HELICOPTER SHORT-HAUL OPERATIONS PLAN

U.S. Department of the Interior
National Park Service

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V6.0

FOREWORD

It is recognized that this document may be adopted for use by state or local agencies; however, its content remains the responsibility of the National Park Service (NPS), acting upon recommendations from the NPS Short-haul Working Team. Proposed changes or deletions to this document should be addressed through the NPS to the working team.

The objectives, policies, and procedures prescribed herein are generally broad in scope and define minimum program standards. It is the responsibility of each Park to determine, within the parameters of this document, additional requirements necessary for safe and efficient operations. These requirements must identify and define specific and often unique program needs.

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CHAPTER 1: GENERAL INFORMATION

1.1 DEFINITION

Short-haul: To transport one or more persons suspended beneath a helicopter (HEC - Human External Cargo).

1.2 HISTORY

The development of the short-haul technique in this country has been closely associated with the evolution of helicopter rappelling (heli-rappelling). When ground evacuation was dangerous or impractical, personnel were removed from rappel sites by attaching to rappel lines anchored to the helicopter. While heli-rappelling requires extended hover time for the delivery of persons to a specific location, short-haul emphasizes limited hover time with added capability of the extraction of persons and cargo.

Helicopter short-haul technique was originally researched and developed by Swiss Air Rescue (REGA) in 1966. Short-haul gained popularity in Europe prior to 1970 as an effective rescue technique in mountainous areas. In 1970, National Parks Canada incorporated Short-haul into their search and rescue program, where it continues to be widely used.

In the early 1980s, Short-haul was adopted and modified by a variety of agencies for use in rescue and law enforcement programs in the United States. Helicopter Short-haul continues to be an effective tool in meeting safe and efficient operational objectives within these programs.

1.3 PURPOSE

This operations plan outlines minimum standards and requirements concerning qualification, training, equipment, procedures, and documentation for helicopter short-haul programs within the National Park Service (NPS).

1.4 AUTHORITY

The authority to perform short-haul operations is found in United States Department of the Interior Aviation Policy, Departmental Manual 351 DM 1.7, Special Use Activities. Guidelines for conducting short-haul operations are set forth in Operational Procedures Memorandums (OPMs) 29 and 32, and NPS Reference Manual (RM) 60.

1.5 NEW AND EXISTING PROGRAM APPROVAL AND REQUIREMENTS

New short-haul program requests must be forwarded to and approved by the NPS Director or their delegate, per RM-60. Requests must include a copy of the NPS Enhancement Application and the proposed local short-haul operations plan. The operations plan must include a process for risk management. Plans must comply with agency and departmental policies and guidelines. Existing approved programs will review their local short-haul operations plans annually and update them as needed to ensure compliance with agency and departmental policies and guidelines.

Refer to Appendix A for new program start-up procedures. Local aviation program managers will select Spotter trainees. Initial short-haul training will be conducted by approved training specialists in accordance with this operations plan. Qualified Check Spotters from other approved programs will be used for initial training and qualifications. A minimum of two Quality Assurance checks for NPS Short-haul Helicopter Programs should be conducted each calendar year to help maintain a high level of operations and collaboration between programs. These QA's may be conducted in the host park or on the road depending on availability and personnel schedules. These reviews will be coordinated with the Regional Aviation Managers.

1.6 INTERAGENCY INTEROPERABILITY

The National Park Service (NPS) and United States Forest Service (USFS) Helicopter Short-haul Interoperability Plan (Appendix G) is approved through the Interagency Helicopter Short-haul Unit (HSHU) for all short-haul operations involving a mixed team of NPS and USFS personnel or aircraft.

This Interoperability Plan provides a set of requirements to be used when short-haul operations include individuals from each agency. This plan is a subset of both agencies' short-haul operations plans and will be located within their respective appendices. The plan includes guidance to ensure that short-haul programs work in a collaborative manner and operating procedures and equipment are compatible for safe short-haul operations when working as a mixed team. The plan will be reviewed annually by the HSHU and revised as needed.

Each agency will use their respective short-haul operations plan for operations that do not contain mixed team members.

CHAPTER 2: QUALIFICATIONS AND REQUIREMENTS

2.1 PILOT REQUIREMENTS

A safe and effective short-haul program is highly dependent upon precision longline skills. Accordingly, pilots must comply with the following minimum requirements:

1. Qualified in accordance with 14 CFR 133 for Class A and B external load operations and meet pilot requirements identified in the procurement document.

2. 50 hours Pilot-In-Command (PIC) in make and model in the preceding 12 months.

3. 25 hours total longline vertical reference (VTR) flight hours to include a minimum of 2 hours VTR training within the last 12 months.

4. Approved for longline operations.

5. Pass the OAS-administered Emergency Short-haul (SAR) Pilot Test outlined in the Interagency Helicopter Pilot Practical Test Standards (IHPPTS).

6. Complete annual short-haul training with the using unit.

7. Understand short-haul techniques, Short-hauler/Spotter signals, and operational concerns.

8. Demonstrate ability to work with the short-haul Spotter(s).

2.2 SPOTTER AND SHORT-HAULER REQUIREMENTS

Spotters and Short-haulers must complete the following minimum requirements. Additional training may be required of an individual based on the complexity of the program.

A. Check Spotter

The Check Spotter evaluates and certifies new Spotters and evaluates/recommends new Check Spotters to the RAM. It is recommended that a check spotter from a different program evaluate and recommend new Check Spotters for certification. Parks will recommend Check Spotter candidates to their Regional Aviation Manager (RAM) with supporting documentation of qualifications (Appendix F: Initial Check Spotter Certification Record). The RAM will review and send to the National Aviation Office for approval. Check Spotters will be listed annually by the RAM in the form of a designation letter. In addition to meeting all Spotter requirements, Check Spotter candidates must:

1. Be qualified as Helicopter Managers (HMGB) or All-Hazard/Resource Helicopter Managers (HEAM) per RM-60.

2. Have served as a qualified Spotter for 2 full operational seasons. A season is defined as a minimum of 90 days experience.

3. Have instructed at least two annual short-haul trainings.

B. Spotter

Spotter candidates must:

1. Have completed the Interagency Helicopter Crewmember course (S-271).

2. Be familiar with the helicopter procurement documents.

3. Under the supervision of a qualified Check Spotter:

    a. Demonstrate knowledge of the inspection, care, and maintenance of short-haul equipment.

    b. Demonstrate ability to rig the helicopter for short-haul, provide a safety briefing to, and conduct a safety check of, short-haul personnel without procedural error.

    c. Demonstrate knowledge of emergency procedures.

    d. Spot six loads of short-haul personnel, two in typical terrain, without procedural error. If applicable, spot four loads of cargo (e.g., a rescue litter).

    e. Demonstrate effective crew resource management (CRM) with the Pilot and short-haul team.

    f. Demonstrate knowledge of short-haul procedures, mission structure and risk assessment.

C. Short-hauler

Short-hauler candidates must:

1. Have completed the Interagency Helicopter Crewmember course (S-271).

2. Demonstrate knowledge of the inspection, care and maintenance of short-haul equipment and rigging.

3. Demonstrate knowledge of short-haul procedures.

4. Demonstrate knowledge of emergency procedures.

5. Complete a minimum of four short-hauls, two in typical terrain, without procedural error.

6. Demonstrate knowledge of mission components, effective CRM, and the risk assessment process.

NOTE: The Spotter should incorporate short-haul scenarios with deployments in typical terrain and/or confined areas into Short-haulers initial training.

2.3 ANNUAL REQUALIFICATION REQUIREMENTS

Pilots and all short-haul personnel must participate in annual short-haul training and complete the following requirements to the satisfaction of the Check Spotter or Spotter. Short-haul programs should use the training outline found in Appendix B and may add program-specific items as needed.

A. Annual short-haul training will include:

1. Participation in helicopter orientation and safety training.

2. Review and discussion of the local short-haul operations plan, emergency procedures and risk assessment.

3. Review of short-haul related incidents and lessons learned.

4. Short-haul specific CRM review and discussion

B. Pilot

In addition to the annual short-haul training, the Pilot will successfully complete the OAS-administered Emergency Short-haul (SAR) Pilot Test outlined in the Interagency Helicopter Pilot Practical Test Standards as required per the procurement contract.

C. Check Spotter and Spotter

In addition to the annual short-haul training, Check Spotters and Spotters will:

1. Demonstrate knowledge of short-haul procedures and Spotter responsibilities to another Spotter.

2. Complete four short-hauls without procedural error. At least two must be in typical terrain. If applicable, four cargo loads may be substituted for Human External Cargo (HEC).

D. Short-hauler

In addition to the annual short-haul training, Short-haulers will:

1. Demonstrate knowledge of short-haul procedures.

2. Complete at least two short-hauls without procedural error. At least one must be in typical terrain.

NOTE: IAT courses NP-600 (NPS Short-haul Training) and NP-601 (NPS Short-haul Spotter Training) necessitate the completion of training and requirements outlined in Chapter 2 and Appendix B of this Operations Plan.

E. Documentation

It is the responsibility of the Spotter or Short-haul Program Manager to maintain documentation of initial training, re-qualification, proficiency, and operational short-hauls. Documentation will include:

1. Names of personnel involved.
2. Terrain description.
3. Type of mission, either training or operational.
4. Date.
5. Number of evolutions performed, both with and without haulers.

2.4 PROFICIENCY REQUIREMENTS

It will be the responsibility of the Check Spotter or Short-haul Program Manager to determine the frequency of proficiency short-hauls for all short-haul personnel, including the Pilot. In no case will the proficiency period exceed 90 days. The Check Spotter may require additional training based on the complexity of the program or for individuals needing more instruction. An operational short-haul within the proficiency period may count as a proficiency short-haul. Once past the proficiency period, only training short-hauls may be used to re-qualify.

***Minimum Requirements*:**

Position	Initial Certification	Annual Refresher	Proficiency
Pilot	Meet IHPPTS. Annual short-haul training. Demonstrate ability to Short-haul.	Meet IHPPTS. Annual short-haul training. Demonstrate ability to short-haul.	Precision longline, which may include HEC every 30 days. HEC mission every 90 days.
Check Spotter/ Spotter	Annual short-haul training. Spot six loads, two in typical terrain, without procedural error.	Annual short-haul training. Spot four loads, two in typical terrain, without procedural error.	Spot HEC every 90 days.
Short-hauler	Annual short-haul training. Complete minimum of four short-hauls, two in typical terrain, without procedural error.	Annual short-haul training. Complete two short-hauls, one in typical terrain, without procedural error.	Short-haul every 90 days.

NOTE: Without sacrificing efficiency or safety, short-haul pilots are encouraged to practice precision placement of external loads as often as possible. During routine project work it may be useful to define targets and use a long line of the same length as the rope normally used for short-haul. This practice encourages the maintenance of short-haul skills.

CHAPTER 3: PERSONAL PROTECTIVE EQUIPMENT (PPE)

3.1 PPE STANDARDS

When on board the helicopter, PPE will be worn in accordance with the Aviation Life Support Equipment (ALSE) Handbook during short-haul training and operations. Alternative PPE may be used outside the aircraft to enhance the safety of the Short-hauler.

3.2 EXCEPTIONS

There are environmental conditions that require specific PPE that may vary from ALSE standards. Reference the 351 DM 1, NPS RM-60, and OPM 29 for authorization of exceptions and waivers to PPE.

A. Waiver Delegation.

Discretionary authorization for approval of waivers is delegated to NPS Regional Directors, per RM-60, for those circumstances where the protection of the individual after exiting the aircraft is deemed more critical to personal safety and security than that provided by PPE generally required for flight.

When the waiver authorization has been placed in effect by a region, a copy will be provided to the OAS Director. Waiver authorizations must also be included with bureau requests for procurement services when such operations are conducted.

B. Documentation.

A copy of the approved waiver will be included in the local aviation management plan and short-haul operations plan.

CHAPTER 4: SHORT-HAUL EQUIPMENT

4.1 LIFE SAFETY EQUIPMENT STRENGTH AND CERTIFICATION

A 5:1 Static System Safety Factor (SSSF) will be used for all life safety equipment used in the short-haul system, e.g., a minimum breaking strength of 10kN in the equipment's designed position of function is required for components anticipating a 2kN load. For the purposes of this document, life safety equipment is defined as that equipment used to suspend human external cargo. The SSSF is the ratio of the breaking strength of the weakest link in the system to the maximum expected static force.

There are a number of European and North American organizations that establish life safety equipment standards and validate the minimum breaking strengths and design components of equipment used in mountaineering, industrial fall protection and rescue systems. All life safety equipment used in Short-haul will adhere to design standards and be certified by one of the following organizations.

A. Underwriter Laboratories (UL)
B. American National Standards Institute (ANSI)
C. American Standard for Testing and Materials (ASTM)
D. National Fire Protection Association (NFPA)
E. Union International Alpine Association (UIAA)

Additionally, equipment conforming to the Common European (CE) standard will conform to the appropriate EN # for European Standards.

NOTE: The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader and does not constitute an endorsement by the NPS Short-haul Working Team for any product or service to the exclusion of others that may be suitable.

4.2 SHORT-HAUL ROPE ATTACHMENT POINT/ANCHOR

A short-haul anchor system is defined as the points of attachment of the short-haul rope system to the helicopter. This system will include dual hooks with dual release. The dual hook system must be designed for Pilot release. For belly band systems still in use, the primary and secondary anchors must be designed for Pilot and/or Spotter release in an emergency. The load must be fully jettisonable, using two separate and independent actions for release.

The aircraft cargo hook is excluded from the 5:1 SSSF requirement. The Federal Aviation Administration (FAA) is responsible for approving attachment devices or brackets, their installation, and any proposed changes.

A FAA-certified Airframe and Powerplant (A&P) mechanic will perform inspection and maintenance tasks associated with hard point short-haul anchors (cargo hook).

A. Belly bands and 3-ring release systems must be inspected annually and retired 5 years from the date put in service, or 10 years from the date of manufacture, regardless of condition. Software components that become fuel or oil soaked will be retired from service.

B. Modification or repair of the anchor system will be done in accordance with the original equipment manufacturers standards.

C. The Short-haul Program Manager or Spotter will maintain records of inspection, maintenance and use for the government-furnished anchor system. Records will be retained for the life of the equipment and will contain the following information:

- Identification number issued by the manufacturer.
- Date of manufacture, date put in service, usage, last inspection with initials of individual.
- Maintenance performed, including the date and the initials of the person who did the work.

4.3 SHORT-HAUL ROPE AND BALLAST

Short-haul rope is used to suspend HEC and cargo beneath the helicopter during short-haul operations. This is used for attachment from the helicopter anchor to personnel on the end of the rope in lengths that are appropriate for the specific needs of the individual mission and short-haul program.

The short-haul rope will be constructed of synthetic material which may include nylon, polyester or high molecular weight polyethylene, e.g., Spectra™ or Dyneema™.

An un-weighted short-haul rope will have a minimum ballast of 12 pounds attached to it to prevent excessive trailing behind the aircraft during forward flight. Additional weight should be considered for rope lengths exceeding 100 feet. Forward flight should not exceed 60 mph with the short- haul rope deployed.

Short-haul rope requirements

A. Ropes will be marked in a non-destructive manner for identification.
B. Short-haul rope history will be documented by the Spotter or Short-haul Program Manager following each use. Documentation will include the date and specific type of use.
C. Rope history will begin when it is put into service, noting the date of manufacture.

D. Retirement of a short-haul rope may be dictated by age, documented usage history, or visual inspection.
E. Regardless of condition, short-haul rope will be retired 5 years from the date put into service, when manufacturer stipulates, or 10 years from the date of manufacture, whichever is soonest.

NOTE: **When in doubt, retire it.** For further guidance on rope wear, inspection, care, and maintenance, refer to manufacturer's specifications and guidelines.

4.4 HARNESSES, TETHERS, HELMETS, AND PATIENT EXTRACTION EQUIPMENT

All harnesses will be commercially manufactured.

Short-haulers will attach to the short-haul rope with one or more tethers. If more than one tether is used, an independent carabiner should be attached to each tether.

The manufacturer's recommendations for proper use will be followed. Short-haul team members will inspect harnesses, tethers, and extraction equipment for wear or other damage before and after each use (e.g., stitching, buckles, webbing abrasion, etc.).

Short-haulers must wear a helmet that is certified by one of the organizations listed in Chapter 4.1.

4.5 CARABINERS

All carabiners used for short-haul will be of a locking screw-gate, twist or auto-lock design and will satisfy the certifications listed in Chapter 4.1. Only steel and aluminum are approved.

Carabiners should be inspected frequently for proper function of gate and locking mechanisms, abrasion, burrs, rough edges, etc.

NOTE: Carabiners are designed to be loaded longitudinally. If loading occurs on the side, i.e., cross-gate loading, failure may occur. If screw-gate carabiners are used, be aware of the potential for vibration induced movement of the locking mechanism.

4.6 KNIFE

A knife suitable for rapid cutting of tethers will be worn where it is accessible and easily deployed for emergency use.

4.7 SPOTTER ATTACHMENT

Refer to the ALSE Handbook, Chapter 2.4, "Aircrew Member Secondary Restraint System."

A. When the doors of the aircraft are open or removed, the Spotter on board the aircraft must utilize a secondary restraint system.
B. The Spotter will attach one or more independent tethers to their harness. The tether(s) will be attached to aircraft hard points with carabiners.
C. The Spotter is required to wear a seat belt during takeoff and landing.

4.8 PROCESS FOR APPROVAL OF NEW EQUIPMENT

A New Equipment Testing Approval Request Form (Appendix E) will be submitted to the Short-haul Program Managers at each short-haul park when a proposed piece of life safety equipment either:

A. Does not meet the equipment standards identified in Chapter 4.1,
B. Or the use of the equipment results in a change to the standard procedures identified herein.

The Short-haul Program Managers will submit questions regarding the testing approval form to the NPS Short-haul Working Team (NPSSHWT) Chair for the applicant to address. If all the Short-haul Program Managers have reached a consensus of approval for testing, the recommendation for testing will be submitted by the NPSSHWT Chair to the applicant program's Regional Aviation Manager for testing authorization.

If authorized for testing, the testing period will not exceed one year. After that time, the results of testing should be submitted to the Short-haul Program Managers.

Final approval for NPS use of the equipment will be decided by quorum vote, as compiled by the NPSSHWT Chair. This plan will be updated as necessary.

CHAPTER 5: OPERATIONS

5.1 OPERATIONAL REQUIREMENTS

Operations and procedures will comply with DOI and NPS policy, the helicopter procurement document, and the local short-haul operations plan. All flight operations have inherent risk. Training and the judicious use of aviation resources may reduce the risk associated with a particular mission. Risk assessment is the subjective analysis of physical hazards and operational procedures used to arrive at informed decisions. Initial and ongoing risk assessments are important to the successful outcome of any short-haul mission. The Pilot retains final authority for a decision when safe operation of the aircraft is a factor (per 352 DM 1, Aviation Safety; 1.9, A). A GAR Risk Assessment is required for all short-haul missions (Appendix D).

A. The standard crew configuration includes a Spotter on board the aircraft during short-haul operations.
B. When there are aircraft performance limitations or other incident specific safety issues, the Spotter may be located outside of the aircraft. It is imperative that the Pilot have clear communications with the Spotter regardless of location.

5.2 CREW RESOURCE MANAGEMENT

Crew Resource Management (CRM) is the use of individual skills, human factor knowledge, equipment, and crew coordination to achieve safe flight operations by managing threats and error in aviation. The seven skills of CRM are: 1. Decision Making, 2. Assertiveness, 3. Mission Analysis, 4. Communication, 5. Leadership, 6. Adaptability/Flexibility, 7. Situational Awareness.

The seven skills of CRM enable an aircrew to maintain an accurate perception of the environment, identify the source and nature of problems, detect those situations requiring immediate action, and assertively communicate needs. Human factors that reduce overall mission safety include insufficient communication, fatigue/stress, task overload/underload, group mindset, “press on regardless” philosophy, and degraded operating conditions.

Through practice and use of the seven skills of CRM, the above problems can be identified and mitigated. All personnel have a say in what transpires during a mission. Flight crewmembers should actively question and evaluate mission progress, analyze the situation, update, and revise their image of the mission, and consider alternatives to original mission objectives. Assertive behavior such as making suggestions, providing relevant information without being asked, asking questions, and confronting ambiguities is expected when situations warrant. Involved personnel as well as pilots should openly state their opinions on decisions and procedures and refuse unreasonable requests. It’s okay to say ‘No.’ Any member of the team can stop the operation until concerns are resolved.

5.3 SHORT-HAUL OPERATIONS SEQUENCE

The following steps, at minimum, must be completed during short-haul operations.

- A load calculation for reconnaissance flight/proposed site/operation.
- Reconnaissance flight.

- Mission planning.
- Mission briefing.
- Ship configured for Short-haul.
- Short-haul operation completed.
- Mission debriefed.

5.4 HELICOPTER LOAD CALCULATIONS AND FLIGHT RESTRICTIONS

- Interagency Helicopter Load Calculation will be completed per the instructions for Form OAS-67/FS 5700-17.
- Flight operations and procedures will be conducted from 1/2 hour before official sunrise until 1/2 hour after official sunset.
- Visibility for short-haul operations will be in accordance with applicable policy.

NOTE: Life-threatening emergencies may prompt deviation from the Departmental Manual and/or this short-haul operations plan. In such an event, thorough documentation, and submittal of a SAFECOM is required. The risk-to-benefit gain of deviation should be carefully assessed through risk management procedures.

5.5 RECONNAISSANCE FLIGHT AND MISSION PLANNING

The purpose of the reconnaissance flight is to size up the scene, determine if Short-haul is the appropriate response and, if so, collect the necessary environmental data and aircraft performance data necessary for the risk analysis. The flight is also used to identify suitable short-haul and staging sites.

The Spotter will assist with navigation and be alert to hazards (use hazard map, watch for other aircraft, clearances, wires, changing conditions, etc.).

The Spotter and Pilot will evaluate the short-haul site, staging site, and contingency insertion/extraction sites. Personnel already on scene may assist with gathering the following information:

- proximity to the incident
- approximate size
- slope
- rotor clearance
- wind conditions
- ground hazards
- approach and departure routes
- whether non-incident personnel are in the area
- flight hazards

A hover out of ground effect (HOGE) power assurance check, to include a positive rate of climb check, will be performed near the short-haul site.

Based on information gathered during the reconnaissance flight, the Pilot and Spotter will make the final determination if a Short-haul is within the performance capabilities and power limitations of the helicopter.

5.6 MISSION BRIEFING

A briefing will be provided by the Spotter prior to short-haul operations and must include the Pilot, the Helicopter Manager and, to the greatest degree possible, all persons involved in the operation.

As a minimum, the following will be addressed during the mission briefing:

- Short-haul GAR.
- Nature of the mission.
- Location.
- Terrain.
- Weather.
- Landing areas.
- Aircraft capabilities (load calculation, performance, etc.).
- Individual responsibilities (e.g., line management, commo/radio management, patient management).
- Cargo, if applicable.
- Geographic hazards (e.g., power lines, towers, snags, etc.)
- Environmental hazards (e.g., fire behavior, avalanche danger, rock fall danger).
- Safety considerations.
- Emergency procedures.
- Situational awareness review.

5.7 HELICOPTER EQUIPMENT

The Pilot and Spotter will ensure the following (may vary by aircraft):

- Aircraft configured (e.g., doors on or doors off) as directed by the Pilot.
- Unnecessary cargo removed from aircraft. Necessary cargo secured and accessible. External cargo baskets removed, as needed.
- Avionics cords secured.
- Seat belts secured.
- Maps and mission information secured, but accessible.
- All radios operational and on correct frequencies.
- Intercom system operational.

5.8 AIRCRAFT RIGGING

The Spotter is responsible for rigging the helicopter for short-haul and will ensure the completion of the following:

- Short-haul rope inspected and deployed.
- Ballast bag secured.
- Dual release attachment installed correctly and inspected.
- Short-haul rope steel ring connected to primary HEC hook and secondary release with locking carabiner.
- Follow manufacturers inspection and release check procedures for dual attachment release checks.
    - Release 1- electrical
    - Release 1 - manual/hydraulic
    - Release 2 - electrical (or manual if using belly band)
    - Release 2 - manual/hydraulic (or external secondary manual if using belly band)
- Walk-around.

This is general language that would work for most systems. Programs should modify the checklist in the Short-haul Procedures Field Guide (Appendix C) to incorporate specific language related to the mechanics of their release system.

5.9 SHORT-HAULER INDIVIDUAL/BUDDY EQUIPMENT CHECK

A Short-hauler individual/buddy equipment check will be completed prior to any short-haul operation. All steps of the equipment check should be visual, tactile, and verbal for thoroughness. Individuals being checked will be attentive to each step of the process. Inspection will be from head to toe and adapt to specific equipment used. When a partner is not available, a self-check will be performed.

1. **Helmet** - Chin strap secure. Eye and hearing protection in place.
2. **Radio** - Attached under the harness and connected to the helmet. Radio on, correct frequency selected, scan off.
3. **Harness** - Properly donned, strap ends stowed, no twists, adjusted per individual.
4. **Knife** - Readily accessible and secured.
5. **Clothing, Footwear & Gloves** - Mission appropriate.
6. **Tether(s)** - Appropriately attached to harness, carabiner(s) properly attached to tether(s).
7. **Anchor(s)** - Ready for deployment (applicable only to programs employing anchoring of short-haulers to terrain).

NOTE: If the check is interrupted, or a discrepancy is found, it will start over from the beginning.

5.10 SPOTTER INDIVIDUAL/BUDDY EQUIPMENT CHECK

A Spotter individual/buddy equipment check will be completed prior to any short-haul operation. All steps of the equipment check should be visual, tactile, and verbal for thoroughness. Individuals being checked will be attentive to each step of the process. Inspection will be from head to toe and adapt to specific equipment used. When a partner is not available, a self-check will be performed.

1. **Helmet** - Chin strap secure. Eye and hearing protection in place.
2. **Radio** - Connected to onboard radio and intercom system. Short-haul frequency selected.
3. **Harness** - Properly donned, strap ends stowed, no twists, adjusted per individual.
4. **Knife** - Readily accessible and secured.
5. **Clothing, Footwear & Gloves** - Mission appropriate.
6. **Tether(s)** - Appropriately attached to harness, carabiner(s) properly attached to tether(s) and to aircraft.

NOTE: If the check is interrupted, or a discrepancy is found, it will start over from the beginning.

5.11 SHORT-HAUL INSERTION/EXTRACTION PROCEDURES AND COMMUNICATION

During short-haul operations the Spotter/Pilot will request/verify that the radio frequency is cleared for "emergency traffic only" and will advise when initiating and terminating operations.

A radio check should be done to establish communications between the aircraft and appropriate short-haul personnel, including Pilot, Spotter, Short-haulers, and ground crewmembers.

Radio communication between the aircraft and the Short-hauler(s) will be conducted between the Pilot and the Short-hauler(s) unless the Pilot delegates communications to the Spotter.

I. Short-haul Extraction Operations

A. Pilot initiates final approach to the extraction site, slows descent and stabilizes the rope.

B. Communication is established between Short-hauler and aircraft.

C. Short-hauler relays

- Winds.
- Known hazards.
- Weights.
- Configuration, e.g., "Two Short-haulers and Bauman bag".

D. Short-hauler states, "**Ready to receive.**" Response from helicopter to ground crew, "**Inbound.**"

E. Short-hauler may assist Pilot by calling out distances of end of the rope (ring) above the canopy/obstacles and will assist Pilot in calling out distances of end of the rope (ring) above ground. All radio traffic should be clear and concise. Distances should be given in feet measurements such as, 50, 40, 10, but verbalized as five-zero, four-zero, one-zero.

F. When applicable, Short-hauler will indicate load "**Entering canopy.**"

G. Short-hauler will call distance from lowest point on rope (ring/load) to the ground "**Five zero.**"

H. Pilot responds "**Copy, five zero**" at the start of the cadence.

I. Height above ground will then be communicated by calling out "**Four zero, three zero, two zero, one zero, eye level.**" No mirrored responses to these calls are given by the Pilot.

J. When the Short-hauler has control of the rope, the Short-hauler communicates "**Got it,**" indicating to the Pilot to hold and maintain hover.

K. When ready, the Pilot radios Short-hauler to "**Hook up**" and Spotter gives the "hook up" signal.

L. Once hooked up, acknowledgment of readiness is made between the Short-haulers.

M. The Short-hauler communicates "**Ready**" and gives the "lift" signal.

N. Pilot states "**Coming up**" and lifts Short-hauler(s). Short-hauler communicates "**Clear of obstacles**" and gives the "clear of obstacles" signal when appropriate.

While these communications are standard, additional communications may be necessary.

II. Short-haul Insertion Operations

A. Pilot initiates final approach to the insertion site, slows descent and stabilizes the Short-hauler(s)/load on the rope.

B. Short-hauler may assist Pilot by calling out distances of load above the canopy/obstacles and will assist Pilot in calling out distances of load above ground. Short-hauler will also point out any hazards to the Pilot. All Short-hauler radio traffic should be clear and concise.

C. When applicable, Short-hauler may indicate load "**Entering canopy.**"

D. Short-hauler will call distance from lowest point on the rope to the ground "**Five zero.**"

E. Pilot responds "**Copy, five zero**" at the start of the cadence.

F. Height above ground will then be communicated by calling out "**Four zero, three zero, two zero, one zero."** No mirrored responses to these calls are given by the Pilot.

G. When the Short-hauler(s) is/are on the ground and ready to unhook, Short-hauler communicates "**Secure**" and unhooks. The Pilot will acknowledge by responding "**Unhook**" and the Spotter gives the "unhook" signal.

H. Short-hauler radios the Pilot that they are clear of the line by stating "**Clear**" and gives the "lift" hand signal.

I. Pilot states "**Coming up**" and lifts empty rope. Short-hauler communicates "**Clear of obstacles**" and gives the "clear of obstacles" signal when appropriate for forward flight.

While these communications are standard, additional communications may be necessary.

NOTE: If receiving an unattended external load, short-haul ground personnel will follow the standard height-above-ground call outs.

III. In-flight Considerations

A. An unweighted short-haul rope will be flown with ballast attached to prevent excessive trailing behind the aircraft in forward flight (Chapter 4.3).

B. Forward flight should not exceed 52 knots (60mph) with the short-haul rope deployed.

C. In-flight spinning or position changes may be reduced by the helicopter gaining and maintaining forward airspeed allowing the Short-hauler to extend arms and/or legs to act as wind veins, controlling position and/or reducing spin.

D. Radio communication quality is best if the helmet boom mic is flush against the lips and cupped by hand and the head is turned away from the wind.

IV. Loss of Radio Communication Considerations

A. If radio communication cannot be established on the initial approach (no HEC), the evolution should be aborted until radio communication is re-established.

B. If radio communication is lost during the insertion or extraction sequence with HEC, the mission may continue using hand signals. Loss of radio communication does not necessitate termination of the evolution and should be evaluated on a case-by-case basis.

C. If radio communication is lost at any time during the transport or ferry portion of the short-haul insertion or extraction, the Pilot and Spotter may opt to return to the staging site.

D. If the Short-hauler(s) lose radio communication or wish to terminate the mission, they should initiate the "wave-off" hand signal.

V. Communication Within Aircraft Between Spotter and Pilot

A. Task assignment is agreed upon between Spotter and Pilot prior to any short-haul mission,

including delegation of radio communication with Short-haulers or ground personnel.

B. Flight hazards are communicated using common terms such as up, down, left, right, forward, and back. Distances from obstacles should be communicated in feet.

VI. Short-haul Procedures Field Guide

A. During short-haul training and operations, personnel may use the Short-haul Procedures Field Guide (Appendix C) as a job aid to help ensure consistency. The items included in the guide serve as a minimum standard and programs may choose to add additional items.

5.12 MISSION DEBRIEF

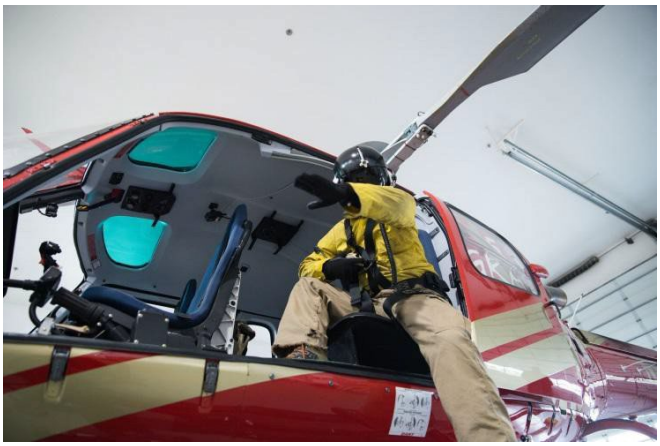
Following short-haul training and missions, a debriefing should be conducted. The debrief immediately following the operation should include:

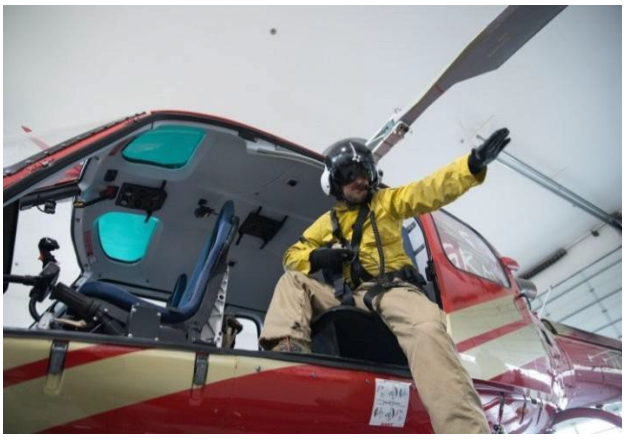
- Provide feedback to personnel involved.
- Identify areas of concern for follow up.
- Reinforce lessons learned.

NOTE: Any significant incident or event that specifically applies to short-haul equipment and/or procedures where the short-haul community would benefit from the lessons learned should be reported immediately using SAFEHAUL. If there is an incident with the aircraft, or if the larger aviation community would benefit from the lessons learned, file a SAFECOM in addition to a SAFEHAUL (See Chapter 5.4).

5.13 SHORT-HAUL HAND SIGNALS

Onboard Spotter Hand Signals



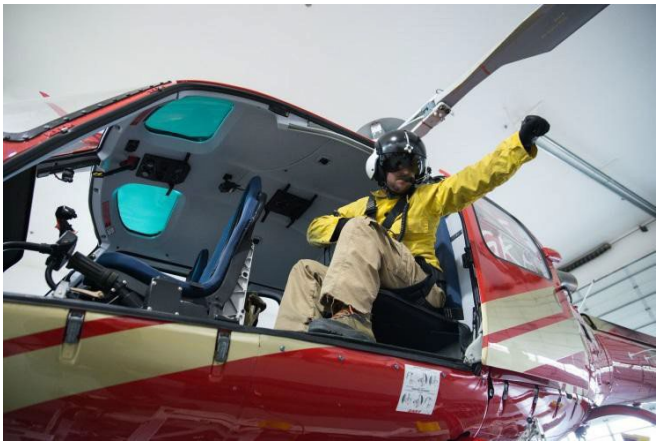


WAVE – OFF

Wave-off indicates the need to stop and do the opposite of current operations.

This is performed by waving one outstretched arm back and forth on a horizontal plane.

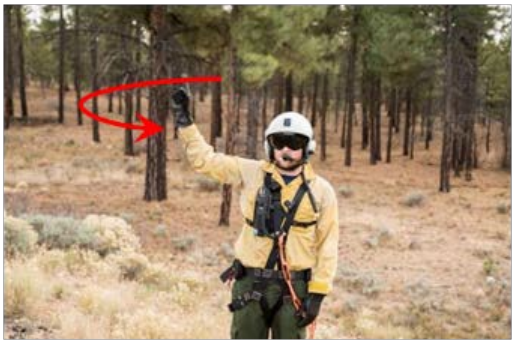
Onboard Spotter Hand Signals Continued



HOOK / UNHOOK

This is performed by holding one outstretched arm with a closed fist in a stationary position.

Short-hauler Hand Signals



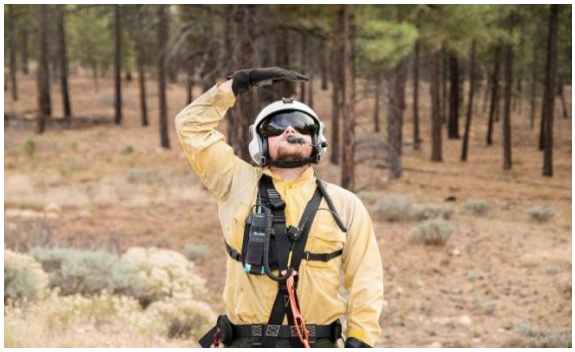
LIFT

This is performed by extending one forearm upward from shoulder height in a 90° angle bend at the elbow. With index finger outstretched, rotate in a circular motion.

CLEAR OF OBSTACLES

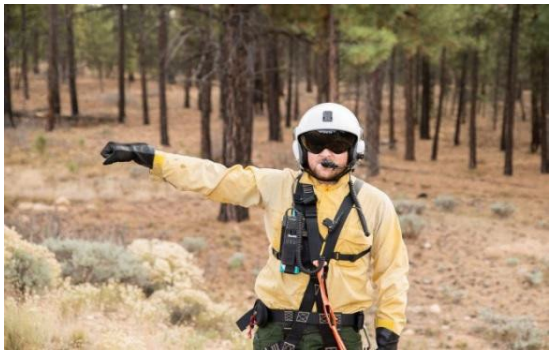
This is performed by extending one arm out in front of the body using a chopping motion. Fingers are to be outstretched in a vertical plane.

Short-hauler Hand Signals Cont.



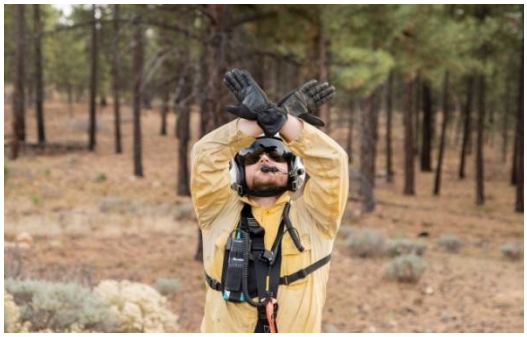
OK? / OK!

This is performed by tapping one hand on the top of the Short-haulers helmet.



HOLD HOVER

This is performed by extending one arm out to the side of the body at shoulder height. This is to be held in a stationary position with a closed fist.



WAVE OFF

This is performed by extending two arms over head and waving back and forth.

NOTE: Short-haul hand signals should be clearly visible to the intended recipient. If additional hand signals are needed, refer to standard helicopter hand signals in the NWCG Standards for Helicopter Operations (NSHO) or the Incident Response Pocket Guide (IRPG).

5.14 ADMINISTRATIVE DUTIES AND REQUIRED DOCUMENTATION

Short-haul Program Managers are responsible for the completion of required documentation related to short-haul activities, including the Annual Short-haul Program Statistics Report and Presentation (Appendix F).

Spotters will have sufficient training, qualifications, and experience to accomplish the following duties and responsibilities:

A. Communicate problems with contract personnel or equipment to appropriate personnel (Helicopter Manager, Project Inspector, Contracting Officer's Representative, etc.).
B. Complete necessary SAFECOMs/SAFEHAULs in a timely manner.
C. Monitor currency of short-haul personnel and schedule training as needed.
D. Ensure that necessary short-haul equipment logbooks are current.

The following is a consolidated list of required documentation and/or forms found within the body of this Operations Plan:

Chapter 1.6: Interagency Short-haul Booster In-briefing and Assurance Form-Appendix G
Chapter 2.2.A: Initial Check Spotter Certification Record-Appendix F
Chapter 2.3.E: Documentation of initial training, re-qualification, proficiency, and operational Short-hauls

1. Names of personnel involved
2. Terrain description
3. Type of mission, either training or operational
4. Date
5. Number of evolutions performed, both with and without haulers

Chapter 3.2: PPE Waiver
Chapter 4.2.D: Records of inspection, maintenance and use for the government-furnished anchor system

- Identification number issued by the manufacturer
- Date of manufacture, date put in service, usage, last inspection with initials of individual
- Maintenance performed, including the date and the initials of the person who did the work

Chapter 4.3: Short-haul Ropes

A. Ropes will be marked in a non-destructive manner for identification
B. Short-haul rope history will be documented by the Spotter or Short-haul Program Manager following each use. Documentation will include the date and specific type of use
C. Rope history will begin when it is put into service, noting the date of manufacture

Chapter 4.8: New Equipment Testing Approval Request Form-Appendix E
Chapter 5.1: GAR Risk Assessment is required for all short-haul missions-Appendix D
Chapter 5.4: Interagency Helicopter Load Calculation
Chapter 5.4: SAFECOMs
Chapter 5.14: Annual Short-haul Program Statistics Report and Presentation-Appendix F

CHAPTER 6: EMERGENCY PROCEDURES

Planning for emergencies is a critical component of risk management. Short-haul programs must evaluate and discuss potential scenarios and actions that may best mitigate any associated hazards. Training for effective crew resource management should be a part of this process.

It is imperative that everyone involved in Short-haul understand how instantaneously an in-flight emergency may occur. Examples of formalized emergency planning procedures are outlined below.

WARNING: Short-haul operations are inherently dangerous and could be fatal. This must be discussed during training and operations. Release of the short-haul rope while human external cargo is attached beneath the aircraft is a possibility. In case of an aircraft emergency, the Pilot may attempt to land with HEC attached to the short-haul rope. The decision of any Short-hauler to cut away from the line is a personal choice depending on the circumstances and best chance for survival.

6.1 SHORT-HAUL ROPE ENTANGLEMENT

In the event of rope entanglement, the Pilot may determine it is necessary to release the rope. The Pilot will notify the Spotter and ground personnel if the rope will be released.

6.2 IN-FLIGHT EMERGENCIES

In-Flight Short-haul Emergency Procedures

Pilots, Spotters and Short-haulers must understand the significance of an in-flight emergency involving human external cargo (HEC) and discuss emergency procedures and their respective roles. During an emergency is NOT the time or place to discover that, "What you heard is not what I meant."

Clear and concise communication between the Spotter and Pilot is critical to a successful outcome of an in-flight emergency. There are two categories of short-haul in-flight emergencies.

A. **Delayed Response** - Those that allow a delayed action (land as soon aspracticable).
B. **Immediate Response** - Those that require an immediate action (land as soon aspossible).

Pilots are trained to respond to in-flight emergencies in accordance with the Rotorcraft Flight Manual in addition to the emergency procedures outlined in this plan.

Delayed Response Emergencies (Land as Soon as Practicable)

Many events fall into this category. These are characterized by an ability to delay the departure from the short-haul hover. These events typically allow time to place the load safely on the ground prior to departing the hover.

Examples of Possible Delayed Response Emergencies:

A. Transmission/engine/tail rotor gearbox chip light.
B. Hydraulic failure.
C. Oil temp/oil pressure light.
D. Hydraulic pressure light.
E. Unknown Master Caution.
F. Fire light.
G. Stuck pedal.
H. Fuel control or governor failure high side.
I. Electrical failure.
J. Compressor stall.
K. Adverse environmental conditions.
L. Line entanglement.

Immediate Response Emergencies (Land as Soon as Possible)

There are a limited number of emergencies that fall into this category. These are characterized by a need to transition immediately to forward flight, establish an autorotation, or execute a forced landing. In this type of emergency, a positive outcome may be impacted by the ability to jettison any external load quickly.

Examples of Possible Immediate Response Emergencies:

A. Engine failure
B. Tail rotor failure
C. Hard-over of controls
D. Engine over speed/driveshaft failure
E. Compressor stall
F. Governor failure
G. Fire

Pilot and Spotter Delayed Response Actions

These procedures apply when rope is attached to aircraft. Order of emergency procedures may vary depending on the Spotter and Secondary Release location. This mostly applies to aircraft configured with the Belly Band Secondary Release System.

"EXPEDITE, EXPEDITE" and the subsequent actions taken by the Pilot and Spotter will occur almost simultaneously. The Pilot will attempt to allow time to place the load safely on the ground prior to departing the hover to gain forward flight, which may require releasing the short-haul line. Any failure to immediately release the line may pose a threat to the aircraft and personnel onboard, as well as increase the risk to the Short-hauler.

Pilot Duty:

During a delayed response emergency, the Pilot will alert with "EXPEDITE, EXPEDITE" as the initial alert for the crew that the Short-haul must be halted due to an aircraft malfunction or environmental condition. It should not be the only communication. As the situation allows, the Pilot should advise the crew of the aircraft status and the intended duration of the flight. Safe delivery of the Short-hauler to the nearest suitable site should happen immediately. Delays may occur when no suitable site is readily available.

Alert should be broadcast over short-haul frequency.

Spotter Duty:

The Spotter should assist the Pilot in locating a suitable site for the Short-hauler.

PILOT STATES:	**ACTION/RESPONSE**:
Short-haul rope attached, No HEC "**EXPEDITE, EXPEDITE**"	**Spotter:** Take seat and fasten seat belt. State "READY." **Pilot:** Release secondary and, as necessary, release primary. **Pilot/Spotter:** Note location of jettisoned equipment for subsequent retrieval.
Short-haul rope attached, with HEC attached: "**EXPEDITE, EXPEDITE**"	**Spotter:** Assist in locating nearest suitable site to insert hauler. **Pilot:** Insert hauler to suitable site. **Spotter:** Take seat and fasten seat belt. State "READY." **Pilot:** Release secondary, as necessary, release primary. **Pilot/Spotter:** Note location of Short-hauler and equipment for subsequent retrieval.

For those programs that require a Spotter to release the secondary anchor due to configuration of the aircraft, references to releasing the secondary anchor by the Pilot, above, instead defer to the Spotter. Order of emergency procedures may change due to spotter and secondary release location.

Pilot and Spotter Immediate Response Actions

These procedures apply when a rope is attached to aircraft.

"MAYDAY, MAYDAY" and the subsequent actions taken by the Pilot and Spotter will occur almost simultaneously. The Pilot will attempt to immediately gain forward flight or land, which may require releasing the short-haul rope. Failure to immediately release the rope may pose a threat to the aircraft and personnel on board, as well as increase the risk to the Short-hauler.

Pilot Duty:

Identify emergency and alert others without delay.

Alert should be broadcast over short-haul frequency.

Spotter Duty:

Take seat and fasten seat belt. Assist in line release if possible.

PILOT STATES:	ACTION/ RESPONSE:
"**MAYDAY, MAYDAY**"	**Spotter**: Take seat, Fasten seat belt, and Prepare for emergency landing. **Pilot**: Release secondary, Evaluate situation, Release primary as necessary. **Spotter**: Time permitting, state "LINE CLEAR".

SHORT-HAULERS (if on the rope): Assess situation, determine best course of action.

For those programs that require the Spotter to release the secondary anchor due to the configuration of the aircraft, references to the Pilot releasing the secondary anchor, above, instead defer to the Spotter.

APPENDIX A: NEW SHORT-HAUL PROGRAM START-UP PROCEDURES

For new short-haul programs, initial start-up can be daunting and intimidating. The process takes time to initiate and implement. Standing up a new short-haul program should follow a logical sequence. The following recommendations are intended to provide direction.

Approval

A local Short-haul Program Manager must be designated. Usually this person creates the short-haul program request and presents it to NPS management, per RM-60, for initial approval.

Requests will include a copy of the proposed local short-haul operations plan describing when and how short-haul will be used. The operations plan must also include a process for risk management. Plans must comply with departmental and bureau policy and guidelines.

- A local short-haul operations plan is normally written by the local program aviation manager and details program requirements for the local unit. The plan should be referenced in the local aviation management plan. It is recommended that new programs seek input from the NPS Short-haul Working Team and NPS specialists.

Program Funding

It is important that funding be available to provide for initial start-up and continual support of the short-haul program. Some funding considerations are:

- **Helicopter costs** – Pilot and short-haul personnel proficiency training may require between 8 to 10 hours of flight time per year.
- **Short-haul equipment purchase** - Initial equipment purchase may cost between $10,000 and $20,000. Annual equipment upkeep may be at least $1,000 average per year.
- **Short-haul Working Team meeting attendance** - Additional annual costs for training and meetings are approximately $2,000 to 5,000.
- **Pilot proficiency** - The Pilot(s) must pass a four-phase short-haul check ride. This will require practice time. The cost of the accrued flight time may be stipulated in the procurement document or negotiated between the contractor and Contracting Officer.
- **Short-haul personnel** will be required to attend Interagency Helicopter Crewmember (S-271) and annual and proficiency short-haul training.
- **Additional costs to consider:**
  - There may be additional cost if a Check Spotter must be brought in.
  - Short-haul Program Managers should attend the annual short-haul meeting.

Timeframe

Anticipate at least 8 to 12 months as a minimum before initial short-haul training can begin. The amount of time required to initiate a short-haul program will vary due to several factors.

- Will the aircraft type require new development of equipment or procedures? Helicopter models currently not being used for Short-haul may require at least 12 months for equipment evaluation and approval.
- What type of helicopter procurement document? An existing procurement document will require modification to include Pilot short-haul proficiency and possible aircraft equipment modifications.

Program Preparation

Approval Process

- Local
- Regional
- National
- Send to OAS Associate Director

Program Funding

- Helicopter procurement document – Contact the appropriate OAS region as soon as possible to initiate the aircraft procurement and Pilot approval process.
- Short-haul equipment purchase – Secondary short-haul anchor will be associated with helicopter make and model, and so may influence procurement and installation.
- Develop an estimate of total cost for personnel and aircraft associated equipment.
- Develop an estimate of annual training costs for short-haul personnel and Pilot proficiency.
- Program additional funds to cover miscellaneous costs.

Final Details

- Aircraft inspection – New make and model of aircraft that have not been used for short-haul previously may require additional research and evaluation. Sufficient time will be required prior to the Pilot proficiency test.
- Pilot proficiency – Evaluations will be conducted by an OAS Helicopter Inspector Pilot and the local Short-haul Program Manager. Ample time should be provided in case the Pilot fails the test and requires additional proficiency training.
- Short-haul training – Training should not be scheduled until the aircraft inspection and the Pilot proficiency test have been successfully completed.

NOTE: It is imperative that the local Short-haul Program Manager and the OAS Regional Office maintain close contact throughout the entire process. Sufficient planning must occur at each stage to eliminate additional costs and to prepare for the next stage. After the approval process, program funding and final details are completed; the program is considered an operational short-haul program.

APPENDIX B: ANNUAL SHORT-HAUL TRAINING OUTLINE

Unit I: Program Orientation and Overview

Objective: Provide students with an overview of short-haul program, principles of crew resource management, and policy requirements

Approximate Time: 6 to 8 hours

Training Aids: NPS Helicopter Short-haul Operations Plan, local short-haul operations plan, Aviation Life Support Equipment Handbook (ALSE), NWCG Standards for Helicopter Operations (NSHO).

OUTLINE	NOTES/REFERENCE
Make sure students have copies of the NPS Short-haul Operations Plan and local short-haul operations plan, ALSE Handbook, and NSHO. It is preferable that students are given these documents, along with other pertinent reading material, prior to training.	
I. Program history A. Local B. National	❖ *NPS Short-haul Ops Plan, Ch 1*
II. Review NPS policy and guidelines.	❖ *Reference Manual (RM)-60, NSHO, Park Aviation Management Plan*
III. Review NPS Helicopter Short-haul Operations Plan and local short-haul operations plan A. New Programs B. Pilot Requirements C. Training Requirements • Check Spotter • Spotter • Short-hauler • Annual Requalification • Proficiency Requirements	❖ *NPS Short-haul Ops Plan and local short-haul ops plan*

OUTLINE	NOTES/REFERENCE
D. Operational Requirements • Load Calculations • Flight Restrictions • Mission Briefing • Risk Assessment (GAR required) • Equipment Checks • Duties E. In-Flight Emergencies F. Documentation IV. Crew Resource Management (CRM) A. CRM Basics B. Human Factors • Five Hazardous Attitudes • Risk Aversion/Tolerance • Cognitive perception (change blindness, illusion, etc.) • Physical Factors (fatigue, Rx drugs, etc.) C. Review 7 Critical Skills of CRM • Decision Making • Assertiveness • Mission Analysis • Communication • Leadership • Adaptability (flexibility) • Situational Awareness D. Lessons Learned Case Study • Short-haul Reports • Extraction FLA's V. Equipment Orientation and Inspection A. Personal Equipment • Clothing • Helmet • Harness • Knife • Tether(s) • Other (PFD, Footwear, Packs, etc.) B. Secondary Release System • Construction Specifications	❖ *NPS Short-haul Ops Plan, Ch 5* ❖ *ALSE Handbook, NSHO* ❖ *NPS Short-haul Ops Plan Ch 4* ❖ *Discuss the use of PPE waivers*

• Installation Procedures • Inspection Requirements • Release system function C. Short-haul Ropes and Equipment 1. Hardware • Inspection (preflight and post flight) • Care during use • Cleaning • Storage • Retirement • Documentation 2. Software • Construction and requirements • Inspection (preflight and post flight) • Care during use • Cleaning • Storage • Retirement • Documentation	
VI. Communications A. Radio B. Hand Signal C. Siren/PA D. Other	❖ *NPS Short-haul Ops Plan, Ch 5*
VII. Safety and Emergency Procedures A. Local Hazards and Problems B. Review Immediate and Delayed Response Emergency Procedures C. Entanglement • Prevention • Release Procedures D. Crash Procedures • Pilot duties • Spotter duties • Short-haul personnel	❖ *NPS Short-haul Ops Plan, Ch 6*

OUTLINE	NOTES/REFERENCE
E. Survival Equipment and Use • Signal mirror • Signal smoke • Other VIII. Documentation A. Training/Qualifications/Proficiency B. Short-haul Missions C. GAR Risk Assessment/Load Calcs D. PPE Waivers E. SAFECOM/SAFEHAUL/Mishaps F. Equipment documentation G. AARs/FLAs	❖ *NPS Short-haul Ops Plan, Ch 5.14/Appendices, local short-haul ops plan*

Unit II: Field Training

Objective: Train and qualify students in safe short-haul procedures.

Approximate Time: 6 to 12 hours

Training Aids: Helicopter, lifting device, raised platform, ground markers/targets, and local equipment (SAR/EMS/LE), typical terrain.

OUTLINE	NOTES/REFERENCE
Step-by-Step Orientation (with Helicopter) I. Ground Mock-up A. Pilot Briefing B. Rigs equipment and rope C. Doors removed and secured D. Loose equipment removed/secured E. Radio frequency established F. Radio check with Pilot and personnel G. Understanding of mission/role H. Short-hauler Equipment Check • Helmet • Eye protection • Appropriate clothing • Knife • Radio check • Personal tether(s) • Harness • Gloves (if appropriate) • Appropriate footwear • Pack • Other equipment I. Short-haul Equipment • Screamer suit • Bauman bag • Other J. Communication • Hand signals • Radio	❖ *Spotter and Pilot will check cabin and configuration for short-haul.* ❖ *The Pilot and Spotter will install and test anchor (primary and secondary).* ❖ *Short-haulers should observe and double-check this procedure.* ❖ *Short-haul rope, carabiners, and other equipment attached correctly, checked, and operational.* ❖ *Each Short-hauler will perform a buddy check, working from head to toe.* ❖ *Check knife for easy accessibility and deployment.* ❖ *Radio/comm check.*

OUTLINE	NOTES/REFERENCE
II. Static Suspension (Short-haul Personnel) A. Adjust harness. B. Practice use of attachment points.	❖ *Demonstrate harness adjustment and use of attachment points.*
III. Lift Training (if used) A. Short-haul personnel (in pairs if applicable). B. Students are raised off ground and set down. C. Demonstrate communication as outlined in live helicopter evolution training below.	
IV. Mission Briefing A. What is the mission? B. Where is the mission? C. Potential Hazards D. Mission limitations (environmental considerations, aircraft and crew limitations) E. Alternative methods of extraction discussed F. Pre-flight and in-flight checks G. Trigger points discussed and GAR/Risk Assessment completed H. Helicopter briefing I. Communications (Hand Signals, Radio, Flight Following, Other)	❖ *Demonstrate competency in communications, hand signals and tactile manipulation of equipment. Ability to interact as a team member.*
V. Emergency Procedures A. Emergency communications B. Immediate response emergency C. Delayed response emergency D. Pilot, Spotter, Short-hauler response actions	❖ *Demonstrate knowledge of emergency procedures and recognize potential catastrophic consequences of an emergency.*
VI. Helicopter Evolution Training (See Chapter 5.5 & 5.11) A. Perform recon and power check. B. Extraction Evolutions C. Insertion Evolutions D. In Flight Considerations	❖ *NPS Short-haul Ops Plan, Ch 5* ❖ *NPS Short-haul Ops Plan, Appendix C*

OUTLINE	NOTES/REFERENCE
VII. Typical Terrain Training A. Varied Locations. B. Typical Hazards such as snow, pinnacles, ledges, moving water, etc. C. Recon check flight (Pilot, Spotter, Short-hauler duties) • Flight following (Spotter may assist with navigation, watching for other aircraft, hazards, etc). • Pilot, Spotter, and Short-haulers will select a short-haul site. • Evaluate short-haul site for: a) proximity to incident b) size c) slope d) rotor clearance e) wind conditions • Complete hover check and make short-haul decision. • Select staging area to rig for Short-haul. D. Extraction/Insertion Evolutions	❖ *Evaluate training locations ahead of time.* ❖ *NPS Short-haul Ops Plan, Ch 5.5* ❖ *NPS Short-haul Ops Plan, Ch 5.11*
VIII. Mission Scenario (optional) A. Create a realistic situation B. Pilot and Spotter briefing C. Pilot duties D. Spotter duties E. Short-hauler duties	❖ *Planning for missions should be accomplished with input from instructors, Program Manager, Pilot, Spotter and Short-hauler(s).* ❖ *Use risk assessment and risk management tools/procedures.*
IX. Critique and Wrap-Up A. Debrief. B. Seek input for program improvement. C. Documentation completed	❖ *Everyone is encouraged to participate.* ❖ *Document feedback, both positive and negative.*

APPENDIX C: JOB AIDS

SHORT-HAUL PROCEDURES FIELD GUIDE

NPS Short-haul Procedures **Page 1** **Page 2**

Reconnaissance Check Flight
Lat_____°_____Long_____°_____
Pressure Altitude:_____’
Outside Air Temp:_____°
Wind Speed_____Direction_____Gust_____
Wx Issues_____
Power: Adequate Not Adequate
Rotor Clearance: Adequate Not Adequate
Light/Vis Issues? (flat light, poor vis, darkness, etc.)
Yes No
Terrain_____Slope Angle_____
Anchors Needed? Yes No
Other Hazards:_____
# of patients_____Approx weights_____
Patient Status:___Green___Yellow___Red___Black
Fuel on Board:_____
Totality of Circumstances_____
_____
Relay Information to IC/Ops Chief

Staging Site
Load Calc in agreement w/ recon findings
Short-haul Mission Briefing conducted
Decision to short-haul made
Mission Approval at appropriate level received

Aircraft Rigging
Removal and storage of doors (if necessary)
Dual release system attached and inspected
SH rope laid out and inspected
Ballast bag secured to SH rope
SH rope steel ring connected to bottom of Y-lanyard
via locking carabiner
Y-lanyard connected to cargo hook and HEC hook
Dual Attachment release checks

HEC hook – electrical HEC
hook – hydraulic Cargo
hook – electrical
Cargo hook – hydraulic

Walk-around completed

Buddy Check: Look-Touch-Talk
Helmet, Eye/Ear protection
Radio system operational
Harness & SH attachments correct & mission ready
Knife easily accessible and secure
Clothing, footwear & gloves mission appropriate
Anchor(s) ready for deployment
Repeat check on backside
Spotter tether attached to Spotter attachment point(s)
Comm Check
Pilot ↔ Spotter ICS Check
Pilot ↔ SH’er radio check
Radio Silence / Priority Status

Short-haul Commands
Extraction:
SH’er: Establishes positive commo with Pilot
(provide winds, weights, concerns, hazards, config)
“Ready to receive”
Pilot: “Inbound” delivers rope to SH’er(s)
SH’er: “5-zero”
Pilot: “Copy, 5-zero”
SH’er: “4-zero..3-zero..2-zero..1-zero..eye level”
Pilot holds rope in position
SH’er: “Got it”
Pilot: “Hook Up”
SH’er: “Ready” (Lift Hand Signal)
Pilot: “Coming Up”
SH’er: When lifted clear for forward flight: **“Clear of**
obstacles” (Clear of Obstacles Hand Signal)
Insertion:
SH’er: “5-zero”
Pilot: “Copy, 5-zero”
SH’er: “4-zero..3-zero..2-zero..1-zero”
SH’er: “Secure” once down and footing established
Pilot: “Unhook”
SH’er: “Clear” (Lift Hand Signal)

NOTE: Page 1 is intended as a checklist for Pilot and Spotter. Page 2 displays buddy checks and verbal commands for the participating Short-haul team members.

APPENDIX D: GAR RISK ASSESSMENT /MANAGEMENT WORKSHEET

A GAR Risk Assessment (example for below) is required for all Short-haul missions. It should include the key overhead and functional positions to execute a short-haul mission. This may include:

- Incident Commander
- Pilot
- Spotter
- Hauler(s)
- Duty Officer
- Helicopter Manager if different from Spotter

It is understood that risk management is an on-going process. Key elements of all risk assessments and discussions will be documented and kept with the short-haul records.

Additional examples of risk assessment templates, forms and checklists used to properly identify hazards and mitigate risks associated with Short-haul can be found in the HSHU collaboration website "box" https://account.box.com/login. They can aid with gathering information needed to make the best decision possible based on known and expected conditions. Those forms may be reformatted/reorganized to meet individual Park/Unit program needs and are intended to open critical conversations and prompt individuals involved to consider the added risk of a helicopter short-haul mission and/or training.

GAR RISK ASSESSMENT MODEL*

Employing the GAR Model (GREEN AMBER RED)

The GAR Risk Assessment looks at eight mission risk factors that pose risk to a mission, training, or project. The numerical values and/or color codes assigned are not the most important element of the GAR Risk Assessment. The team discussion that follows to identify, understand, and mitigate the risks/hazards involved is the critical step in the process.

Step 1: Define the Mission or Task
Clearly identify the mission or task and state your desired outcome.

Step 2: Define the Threats
Identify the hazards of the mission in general terms. Focus on the ones you think pose the greatest risk.

Step 3: Assess Risk & Assign Numerical Values
Use the eight mission risk factors to evaluate the threats. Assign a numerical value of 1 (Almost No Risk) through 10 (Maximum Risk) to each of the eight mission risk factors. Do this individually, without discussing the scores with team members. This is your personal estimate of risk. Add the risk scores up to calculate a Total Risk Score for the overall mission, training, or project.

KEY POINT: We use a number because it makes you think about the risk factors. It's the process that's important; assigning a number is the way to get you there.

After calculating individual risk scores, begin a team discussion of each of the eight mission risk factors. Recalculate a team GAR Risk Assessment Score. Determining an exact number is not the objective. The objective is to communicate!

Color Coding Risk: Mission risk can be visualized using the colors of a traffic light. If the total risk value falls in the GREEN (8-35), risk is rated as low. If the total risk value falls in the AMBER (36-60), risk is moderate, and you should consider adopting procedures to minimize the risk. If the total risk value falls in the RED (61-80), you should implement measures to reduce the risk prior to starting the mission.

Step 4: Identify Risk Control Options
Look at ways to reduce, manage, control, or eliminate the risk associated with the eight factors considered.

Step 5: Evaluate Risk vs. Gain
What do we stand to gain from exposing ourselves to the identified hazards/risks? Determine the acceptable level of risk for the situation.

Step 6: Execute Decision

Step 7: Supervise – Watch for Change
Monitor the situation and evaluate the risks and associated control measures selected. Constantly re-evaluate the effectiveness of these risks and control measures. Adjust strategy and tactics according to changing conditions or circumstances.

* Information taken from the NPS Operational Leadership Student Manual

*Mission/Training:*_____ *Name:*_____ *Date:*_____

GAR Risk Assessment Worksheet

Risk Rated 1-10 for each category. Mitigation should be considered for each category, particularly when rated higher than 5.

Category: Supervision	Individual Assessment	Mitigation	Adjusted Assessment
Presence, accessibility, and effectiveness of leadership for all teams and personnel. Leaders not task overloaded. Clear chain of command.			

Category: Planning	Individual Assessment	Mitigation	Adjusted Assessment
Adequate mission planning time with planned face-to-face briefings. Team input solicited. Urgency not driving the mission. SOPs being followed, required equipment on-site.			

Category: Team Selection	Individual Assessment	Mitigation	Adjusted Assessment
Level of individual training and experience. Team cohesiveness and atmosphere that values input/self-critique.			

Category: Team Fitness	Individual Assessment	Mitigation	Adjusted Assessment
Level of overall physical fitness of team. Level of crewmember's rest/fatigue and overall morale. Team members with major life distractions.			

Category: Communication	Individual Assessment	Mitigation	Adjusted Assessment
Infrastructure: Radio communications clear throughout area of operations; communications plan established and checked. Last minute changes in the plan can be clearly communicated to IC/Ops and agreed upon or face-to-face re-briefing.			

Category: Contingency Resources	Individual Assessment	Mitigation	Adjusted Assessment
Known resource availability/response time for back-up plan or accident response. Shared freq & known capabilities.			

Category: Environment	Individual Assessment	Mitigation	Adjusted Assessment
Extreme temperatures, elevation, difficulty of terrain (aspect, foliage, slope, etc.) long approach, remoteness.			

Category: Incident Complexity	Individual Assessment	Mitigation	Adjusted Assessment
Activities that require special technical knowlege or skills. Number of variables that impact the performace of the mission. How well understood and how controlled are those variables? Pace of operations? Are other factors driving tempo? How much are we relying on perfect human performance for a successful outcome?			

TOTAL	8-35 Green	36-60 Amber	61-80 Red		TOTAL	

NOTE: The numerical values and/or color codes assigned are not the most important element of the GAR. The team discussion that follows to identify, understand, and mitigate the risks/hazards involved is the critical step in the process.

APPENDIX E: EQUIPMENT

Equipment in use will vary between each NPS Unit who has an established short-haul program. Equipment types and configurations will vary depending on terrain, mission type, and helicopter make/model. A detailed configuration description should be included in each local short-haul plan.

New programs should contact the NPS Short-haul Working Team for further guidance on current vendors who provide equipment meeting the specifications stated in Chapter 4.1

Listed below are the NPS units with active and approved short-haul programs and the current Make/Model helicopter in use. Detailed rigging configurations for each make/model can be found in the HSHU collaboration website "box" https://account.box.com/login.

DENA – AS350B3 (Left-hand drive)
MORA – AS350B3 (Right-hand drive)
GRTE – AS350B3 (Right-hand drive)
YELL – AS350B3 (Left-hand drive)
MEVE – AS350B3 (Left-hand drive)
YOSE – Bell 205 A++ (Left-hand drive)
SEKI – AS350B3 (Left-hand drive)
GRCA – MD 900 (Ambidextrous)
– AS350B3 (Left-hand drive)

NPS Short-haul
New Equipment Testing Approval Request Form

Unit Name:
Name of Requestor:
Date of Request:

1. Describe the equipment submitted for approval.

2. Describe the advantage to your program by utilizing this equipment.

3. How was the item procured (commercially, custom, in-house)?.

4. How will the equipment be tested?

5. How will the results be measured?

6. Is this equipment currently in use for this purpose within another short-haul program? Where?

7. Using Severity, Probability, and Exposure (SPE) risk analysis format, describe how your program mitigated the risks of the equipment.

Severity:
Probability:
Exposure:

8. Describe the equipment submitted for approval.

APPENDIX F: DOCUMENTATION

The following documents/forms are required or provide examples that will aid in complying with required documentation and statistic reporting as outlined in Chapter 5.14 of this plan.

REQUIRED DOCUMENT/FORM LIST:

Initial Check Spotter Certification Record – Page F2
- Must be completed and submitted to the Regional Aviation Manager (Chapter 2.2.A)

Annual Short-haul Program Statistics Report – Page F3
- Will be submitted annually to the HSHU Chair via direct entry into the NPS Annual Statistics Spreadsheet in "box" https://account.box.com/login or submission of this form to the NPSSHWT Chair (Chapter 5.14)

Annual Short-haul Program Presentation – Page F4 (Template found in "box")
- Will be presented annually at the HSHU/NPSSHWT Meeting and uploaded into the NPS Annual Presentation folder in "box" https://account.box.com/login or submitted to the NPSSHWT Chair (Chapter 5.14)

EXAMPLE DOCUMENT/FORM LIST:

NPS Operational Short-haul Report – Pages F5 & F6
- May be completed to aid in the collection of program statistics and lessons learned for the required Annual Short-haul Program Statistics Report and Presentation.

Short-hauler Certification and Annual Training Record – Page F7
- Example form that can be used to meet documentation requirements in Chapters 2.2 and 2.3

Spotter Certification and Annual Training Record – Page F8
- Example form that can be used to meet documentation requirements in Chapters 2.2 and 2.3

Short-haul Rope Usage and History – Page F9
- Example form that can be used to meet documentation requirements in Chapter 4.3

Name:_____ Date:_____

Unit:_____

Initial Check Spotter Certification Record

QUALIFICATION REQUIREMENTS

Task	*Date Completed*	*Initial*
Qualified as Helicopter Manager (HMGB) or All-Hazard/Resource Helicopter Manager (HEAM) per RM-60		
Served as a qualified Spotter for at least two (2) years		
Instructed at least two (2) annual short-haul trainings		
Meets all Spotter requirements		

SUPPORTING DOCUMENTATION

Helicopter Manager	*Details/Notes*	*Date Verified*	*Initial*
Qualified IQCS (HMGB)			
Qualified IAT/RM-60 (HEAM)			

Annual Training	*Location Instructed*	*Date*	*Initial*
Training #1			
Training #2			

Comments:

This individual has demonstrated the competence to carry out the necessary elements required of a short-haul Check Spotter. They are a current short-haul Spotter and are recommended for qualification as a short-haul Check Spotter.

Program Manager/Check Spotter Signature	Program Manager/Check Spotter (printed name)	Date

Regional Aviation Manager Signature	Regional Aviation Manager (printed name)	Date

ANNUAL SHORT-HAUL PROGRAM STATISTICS REPORT

Year:
Unit Name:
Unit Address/Phone number:
Point of Contact:

1) TOTAL NUMBER OF SHORT-HAUL TRAININGS CONDUCTED:

2) TOTAL NUMBER OF TRAINING SHORT-HAUL EVOLUTIONS[1]:

3) TOTAL NUMBER OF TRAINING SHORT-HAULERS TRANSPORTED:

4) TOTAL NUMBER OF SAR SHORT-HAUL MISSIONS:

5) TOTAL NUMBER OF SAR SHORT-HAUL MISSION EVOLUTIONS:

6) TOTAL NUMBER OF SAR SHORT-HAULERS TRANSPORTED:

7) TOTAL NUMBER OF PEOPLE RESCUED BY SHORT-HAUL:

8) TOTAL NUMBER OF LIVES SAVED[2] USING SHORT-HAUL:

9) TOTAL NUMBER OF LE SHORT-HAUL MISSIONS:

10) TOTAL NUMBER OF LE SHORT-HAUL MISSION EVOLUTIONS:

11) TOTAL NUMBER OF LE SHORT-HAULERS TRANSPORTED:

12) TOTAL NUMBER OF FIRE SHORT-HAUL MISSIONS:

13) TOAL NUMBER OF FIRE SHORT-HAUL MISSION EVOLUTIONS:

14) TOTAL NUMBER OF FIREFIGHTER SHORT-HAULERS TRANSPORTED:

15) TOTAL NUMBER OF QUALIFIED SHORT-HAULERS:

16) TOTAL NUMBER OF QUALIFIED SHORT-HAULER SPOTTERS:

17) TOTAL NUMBER OF QUALIFIED SHORT-HAUL CHECK SPOTTERS:

18) TOTAL NUMBER OF DECEASED RETRIEVED BY SHORT-HAUL:

19) TOTAL NUMBER OF CAMP OPERATIONS USING NPS LE:

20) ANNUAL SHORT-HAUL PROGRAM PRESENTATION WITH LESSONS LEARNED

This report will be submitted annually to the Interagency Helicopter Short-haul Unit (HSHU) Chair via direct entry into the NPS Annual Statistics Spreadsheet in "box" https://account.box.com/login or submission to the NPSSHWT Chair.

[1]EVOLUTION: Movement of a short-haul load from one location to another.

[2]LIVES SAVED: Without NPS short-haul intervention, a life or limb would have been lost.

ANNUAL SHORT-HAUL PROGRAM PRESENTATION

This presentation is given in PowerPoint format at the annual HSHU/NPSSHWT meeting to provide a season summary and program overview/update, along with lessons learned to be shared for the benefit of all member programs. A template can be found in the HSHU collaboration website "The Box" in the Annual Presentations folder.

NOTE: Any significant incident or event that specifically applies to short-haul equipment and/or procedures where the short-haul community would benefit from the lessons learned should be reported immediately using SAFEHAUL. If there is an incident with the aircraft, or if the larger aviation community would benefit from the lessons learned, file a SAFECOM in addition to a SAFEHAUL (See Chapter 5.4).

Presentation Content:

Program Name/Year

Staff size and composition (# of Short-haulers, Spotters, Check Spotters)

General Program Information

- Helicopter(s) used
- Contract type/length
- Secondary Release System
- Mission Profiles
- Training
- Etc.

Notable program changes/new things/highlights

Stats Overview

Notable Operations with lessons learned

Discussion Topics/Bin Items

Program Manager and Contact Information

NPS OPERATIONAL SHORT-HAUL REPORT

This report captures incident details, the tracking of personnel, and equipment used.

Incident Name:	**Incident #:**
Mission Type: ☐ **SAR** ☐ **Fire** ☐ **MIG/LE**	
Incident Location:	**Incident Commander:**

Summary

Number of Patients:_____

Patient Condition/Injury:_____

Patient Extraction Equipment used:

Description of Environment (Wx, Terrain, Altitude, Airspace):

Personnel

Position	Name	Participated in GAR?
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**
		☐ **YES** ☐ **NO**

NPS OPERATIONAL SHORT-HAUL REPORT, cont.

Narrative / Sequence of Events

Replacement Gear

Quantity	Item	Justification

Approvals

IC Approval: ☐ Yes ☐ No

Order Placed: ☐ Yes ☐ No

Report Prepared By:_____ **Date:**_____

Name:_____ Year:_____

Unit:_____

Short-hauler Certification and Annual Training Record

CLASSROOM QUALIFICATION REQUIREMENTS

Task	*Date Completed*	*Initial*
Completed Interagency Helicopter Crewmember Training course (S-271)		
Participate in Annual Short-haul Training that includes: a helicopter safety refresher, review and discussion of the local short-haul operations plan, emergency procedures, risk assessment, and short-haul related incidents and lessons learned.		
Short-haul specific Crew Resource Management (CRM) review and discussion		
Demonstrate knowledge of the inspection, care and maintenance of short-haul equipment and rigging.		
Demonstrate knowledge of short-haul procedures.		
Demonstrate knowledge of emergency procedures.		
Demonstrate knowledge of mission components, effective CRM, and ability to perform risk assessments.		

LIVE EVOLUTIONS

Returning Short-hauler: Complete at least two short-hauls without procedural error. At least one must be in typical terrain.

Task	*Date Completed*	*Initial*	*Comments*
Evolution #1			
Evolution #2			

Initial Short-hauler: Complete at least four short-hauls without procedural error. At least two must be in typical terrain.

Task	*Date Completed*	*Initial*	*Comments*
Evolution #3			
Evolution #4			

Comments:

This individual has demonstrated competence to carry out the necessary elements required of a Short-hauler. They performed as a human external load without procedural error. Completion of this form satisfies the requirements for NPS Short-hauler training NP-600.

Spotter Signature	Spotter (printed name)	Date

Name:_____ Year:_____

Unit:_____

Spotter Certification and Annual Training Record

CLASSROOM QUALIFICATION REQUIREMENTS

Task	*Date Completed*	*Initial*
Completed the Interagency Helicopter Crewmember course (S-271)		
Participate in Annual Short-haul Training that includes: a helicopter safety refresher, review and discussion of the local short-haul operations plan, procurement documents, emergency procedures, risk assessment, and short-haul related incidents and lessons learned		
Short-haul specific Crew Resource Management (CRM) review and discussion		
Demonstrate effective crew resource management (CRM) with the Pilot and short-haul team		
Demonstrate knowledge of the inspection, care and maintenance of short-haul equipment		
Demonstrate ability to rig the helicopter for short-haul, to provide a safety briefing to, and conduct a safety check of, short-haul personnel without procedural error		
Demonstrate knowledge of emergency procedures		
Demonstrate knowledge of short-haul procedures, mission structure, and risk assessment		

LIVE EVOLUTIONS

Returning Spotter: Spot at least four loads without procedural error. Two must be in typical terrain.

Evolutions	*Date Completed*	*Initial*	*Comments*
Load #1			
Load #2			
Load #3			
Load #4			

Initial Spotter: Spot at least six short-hauls without procedural error. At least two must be in typical terrain.

Evolutions	*Date Completed*	*Initial*	*Comments*
Load #5			
Load #6			

Comments:

This individual has demonstrated the competence to carry out the necessary elements required of a short-haul Spotter. They performed without procedure error. Completion of this form satisfies the requirements for NPS short-haul Spotter training NP-601.

Check Spotter Signature	Check Spotter (printed name)	Date

Unit Name:

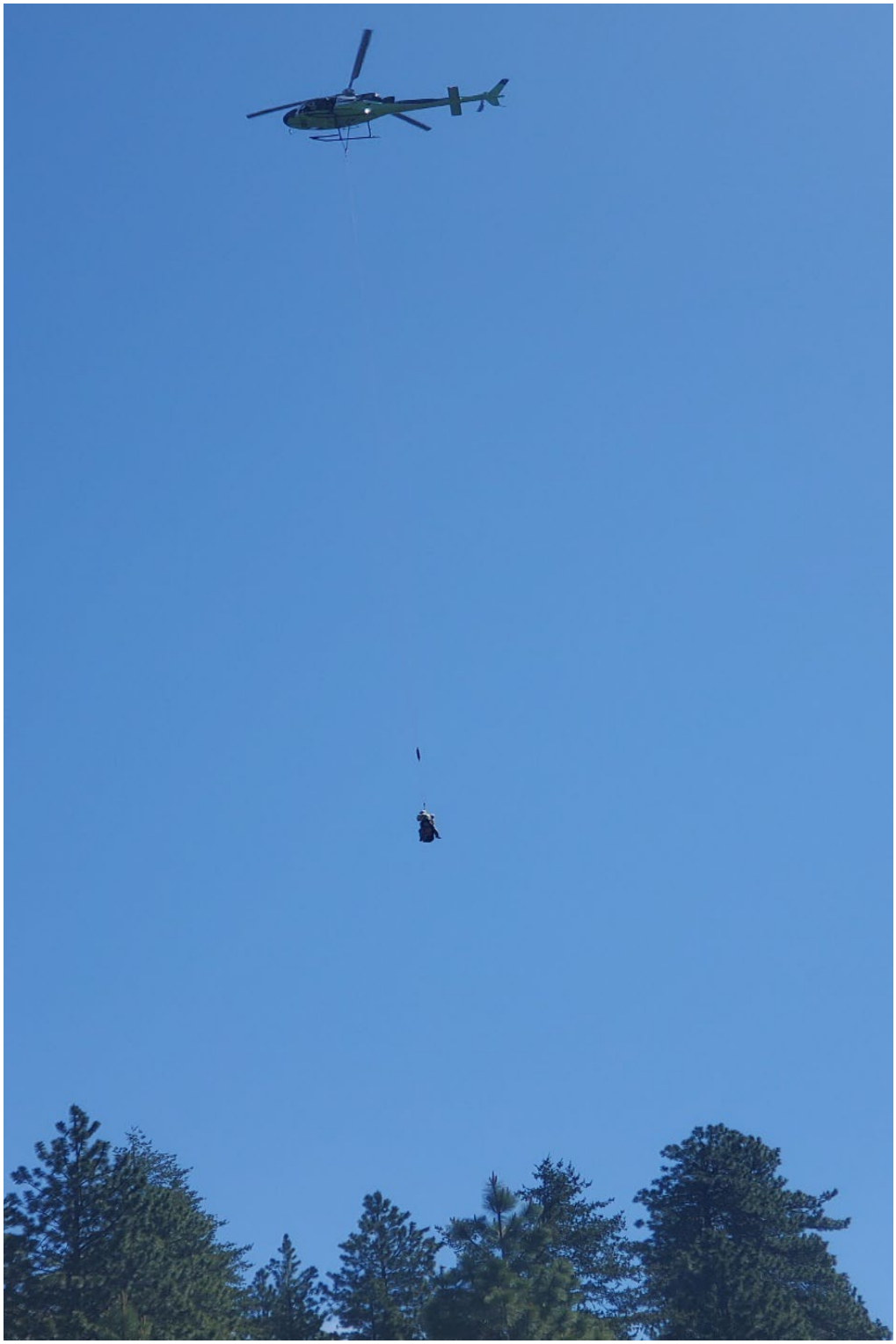
SHORT-HAUL ROPE USAGE AND HISTORY

CATEGORY	INFORMATION
PURCHASED FROM	
MANUFACTURING DATE	
ROPE NUMBER	
DATE IN SERVICE	
RETIRE DATE	
LENGTH	

DATE USED	INCIDENT LOCATION	NUMBER OF SHORT-HAULS	TYPE OF USE (SAR) TRAINING, ETC.)	DATE INSPECTED	INSPECTOR'S PRINT NAME & INITIAL	ROPE CONDITION & COMMENTS

APPENDIX G:

NPS and USFS Helicopter Short-haul Interoperability Plan – 2023 v1



Introduction

In 2015 the United States Forest Service (USFS) Short-haul Program was developed and implemented with the National Park Service (NPS) providing the guidance and leadership needed to initiate this helicopter program from their decades of experience. Since then, Interagency Helicopter Operations Subcommittee (IHOpS) has tasked the two agencies' Short-haul working teams to align practices, equipment, and procedures to provide and support a consistent and standardized response particularly when operating in the interagency wildland fire environment. By combining efforts, the agencies have already seen benefits to operations in support of the public, agency personnel, Incident Management Teams, and interagency cooperators by designing similar staffing requirements, equipment, and training standards. While the founding doctrines between the two agencies have differences, the mission to insert and extract personnel from difficult terrain, environments, and situations continues to be the common objective.

Intent

Helicopter short-haul programs for the USFS and NPS provide a high standard of operational support to fire management through aerial insertion and extraction capabilities. Each agency will function under their approved operations plan until personnel from each agency staff an aircraft together. Once that occurs, this Appendix, *The NPS and USFS Helicopter Short-haul Interoperability Plan*, will provide guidance. Both agencies shall work in a collaborative manner to operate with mixed agency short-haul personnel. The agreed-upon level of interoperability will be identified below in the *Operating Plan*

Operating Plan

While recognizing that agency-specific needs may preclude comprehensive standardization of all procedures and equipment, the interoperability of the two agencies' short-haul programs shall be maintained to ensure operating procedures and equipment remain compatible. This is accomplished by the operating plan accepting the differences between the two agencies. Below are the differences and mutually agreed upon points:

Aircraft and Pilot Carding

DOI and USDA requirements for short-haul operations are standardized and consistent through the Interagency Helicopter Pilot Practical Test Standards and aircraft carding standards.

Training

Annual short-haul training and its requirements for both initial and refresher participants are outlined and standardized for both agencies. An annual short-haul training must be attended. Both agencies will accept each other's annual training and attending an individual agency's training is not required to operate with that agency.

Short-haul trainings for either agency provide similar information for short-haul operations and contain: Crew Resource Management (CRM), equipment, policy changes and updates, communication procedures, emergency procedures, review of lessons learned from Human External Cargo (HEC) operations, and annual ground school and flight proficiency requirements. The following course are considered equivalent:

- Short-hauler (SHLR) Training: FS-511 and RT-511F to NPS 600
- Spotter (SHLS) Training: FS-512 and RT-512F to NPS 601

Qualifications

Short-haul qualifications are standardized and listed within the NWCG 310-1 Federal Wildland Fire Qualifications Supplement.

- Experience for trainees to obtain qualifications may occur through interoperability assignments, however, certification of qualifications must be approved by the personnel's agency.

Equipment

The following equipment must be used:

- Must have an approved Dual Hook System with a FAA certified HEC Hook for attachment as defined by 14 CFR Part 27.865 (c) for Short-haulers on the line.
- For all onboard flight activities, Personal Protective Equipment (PPE) shall be worn in accordance with current contractual requirements, NWCG Standards for Helicopter Operations (NSHO) and Interagency Aviation Life Support Equipment (ALSE) standards during operations.
- Each personnel's agency approved equipment will be accepted by the hosting agency.
- Minimum of one attachment point for Short-hauler.
- Personnel will be familiar with medical and short-haul equipment; only equipment that is approved by their agency will be used by that individual.

Environments

Personnel will only be approved and authorized to operate as a short-hauler or a spotter commensurate with their training and agency policy. Personnel will not perform any short-haul operational functions in technical environments and/or requiring specialized equipment or training for which the personnel does not already possess (e.g., swift water operations, forested canopies, or wildland fire operations).

Communications

All communications are standardized between the two agencies including hand-signals, a verbal script, and emergency procedure communications for the pilot, spotter, and short-hauler(s). The standard verbal script for both agencies allows for clear communications and operational specifics when necessary.

Personnel Ordering

For wildland fire incidents, the National Wildfire Coordinating Group (NWCG) has established incident qualifications to ensure standardization of minimum training requirements of the Short-haul positions. These qualifications are identified in the NWCG PMS 310-1 Federal Wildland Fire Qualifications Supplement and may be used in the ordering of personnel between or within agencies.

Risk Assessment

Both agencies have established and standardized the use of the Green, Amber, Red (GAR) Risk Assessment for helicopter short-haul operations.

Proficiencies

Proficiency short-hauls will be required to be completed and at the hosting agency's expense (if not assigned to an incident) to ensure no loss of currency by the detailing personnel.

Procedures

Before engaging in interagency short-haul operations, the following shall occur at a minimum annually:

- Briefing of differences in equipment and training
- Brief and review "Equipment Check" for the helicopter, spotter, and Short-hauler. These are outlined in the agency's operational plans.
- Review of verbal and non-verbal communication by the pilot, spotter, and Short-hauler
- Review emergency procedures between the pilot, spotter, and Short-hauler
- Mockup and walk-through of a proficiency Short-haul
- Complete and discuss an operational risk assessment (GAR)
- Hosting base manager or check spotter will complete the *Interoperability Short-haul Booster In-briefing and Assurance Form* or roster personnel on an annual training completion memo
- Perform a minimum of one short-haul proficiency for all detailed personnel and determine if more proficiency flights are required
- Complete an AAR for the proficiency flight(s) and document the use of equipment

Emergency Procedures

Emergency procedures are standardized between both agencies.

Documentation

Both agencies are responsible for maintaining their own documentation records for personnel, aircraft, and equipment. For reporting purposes, the hosting unit will document any interoperable operations within their agency's established processes, and it will be reported to the HSHU Chair for annual data compilation.

Funding

Funding for short-haul operations, ordering, training, and other standard costs are the hosting unit's responsibility. Any questions associated to funding should be directed to the NPS's National Helicopter Operations Specialist or the USFS's National Assistant Helicopter Operations Specialist.

Incident Reporting

All accidents and incidents will be reported according to the host agency's policies or the agency that has operational control. Injuries shall be report in accordance with the employee's agency. The Base Manager will immediately notify the Helicopter Short-haul Unit Chair or Vice Chair, regardless of agency, when an incident occurs that involves an immediate risk to other bases. Incidents or incidents with potential will be documented on the SAFECOM in addition to any internal program reporting system.

Quality Assurance

Annual review of the Interoperability Plan will occur by the Helicopter Short-haul Unit (HSHU) and any proposed changes will be agreed upon by the HSHU and added to the Operational Plan for each agency. The Operational Plans are approved by the Assistant Director, Aviation for the USFS and the National Aviation Manager for the NPS respectively to ensure appropriate oversight and authorization. To ensure Interoperability standards are upheld and continued between the two agencies, an *Interagency Short-haul Operations Quality Assurance* was developed and will be used by both agencies independently and during Interoperability reviews.

INTEROPERABILITY SHORT-HAUL BOOSTER IN-BRIEFING AND ASSURANCE FORM

Complete the following tasks with program management signature prior to conducting live flights.

Hosting Unit:_____	**Boosting Unit:**_____
☐ **USFS** ☐ **NPS** ☐ **Other:**_____	☐ **USFS** ☐ **NPS** ☐ **Other:**_____

OVERVIEW - Discussion Topics May Include:

Agency Background, Crew Background, Vender/Pilot Background, Booster Objectives and Experience, Interoperability Plan, Mission Profiles (Swift Water, High Angle, etc.), and Administrative Responsibilities.

AIRCRAFT - Discussion Topics May Include:

Aircraft Make and Model, Aircraft Emergency Procedures, Aircraft Configurations, Aircraft Limitations, Aircraft Dual Hook System/Secondary Release System (NPS Only), Pilot Orientation, and the Standard Aircraft Briefing including ALSE Equipment.

READINESS - Discussion Topics May Include:

Procedural Differences, Facilities, Local Environment and Typical Terrain, Manifesting and Load Calculations, Gear Location and Staging, Communication (Frequencies, Programing, Comms Plan, and Phone Numbers), Aircraft Configurations (Initial Attack, Short-haul, Project, Cross Country), GAR SOP's, Crew SOP's, Fire Red Cards/Qualifications, and Booster Detail Logistics.

EQUIPMENT - Discussion Topics May Include:

Interoperability Differences (Policy, Dual Hook, Y-Lanyard/Rope, PPE), Harness, Knife, Tethers (e.g. HEC/Cargo/Spotter), Carabiners, Attachment Points, Haul Line Configurations, Medical Extraction Devices

POSITIONS - Discussion Topics May Include:

- **Spotter**: Spotter Equipment/Ops Check, Spotter Tether and Attachment, Spotter Role and Seating Location, Communications (Between Spotter, Hauler, Pilot, other Aircraft), Emergency Procedures, Radio Management, and Oversight.

- **Hauler / Attendant**: Hauler Equipment/Ops Check, Hauler Tether and Attachment, Hauler Role, Communications and Hand Signals, Configuration and Line Attachment, Emergency Procedures, On Scene Management.

Medical - Discussion Topics May Include:

Local Emergency Medical Advisor, National vs Regional Medical Direction, Certification Level, Agency vs Public, Transfer of Information During Patient Contact/Care, Equipment for Extraction Onsite, SOP's for Patient Extraction.

INTEROPERABILITY PLAN REQUIRED TOPICS:

- ❑ Briefing of differences in equipment and training.
- ❑ Brief and review the "Equipment Check" for the helicopter, spotter, and short-hauler.
- ❑ Review of verbal and non-verbal communication by the pilot, spotter, and short-hauler.
- ❑ Review emergency procedures between the pilot, spotter, and short-hauler.
- ❑ Mockup and walk-through of a proficiency short-haul.
- ❑ Complete and discuss an operational risk assessment (GAR).
- ❑ Perform a minimum of one short-haul proficiency for all detailed personnel and determine if more proficiency flights are required.
- ❑ Complete an AAR for the proficiency flight(s) and document the use of equipment.

ONCE ALL SECTIONS HAVE BEEN THOROUGHLY DISCUSSED AND SUCCESSFULLY COMPLETED, SIGN BELOW. USE ONE FORM FOR EACH BOOSTER.

Hosting Check Spotter / Spotter Name:	**Booster Name and Position:**
Signature and Date:	**Signature and Date:**

AFTER CHECKLIST IS SIGNED, SAVE AND EMAIL TO USFS PROGRAM MANAGER AND APPROPRIATE NPS REGIONAL AVIATION MANAGER

APPENDIX H: QUALITY ASSURANCE AND TRAINING REVIEWS:

The purpose of the Interagency Short-haul Operations Quality Assurance (QA) review is to ensure that all Forest Service and National Park Service short-haul programs are meeting the intent of their respective Short-haul Operations Plans and providing a Quality Assurance Program. This information will be used to provide a detailed report to the appropriate aviation staff to ensure the Quality Assurance Program is progressive, appropriate, and consistent with the mission.

Annual short-haul training reviews are intended to provide a framework for feedback to short-haul programs while observing their annual short-haul training. It is also intended to promote the healthy exchange of ideas and best practices between programs. Unlike a Quality Assurance review, which is a comprehensive, formal review of an entire program, this guide focuses on operational aspects of the program that are observed during an annual training and evaluating how well new Short-haulers and Spotters are prepared for their roles after the completion of their training.

These forms can be found in the HSHU collaboration website "box" https://account.box.com/login.

GLOSSARY AND ACRONYMS

ALSE:
Aviation Life Support Equipment.

Anchor, Primary:
An FAA approved cargo hook located underneath the helicopter. This term is also used to identify a location inside the aircraft to affix a short-haul Spotter tether.

Anchor, Secondary:
An FAA approved belly band or attachment point.

ANSI (American National Standards Institute):
An American organization that establishes standards, including strength testing standards, for some equipment used in short-haul operations.

Ballast:
Weight suspended on a short-haul rope to prevent it from becoming entangled in the helicopter rotor system during forward flight.

Belly Band:
A secondary anchor consisting of a belt which is secured around the fuselage of the helicopter through the aft cabin doors.

Boost Human External Cargo Systems Inc:
Manufacturer of a dual actuated dual release hook system which is attached to the belly of a helicopter allowing the Pilot to quickly release attached lines.

Carabiner:
An opening/closing metal link made of various metal alloys used to link one or more systems together.

Cargo hook:
Term commonly used to identify the load-carrying device mounted on the belly of the helicopter to which external equipment or cargo is attached. Cargo hooks usually have both manual and electrical quick-release mechanisms operated by the Pilot.

CE (European Conformity):
The CE marking on a product indicates the compliance with European Union standards,

Climbing Helmet:
Protective headgear used in rock climbing and technical rescue. These helmets have an internal suspension system to protect the head from a blow and a multipoint chin restraint system to prevent the helmet from being knocked off the user's head. Commercially produced helmets typically meet the standards of a certifying body such as ANSI, UIAA or CE.

EN:
European standard (market standards).

Evolution:
Movement of a short-haul load from one point to another.

Extraction:
The phase of a short-haul evolution involving transport of personnel from a short-haul site to a staging helispot/helibase.

FAA (Federal Aviation Administration):
An agency in the Department of Transportation that is responsible for the safety of civilian aviation.

FARs (Federal Aviation Regulations):
Rules prescribed by the FAA governing all aviation activities in the United States. The FARs are part of Title 14 of the Code of Federal Regulations (CFR).

GAR (Green Amber Red):
A risk assessment model that allows for time critical assessments and generates communication concerning the mission risks.

Hard Point(s):
An attachment point designed to carry a load.

Harness:
A commercially sewn climbing or rescue harness. Design elements typically include contrasting stitching to allow inspection for wear and double pass-through buckles to provide for security. Harness features may include extra padding, gear loops or hard connection points. Dependent upon agency preference and application, short-haul rescuers may either wear an independent seat harness, a seat and chest harness combination, or a full body harness. Commercially manufactured harnesses typically meet the standards of a certifying body such as ANSI, UIAA or CE.

Haul Bag:
Bag used for hauling equipment.

HEC:
Human External Cargo.

Hook Knife:
A J-shaped bladed knife designed to quickly cut through cordage or webbing. Used by a short- hauler for emergency cutaway from the short-haul rope or tether.

ICAR:
International Commission on Alpine Rescue.

In-Flight Emergency:
A condition threatening the continued safe flight of the helicopter. This may include critical conditions such as loss of engine power, tail rotor failure, or other major mechanical malfunctions. Such situations will require an immediate autorotation to the ground.

Kilonewton (kN):
An international standard unit of force equal to 1000 newtons or 224.8 pounds. One newton is the force needed to accelerate one kilogram of mass at the rate of one meter per second squared.

Line:
Another term used for "rope". May refer to synthetic rope, wire rope, of "haul-line"

NSHO:
NWCG Standards for Helicopter Operations.

Onboard Systems International:
Manufacturer of a dual actuated dual release hook system which is attached to the belly of a helicopter allowing the Pilot to quickly release attached lines.

OSHA:
Occupational Safety and Health Administration

PIC:
Pilot In Command.

Power Assurance Check:
The Pilot will bring the helicopter to a stable hover and demonstrate a positive rate of climb prior to actual short-haul insertion. This check will be accomplished at actual altitude and temperature for initial insertion.

PPE:
Personal Protective Equipment.

Short-haul:
To transport one or more persons suspended beneath a helicopter (HEC - Human External Cargo).

Short-haul Anchor System:
The points of attachment of the short-haul rope system to the helicopter.

Short-hauler:
Personnel trained and qualified in short-haul procedures.

Short-haul Mission:
An incident or operation (not training) where helicopter short-haul is utilized to accomplish objectives. A short-haul mission may involve multiple evolutions but must include at least one short-haul evolution.

Short-haul Site:
The location where personnel will be inserted to or extracted from during a short-haul evolution.

SPE (Severity, Probability, Exposure) Model:
A risk assessment model that is used to determine risk as a function of severity, probability, and exposure, i.e., Risk = f (S, P, E).
This model uses this formula: Risk = Severity x Probability x Exposure.

Spotter:
Aircrew member who assists and supports the Pilot by directing the mission, identifying hazards, providing local area knowledge, and providing an extra set of eyes in and around the aircraft during a short-haul mission or training.

Tether:
A commercially sewn webbing or cordage strap used to connect a short-haul harness to an anchor point.

Three-Ring Release:
A release mechanism used as a secondary anchor system in Short-haul. It consists of 3 inter-looping rings which are designed to allow for release when under load.

Typical Terrain:
The anticipated environment in which operations may be conducted such as confined areas with features that may include steep slopes, cliff faces, tall trees, etc.

UIAA (Union International Alpine Association):
A European organization that certifies that equipment meets European mountaineering standards. The UIAA test fall is a laboratory simulation of the fall of a rock climber. The CE standard is replacing UIAA and new equipment may carry the CE label.