent” signal.



- 15 L. **Knot**
16 Finger pointing down the rope – signal by spotter or rappeller
17 indicating a knot in a deployed rope – this signal must be
18 acknowledged by a head nod.

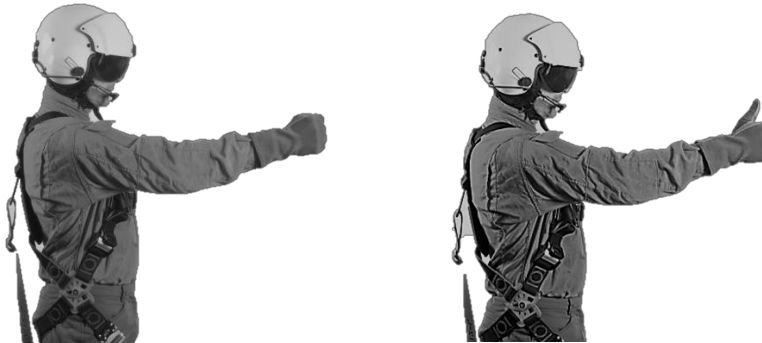


- 1 **M. Return to Seat**
2 Give "Stop, Hold Position" signal [arm(s) extended, fist(s) clenched], then bring fists and
3 elbows together [arms bent 90° and fist(s) in front of body] – signal given by spotter to
4 indicate rappeller(s) should return to seat and buckle seat belt.



5

- 6 **N. Communication Lost**
7 Single clenched fist – spotter will signal to pilot loss of communication with a shoulder
8 tap and presentation of a single clenched fist – When ready to depart, spotter will signal
9 to pilot with a shoulder tap and thumbs-up.



10

CHAPTER 6 –CARGO LETDOWN OPERATIONS

Introduction

"Helicopter cargo letdown" is defined as the deployment of cargo from a hovering helicopter by the means of an approved webbing, descent device, and auxiliary equipment.

Cargo letdown is not a replacement for long-line operations. Exposure and risk assessment must be addressed in the process of deciding which type of helicopter cargo delivery system to use.

Objectives

The intent of this chapter is to develop standardization in training of individual spotters and pilots in a variety of helicopters for the safe and efficient deployment of cargo.

Utilization

Missions

Cargo letdown expands the capability of the helicopter and crew and may enhance the overall safety, efficiency and effectiveness of an operation. This capability should be considered when formulating response plans for a bureau, region, forest, park, etc.

Response

Initial response time to an incident can be expedited when travel by conventional methods is time intensive and arduous. Cargo letdown can be utilized in a variety of terrain conditions which typically limit other access.

Qualifications

Pilot

Cargo Letdown Pilots must meet the Interagency Helicopter Pilot Practical Test Standards and proficiency requirements as a cargo letdown pilot.

Cargo Letdown Check Spotter

A. Requirements and Qualification

1. Must have been a qualified spotter for two (2) years.
2. Must have assisted in training of at least two (2) cargo letdown spotters.

NOTE: New programs will be approved by National Aviation Offices for DOI or Forest Service.

B. Annual Check Spotter Currency

Each cargo letdown check spotter must maintain currency and proficiency as a cargo letdown spotter.

1 C. Designation

2 Designation of check spotters must be approved for model specific platforms annually by
3 the National Rappel Specialist for Forest Service; by the National Aviation Office for
4 BLM; by the Area Manager for BIA; or by the Regional Aviation Manager for NPS in
5 the form of a designation letter. Other agencies and bureaus not listed above will annually
6 approve Check Spotters for their operations at a level in their organization commensurate
7 with the positions above.

8 **NOTE: If currency is lost during the annual qualification period, the check spotter**
9 **must complete the proficiency requirements to remain current.**

10 **Cargo Letdown Spotter**

11 A. Cargo Letdown Spotter Trainee Requirements

12 To be considered for spotter training, the trainee must meet the following requirements:

- 13 • Qualified as Helicopter Manager

14 Other recommended training:

- 15 • Basic Supervision for First Line Supervisors
16 • M-410 or equivalent
17 • Contracting Officer Representative Level I
18 • Crew Resource Management
19 • Risk Management I (A-205)
20 • Ride along on rappel and or cargo missions

21 B. Cargo Letdown Spotter Training and Qualification

22 Cargo letdown spotter trainees must complete the following requirements to be
23 considered for spotter certification.

- 24 1. Meet the training, experience and certification requirements for a Helicopter
25 Manager as stated in their agency policy.
26 2. Demonstrate ability to rig helicopter and gear for cargo letdown operations.
27 3. Complete five (5) simulated deployments without procedural error. Perform
28 all of the duties of the spotter from the initial call through return to base.
29 4. Under the supervision of a qualified spotter, must spot ten (10) loads from
30 the helicopter, five (5) of which are in typical terrain.
31 5. Show principles of inspection, care, maintenance, and repair of cargo
32 letdown equipment.
33 6. Identify the spotter's duties and responsibilities.
34 7. Pass a final evaluation administered by a qualified cargo letdown or rappel
35 check spotter.
36

- 1 8. The spotter trainee will be recommended for certification by a check spotter,
2 reviewed by Regional Helicopter Operations Specialist for Forest Service;
3 by the State Aviation Manager for BLM; by the Area Manager for BIA; or
4 by the Regional Aviation Manager for NPS and certified by the local unit
5 official. Other agencies and bureaus not listed above will approve spotters
6 for their operations at a level in their organization commensurate with the
7 positions above.

8 **NOTE: These are minimum requirements and the certifying official may request**
9 **additional training due to the complexity of the expected operations, or an**
10 **individual's needs for training in specific areas. If an individual cannot meet all of**
11 **the above minimum requirements, the certifying official will not approve the**
12 **spotter for cargo letdown operations.**

13 C. Spotter Proficiency

14 Individuals must make at least one cargo letdown spot every 14 days. If a
15 helicopter letdown is not completed within 14 days, the spotter may use a
16 simulation. If a simulation is used to maintain proficiency during the 14 day
17 period, an airborne deployment must be done in the following 14 day period.

18 D. Annual Spotter Certification

- 19 1. Must attend and successfully complete annual cargo letdown training.
20 2. Simulate a deployment without error.
21 3. Complete deployment of three loads of cargo without procedural error.
22 4. Demonstrate knowledge of standard procedures of cargo letdown.
23 5. Documentation per agency requirements.

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CHAPTER 7 –HELICOPTER EMERGENCY PROCEDURES

In-Flight Emergencies

NOTE: There are many circumstances that can constitute an in-flight emergency. Pilots, spotters and rappellers must understand that the consequences of an emergency change significantly once rappellers are committed to the rope. It is extremely important for a pilot and spotter to have a firm understanding of the situation and discuss up front as many circumstances as possible prior to operations. In the midst of an emergency is NOT the appropriate time and place to discover that, “What you heard is not what I meant.” This should be accomplished through briefings and on-ground emergency exercises.

A. Emergency Communications and Categories

In the rappel environment, clear and concise communication culminating in a coordinated response between the spotter and pilot is critical to a successful outcome.

1. During rappel operations, there are two basic categories of in-flight emergencies:
 - a. Those that require an immediate response (Land as Soon as Possible)
 - b. Those that permit a delayed response (Land as Soon as Practicable)

B. Immediate Response Emergencies (Land as Soon as Possible)

There are a limited number of emergencies that fall into this category. In the rappel environment these emergencies are characterized by a need to depart the rappel hover without delay. In this type of emergency, the possibility of affecting a positive outcome will be impacted by the ability to jettison ropes quickly.

1. Examples of Possible Emergencies:
 - a. Engine Failure
 - b. Tail Rotor Failure
 - c. Hard-over of controls
 - d. Engine over speed/driveshaft failure
 - e. Compressor Stall (Single engine)
 - f. Governor Failure Low Side (Twin Engine)
 - g. Governor Failure (Single Engine)

C. Delayed Response Emergencies (Land as Soon as Practical)

There are any numbers of events, typically mechanical or environmental, that fall into this category. In the rappel environment, these events are characterized by an ability to delay the departure from the rappel hover. In events of this nature there is typically time to complete a rappel or cargo deployment prior to departing the hover.

1 Examples of Possible Problems:

- 2 a. Transmission/Engine/Tail Rotor Gear Box Chip Light
- 3 b. Hydraulic Failure
- 4 c. Oil temp/Oil pressure light
- 5 d. Hydraulic temp or pressure light
- 6 e. Unknown Master Caution
- 7 f. Fire light (require pilot check of controls and for fire on board)
- 8 g. Stuck pedal
- 9 h. Fuel control or governor failure high side (Twin Engine)
- 10 i. Electrical failure
- 11 j. Fuel/air filter clog
- 12 k. Fuel pump failure
- 13 l. Decrease in rotor RPM
- 14 m. Compressor Stall (twin engine)
- 15 n. Severe up or down drafts

16 **NOTE: These procedures note delayed responses and may not require immediate**
17 **action other than communication and monitoring – response actions can vary in**
18 **time from seconds to minutes.**