



QUANTA AVIATION
SERVICES

WORKING RULES AND REPORTING REQUIREMENTS

VERSION 2.0

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RECORD OF CHANGES

10/26/2022

Date of Initial Publication:

New document derived from Quanta
Aviation Services Aviation Standard
version 3

4/19/2024

Version 2

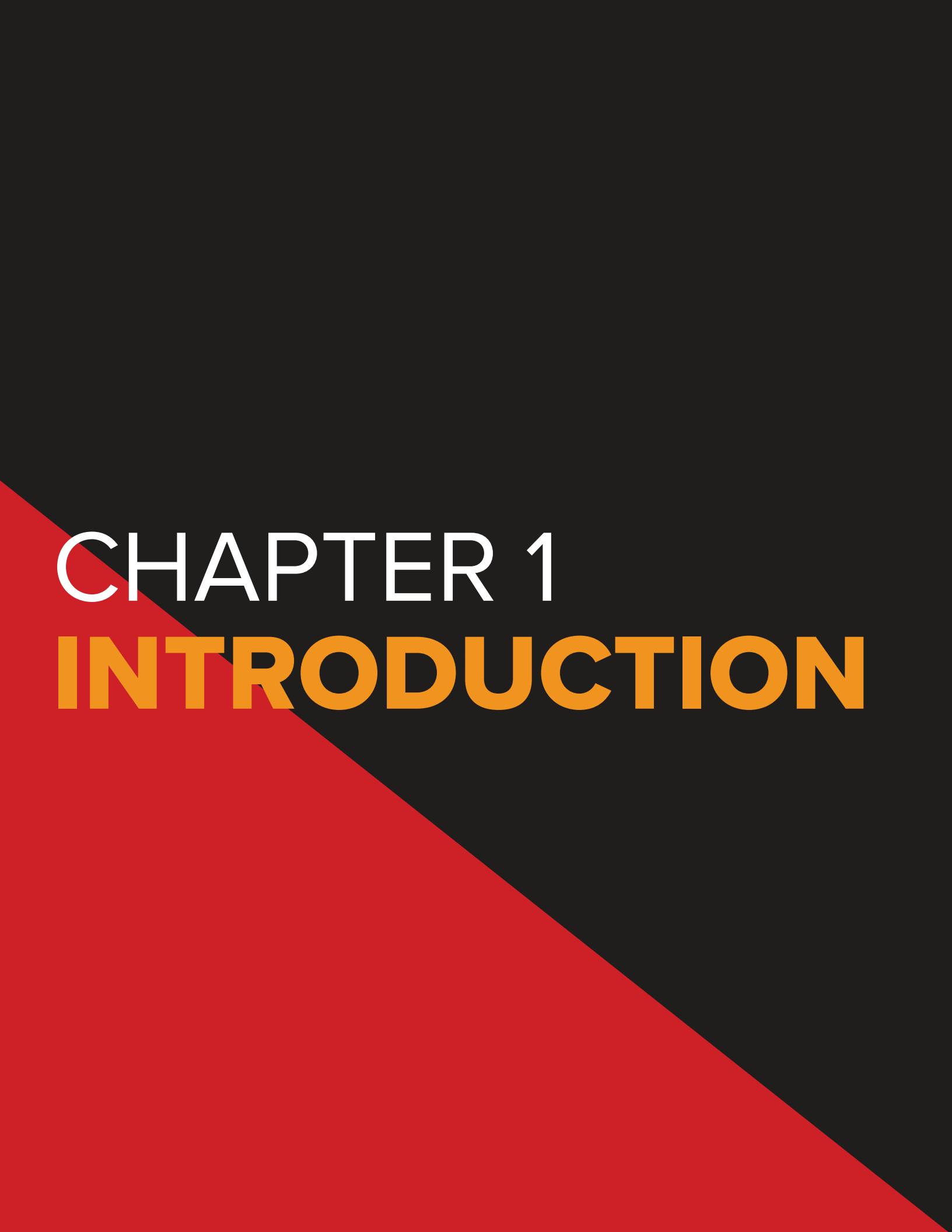
Standards Updates:

2.2.41

3.2.4.12

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CHAPTER 1

INTRODUCTION



CHAPTER 1

INTRODUCTION

1.1 Purpose

To establish work rules, prior authorization requirements, reporting criteria, and best practices for operations involving aviation resources, being conducted by, with, or for all Quanta Services operating units (OpUs). This document sets the standard for work involving aviation operations and drives continuous improvement for both Quanta OpUs and aviation service providers (ASPs) alike.

Quanta Services OpUs routinely subcontract helicopters to support power line construction and maintenance operations globally. This document aligns contractors with the work standards expected on Quanta Services projects.

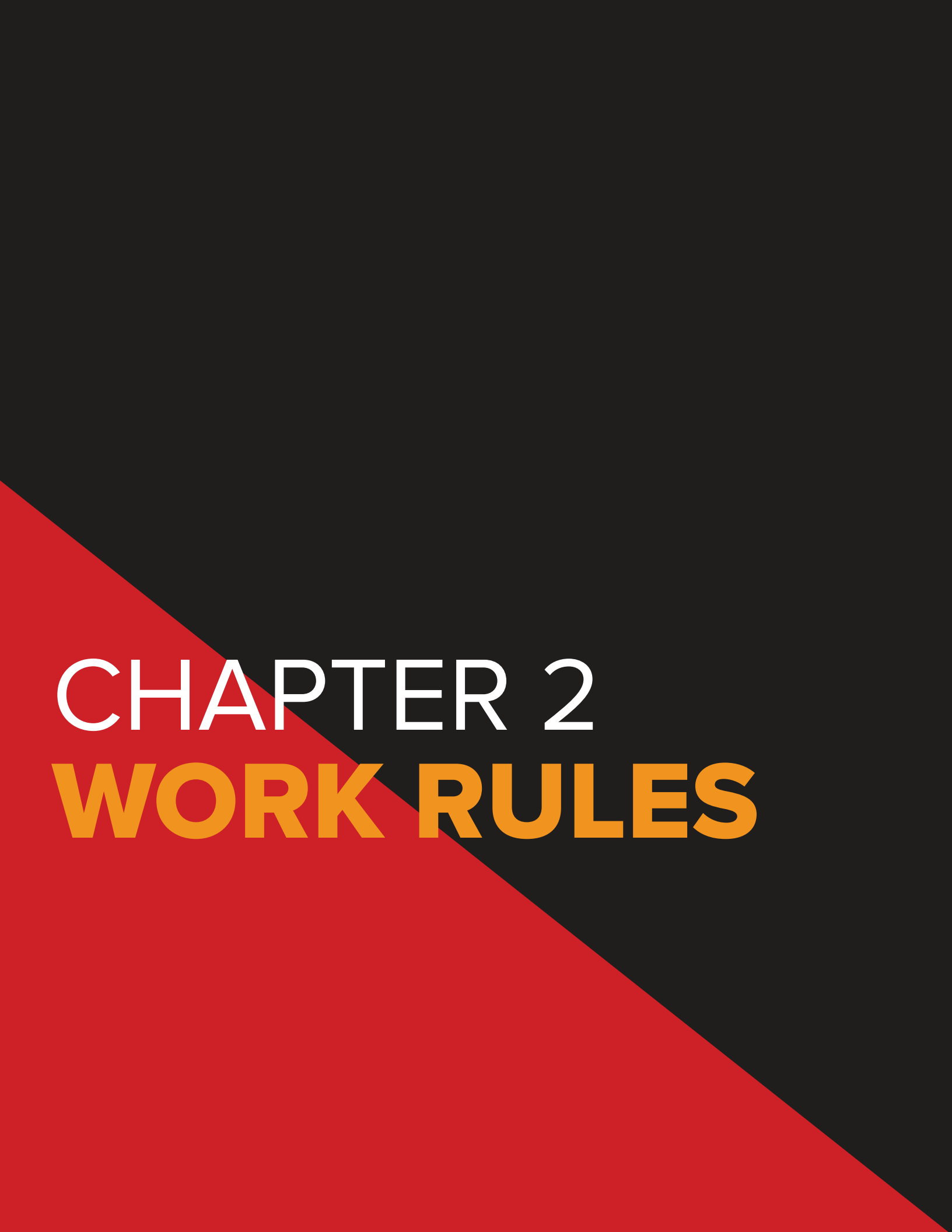
1.2 Scope

This document is to be referenced and adhered to during all operations involving aviation resources. In some cases, individual Quanta OpUs or utilities may have their own work rules specific to their unique operations that may or may not be more restrictive than the work rules, reporting, and pre-authorization requirements set forth in this document. It is the responsibility of the aviation operator to be aware of, and adhere to, any additional requirements. This does not eliminate any requirements to Quanta Aviation Services (QAS).

This document provides a uniform standard for operations and safety across Quanta projects and is applicable regardless of the actual regulation being operated under (e.g., part 91,133,135). This uniform standard applies to operations conducted in the United States, Canada, and other countries. With few exceptions, the Quanta requirements and recommended practices are not regulatory-standard or nation-specific.

1.3 Variances

QAS reserves the right to grant a variance to any of the standards or work rules herein. However, it will do so only for good cause, as determined in its sole discretion, and with appropriate controls and parameters (e.g., safety considerations, time, scope) in place. For questions regarding these standards or to request a variance from work rules, contact **David Bilbao (816-509-8890)**, **Tyler Rose (760-5222-6619)**, or QAS at 382-225-1808 or 979-338-0533. An ASP cannot proceed with work on Quanta operating unit projects until authorization is obtained.



CHAPTER 2

WORK RULES



CHAPTER 2

WORK RULES

This chapter explains rules for working with helicopters on Quanta OpU projects. The following work rules are a minimum standard in force for all Quanta OpUs or any ASP contracted to a Quanta OpU.

2.1 General Rules

- 2.1.1 All applicable federal, state/provincial, and municipal regulatory requirements shall be met on all project sites. These include but are not limited to:
- FAA/CAA regulations
 - OSHA/work safe regulations
 - DOT regulations
 - PHMSA regulations
 - EPA regulations
 - Lightning—When lightning is present within 10 miles of your work location, or if thunder can be heard, you shall be out of the air and cabbed up in a vehicle or inside a building. Work can proceed 30 minutes after last lightning strike.
- 2.1.2 Aircraft limitations shall not be exceeded. Willful exceedances of aircraft limitations will be subject to disciplinary action including removal of individual or removal of company eligibility to work on Quanta OpU project sites.
- 2.1.3 Obstacles (structures, wire, trees, etc.) shall not be allowed in the rotor disk protection zone at any time.

For skid or platform work the main rotor disk protection zone includes the following:

- Starts with a circle beneath the rotor disk and extends down 5 ft below the rotor disk; the pilot shall always be able to see the top of any obstruction under the rotor disk.
- That circle blends with a circle that extends the greater of one-half a rotor diameter (or 13 ft) all AROUND the main rotor laterally.
- That circle blends with a circle that extends 5 ft above the main rotor.
- The slope effects of any wire catenary being worked shall be taken into effect in the clearances.
- Maintain 5 ft tail rotor clearance from obstructions at all times.
- Skid or platform work between 4 to 5 ft of main rotor clearance is approvable with prior authorization.

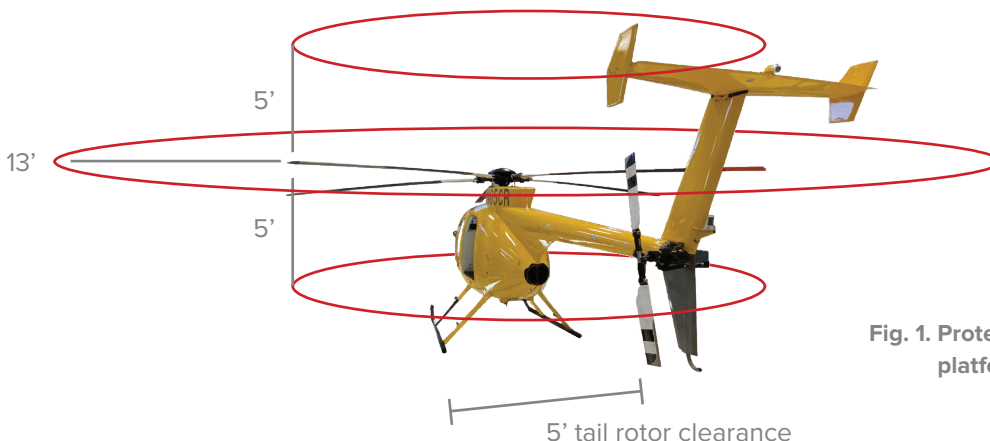


Fig. 1. Protection zone for skid or platform work.

During Class B external loads human external cargo (HEC) and non-human external cargo (NHEC), the following clearances shall be maintained at all times.

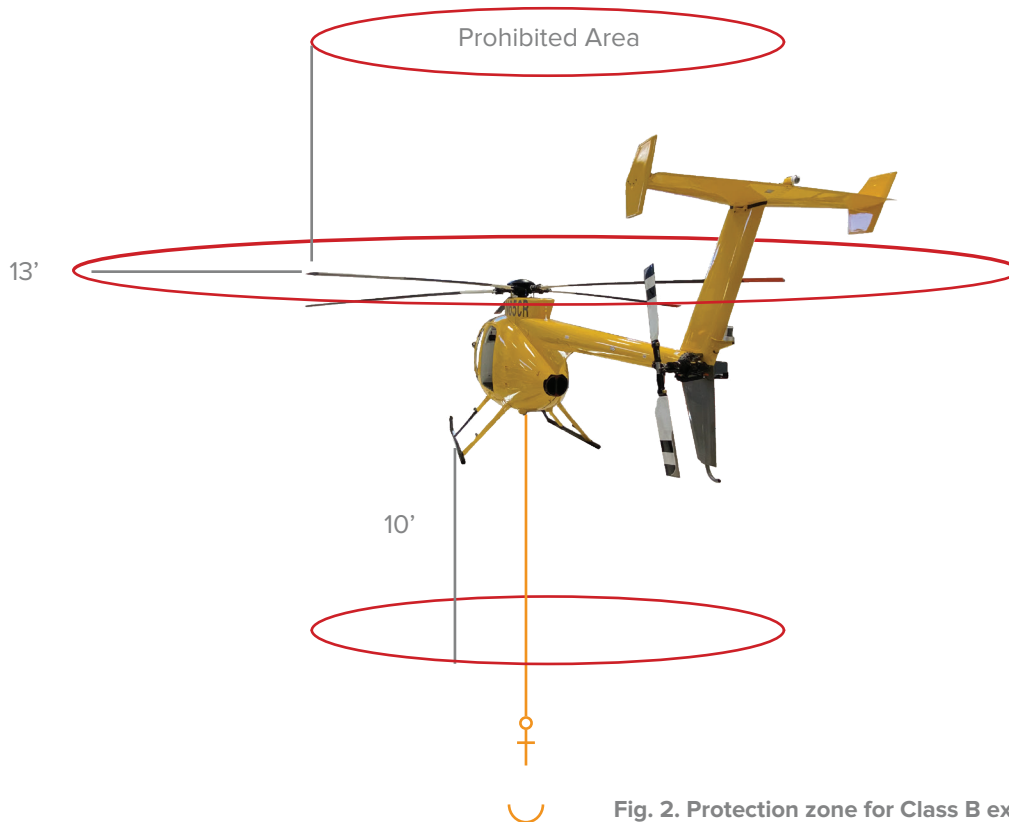


Fig. 2. Protection zone for Class B external loads.

During Class C external loads and FLIGHTS WITH NO EXTERNAL LOAD, the following clearances shall be maintained at all times.

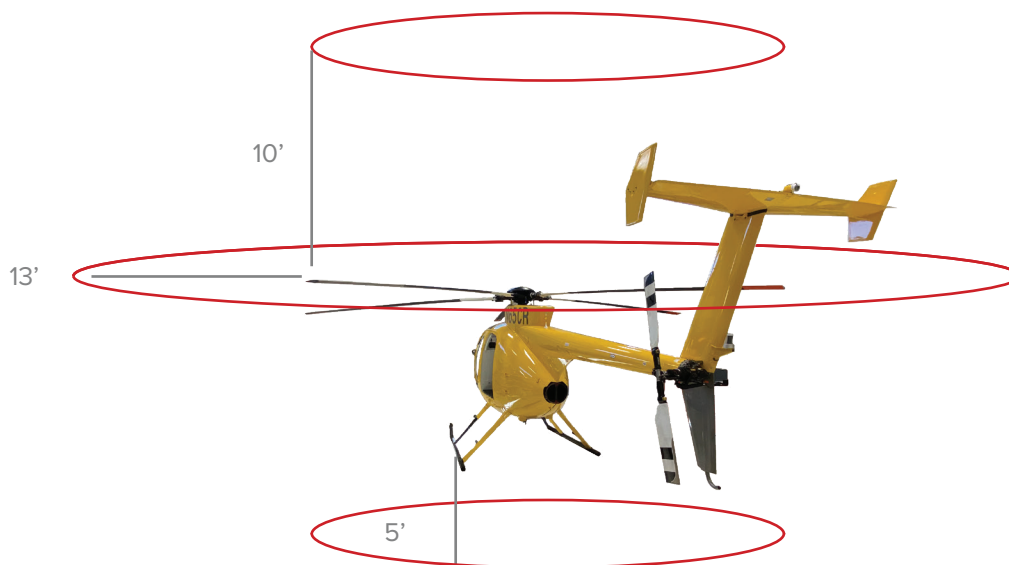


Fig. 3. Protection zone for Class C external loads and flights with no external load.

- 2.1.4 A Quanta Aviation job hazard assessment (JHA) shall be completed each day onsite, prior to the start of work.
- 2.1.5 Upon any change to project scope, the operation shall stop until the ASP Operations department determines whether it can safely perform the new work scope in accordance with rules contained in this standard.



- 2.1.6 Upon any change in the daily work scope, all work shall stop until the JHA is updated and the entire crew is briefed on the changes.
- 2.1.7 Power checks (trend checks) shall be performed on each engine each day and the power margin result will be written on the JHA. Any failure or substantial decrease in margin shall result in a work stoppage until resolved.
- 2.1.8 Inspection of the long line and other supplemental equipment will be completed each day the equipment is used and documented in the appropriate location on the tailboard.
- 2.1.9 Multiple helicopters in the same landing zone (LZ), or working the same stretch of right of way (ROW), need to tailboard together and run on the same radio channel.
- 2.1.10 All pilots shall wear flight helmets on Quanta OpU projects when part 133 operations are being conducted.
- 2.1.11 Pilots shall wear clothing that meets or exceeds requirements of the customer and job site.
- 2.1.12 Flight with less than 20 minutes worth of fuel onboard is strictly prohibited.
- 2.1.13 For work over water, personal flotation devices shall be provided to all persons onboard.
- 2.1.14 Except two-pilot aircraft or for flights with two pilots for on-the-job training (OJT), dual controls shall be removed and the covers (if any) installed.
- 2.1.15 Except for exceptional circumstances and with prior authorization, helicopter work shall be performed in the daylight hours only. The twilight hour may be used to ferry the aircraft back to its overnight location, but low-level work activities shall conclude by official sunset.
- 2.1.16 All lineworkers transferring to structures from the helicopter must have their own means of getting to the ground in the event the helicopter cannot safely retrieve them (for reasons of weather, daylight, maintenance, etc.).
- 2.1.17 All personnel participating in Quanta helicopter operations shall have the appropriate Quanta Aviation-issued qualifications for their role in the aviation operations. Appropriate qualifications include the following, as applicable.

H1: Principles of helicopter safety and orientation to helicopter work procedures:

- Personnel working in an active landing zone
- Personnel hooking up/receiving loads
- Personnel riding onboard the helicopter in a seat, in a seatbelt
- Ground-to-ground HEC transfers (when escorted by H2 trained lineworker)

Note: Pilots, mechanics, fuel truck drivers, or similar personnel of the aviation service provider do not require this training.

H2: Transferring to/from helicopters

- HEC transfers
- Skid transfers

H3: Conducting de-energized work from a long line or helicopter skid/platform

- 2.1.18 Personal protective equipment (PPE) minimum requirements: Some jobs or locations may have additional requirements.

PPE required in an active LZ:

- Eye protection (ANSI Z87.1 glasses or goggles)
- Hearing protection
- Head protection with a three-point chin strap
- HRC 2 FR or appropriate job-specific clothing
- Work boots appropriate for the work

PPE required on a helicopter skid, platform, or during HEC operations:

- Eye protection (ANSI Z87.1 glasses or goggles)
- Hearing protection
- Class E head protection with a three-point chin strap (e.g., Petzl, Kask, or similar) or a flight helmet (as required)
- HRC 2 FR or appropriate job-specific clothing
- Work boots appropriate for the work
- A full-body harness (with integrated or separate lineworker's belt as appropriate)
- Fall protection or fall arrest equipment (as appropriate)
- Radio or intercom communication with the helicopter through a flight helmet or hard hat and compatible headset (required for HEC, skid, or platform work)

2.2 Work Rules for Class B External Loads

- 2.2.1 All signal persons hooking up/receiving loads shall mark their hard hats with a distinguishable mark with dark-colored tape to facilitate pilot recognition of head signals.
- 2.2.2 For long-line operations or HEC within 50 ft of energized lines, all rigging shall be non-conductive unless prior authorization is received (non-conductive in this section refers to constructed from a fiber that passes a hot rope test clean and dry; no steel or remote hook lines).
- 2.2.3 For operations with both abrasion concerns and electrical concerns, a steel long line combined with a suitable dielectric isolator long line may be used.
- 2.2.4 For long-line operations or HEC within electrical minimum approach distance (MAD) to any energized line, long lines shall be dielectric (tested daily) or have insulating devices (tested daily) sufficient to protect against inadvertent contact.
- 2.2.5 Insulating link sticks used in long-line personnel carrying device system (PCDS) shall be rated for vertical loading in the manner used. Insulators shall not be used for human suspension without prior authorization.
- 2.2.6 Covers are meant to protect against dust, dirt, ultraviolet damage, and occasional inadvertent light contact with objects. Where long-line contact with a crossarm/static is unavoidable, steel long lines or an effective rub guard shall be used. Alternatively, use a different work method.
- 2.2.7 Long lines shall be weighted at all times to preclude tail-rotor contact with an empty line. The weight necessary will vary based on long-line size, type, and other factors, but shall not be less than 25 lbs.



- 2.2.8 Designated HEC long lines shall be used for HEC.
- 2.2.9 HEC lines may not be used for wire stringing or any other purpose that may damage or shock load the line. HEC lines and HEC systems (dual-hook systems, PSDs, etc.) may be used for cargo (e.g., ladders and blocks) provided:
- The long-line and PSD or dual-hook system manufacturers permit usage of the line/system for cargo.
 - The cargo is within the 10:1 working load limit (WLL) of the line.
 - The cargo lift is concurrent with or alternating with HEC loads (e.g., supporting clipping of conductors).
 - The pilot can release the non-human load without moving his hands from the flying positions on the flight controls.
- 2.2.10 HEC lines shall be maintained in excellent condition and in accordance with the inspection guidelines put forth by the line manufacturer.
- 2.2.11 All HEC work shall use the closest available staging location.
- 2.2.12 HEC transit for transfers to structures/wires shall not exceed four miles.
- 2.2.13 For HEC work (where lifts exceed five minutes in duration), a rigid seat, basket, or some other means of orthostatic intolerance prevention shall be used.
- 2.2.14 Combined weight of human loads with ladders, rigging, etc., shall not exceed the lesser of 800 lbs or the amount stipulated by the hook system/PSD manufacturer.
- 2.2.15 Except in an emergency, HEC shall not be performed with a grapple hook on the long line.
- 2.2.16 Except in an emergency, no more than two persons may be carried as HEC simultaneously.
- 2.2.17 Airspeed with lineworkers on the long line shall not exceed 60 knots.
- 2.2.18 Class III suspension harnesses (designed for human suspension) shall be used where a lineworker is suspended by his or her harness. Class III life safety harnesses are permissible in a man basket, air chair, supplemental seat, or boatswain's chair where the harness is loaded only in an emergency.
- 2.2.19 Any tools or items carried by or attached to the lineworker combined with the lineworker's weight shall not exceed the weight limits of the lineworker's harness or A-frames.
- 2.2.20 Ladders may be lifted with one lineworker at the top of the ladder with prior authorization; however, the lineworker's fall arrest or fall prevention shall be attached directly to the long line independent of the ladder.
- 2.2.21 Rigging, such as hoists secured to ladders, shall be properly secured to the ladder rail to prevent inadvertent engagement with conductors.
- 2.2.22 Rigging used to hoist ladders shall be secured to both side rails, never hooked to ladder rungs.
- 2.2.23 Spreader bars, such as the air chair, yoke plates, or man baskets may be used, but the lineworker's fall arrest shall still be hooked to the long line directly.
- 2.2.24 During HEC, each lineworker shall have verbal communication (radio or intercom with headset) with the pilot.

- 2.2.25 During HEC transfers, each lineworker shall have a radio.
- 2.2.26 The lineworker's employer is responsible for supplying all such lineworker communications equipment.
- 2.2.27 Head, hand, and arm signals shall still be taught to supplement radio communications.
- 2.2.28 For HEC work that exceeds 15 minutes hovering in one spot (e.g., splicing or breaks), breaks shall be incorporated in the work plan approximately every 10–15 minutes to resituate.
- 2.2.29 All shackles used in long-line rigging shall be safetied (moused) with solid wire, safety wire (preferred), or cable ties.
- 2.2.30 Shackles with safety wire are the preferred means of joining PCDS components.
- 2.2.31 Carabiners used as part of HEC rigging shall be marked by the manufacturer with a safe working load (SWL) or be rated for at least 40 kN on the major axis.
- 2.2.32 Carabiners used for any rigging purposes shall be steel, stamped with the SWL or WLL per ANSI standards.
- 2.2.33 Carabiners used for helicopter external load rigging shall require at least two separate and distinct actions to open.
- 2.2.34 Carabiners shall be used judiciously and shall not be used for any application where they may be side-loaded, gate-loaded, tri-axial loaded, or exposed to fluttering or excessive spinning.
- 2.2.35 For two-part rigging, either leg shall support the full weight of the load without exceeding capacity.
- 2.2.36 For three- or four-part rigging, any two legs shall support the load without exceeding capacity.
- 2.2.37 Two-part loads shall not be rigged so one part of the load can spin independently of the other.
- 2.2.38 Swivels, stabilizers, or drag chutes shall be used on loads that have the tendency to spin rapidly.
- 2.2.39 When setting poles between strung wires using a remote hook, a keeperless remote hook shall be used or the keeper locked if the hook descends near or past the level of the wires. Alternatively, a hook cage design that prevents any possibility of wire entry may be used with a keeperless hook.
- 2.2.40 When setting poles between strung wires using a non-electric hook, keeper-style hooks that may inadvertently lock onto the wire are prohibited. Only keeperless manual hooks such as SHUR-LOC hooks or grapple hooks with suitable lead line for disconnection/disengagement shall be used.
- 2.2.41 When placing top sections or intermediate sections onto lower sections on steel monopoles, personnel shall not be on the pole's lower section during upper section placement via helicopter unless prior authorization has been received. Suitable methods include the use of guides and stops, taglines manned from the ground, or workers positioned in a nearby bucket. Alternatively, the pole can be assembled on the ground and set as one unit.
- 2.2.42 When setting lattice tower sections, guides should be used as practical to limit personnel exposure to pinch points.



- 2.2.43 When setting poles between strung conductors, wires shall be spread sufficiently to achieve clearance on all sides of the hole/foundation, or the step bolts/ladders shall be removed or adequately guarded at least up to the level of the installed conductors.
- 2.2.44 Class B loads (including Class B HEC loads) where the helicopter is beneath any object (wire, crossarms, etc.) is prohibited.
- 2.2.45 During HEC transfers to a tower, pole, baker board, or ladder, the lineworker must attach the fall arrest/fall protection to a suitable anchorage point (5,000 lb minimum) on the tower, pole, or arm prior to disconnecting from the HEC line/A-frame.
- 2.2.46 During HEC transfers to a wire bundle or spacer buggy, the lineworker must attach the fall arrest/fall protection to the wire prior to disconnecting from the HEC line/A-frame.

2.3 Work Rules for Skid and Platform Work

- 2.3.1 For clipping, a personal ground (or bond, as appropriate) shall be used to bring the wire and tower to the same potential at the work location prior to any work being performed.
- 2.3.2 For clipping or any similar operation that places the helicopter in the bite, a safety rope or strap with a carabiner or similar shall be used to ensure that if rigging fails or slips, the wire will not contact the helicopter or lineworker.
- 2.3.3 For clipping, where a sling is used to basket wire for armor rod installation, a rated, continuous loop strap shall be used.
- 2.3.4 Where hoists are used for clipping static over-energized phases, remove sufficient chain so that MAD cannot be inadvertently violated should the chain become unbundled.
- 2.3.5 When transferring within the extended reach of an ungrounded fiber/static in travelers, a personal ground shall be used to bring the wire and tower to the same potential prior to the transfer being performed.
- 2.3.6 If the wire is to be separated, a “mack” (mechanical jumper) shall be installed around the wire separation to equalize the potential.
- 2.3.7 All loads shall be properly secured prior to takeoff in a manner that eliminates any possibility of loss in flight.
- 2.3.8 External loads of multiple classes simultaneously (e.g., Class A/B loads) are prohibited.
- 2.3.9 Skid transfers where a skid is rested on the structure are allowable only where initial/recurrent pilot training on skid transfers covers the technique in detail.
- 2.3.10 For skid or platform work that exceeds 15 minutes on the wire (e.g., splicing), breaks shall be incorporated in the work plan approximately every 10–15 minutes to resituate.
- 2.3.11 During skid transfers each lineworker shall have a radio.
- 2.3.12 The lineworker’s employer is responsible for supplying all such lineworker communications equipment.
- 2.3.13 Class III suspension or Class III life safety harnesses are required for skid or platform work. A separate lineworker’s belt may be used for work positioning if it is worn in conjunction with a Class III life safety harness and fall arrest.

2.4 Work Rules for Wire Stringing

- 2.4.1 Before conducting any wire-stringing operation, a thorough reconnaissance of the entire wire pull shall be completed.
- 2.4.2 When stringing with a side pull, a perpendicular orientation shall be maintained during the pull. Acceptable nose angles shall be limited to those depicted.
- 2.4.3 When stringing with a side pull, the timer shall be started after fuel top-off. Time spent stringing shall be limited to one hour after top-off (C20) or 45 minutes (C30).
- 2.4.4 After placing wire in a block, the next span shall be visually scanned for obstructions and the next structure sighted prior to farther movement.
- 2.4.5 When stringing with the belly hook, sufficient weight shall be used to keep the long line within 30 degrees of vertical throughout the pull.
- 2.4.6 For Class C loads other than wire stringing in the MD500 (including lifting wire, hanging baker boards, and stretching insulators), the fuel remaining must be 200 lbs or greater actual fuel remaining at the conclusion of the Class C load.

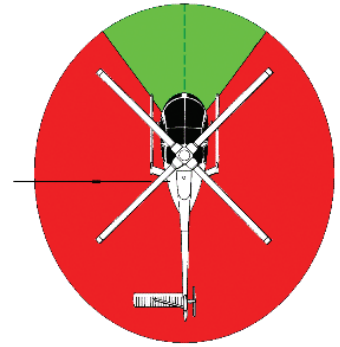
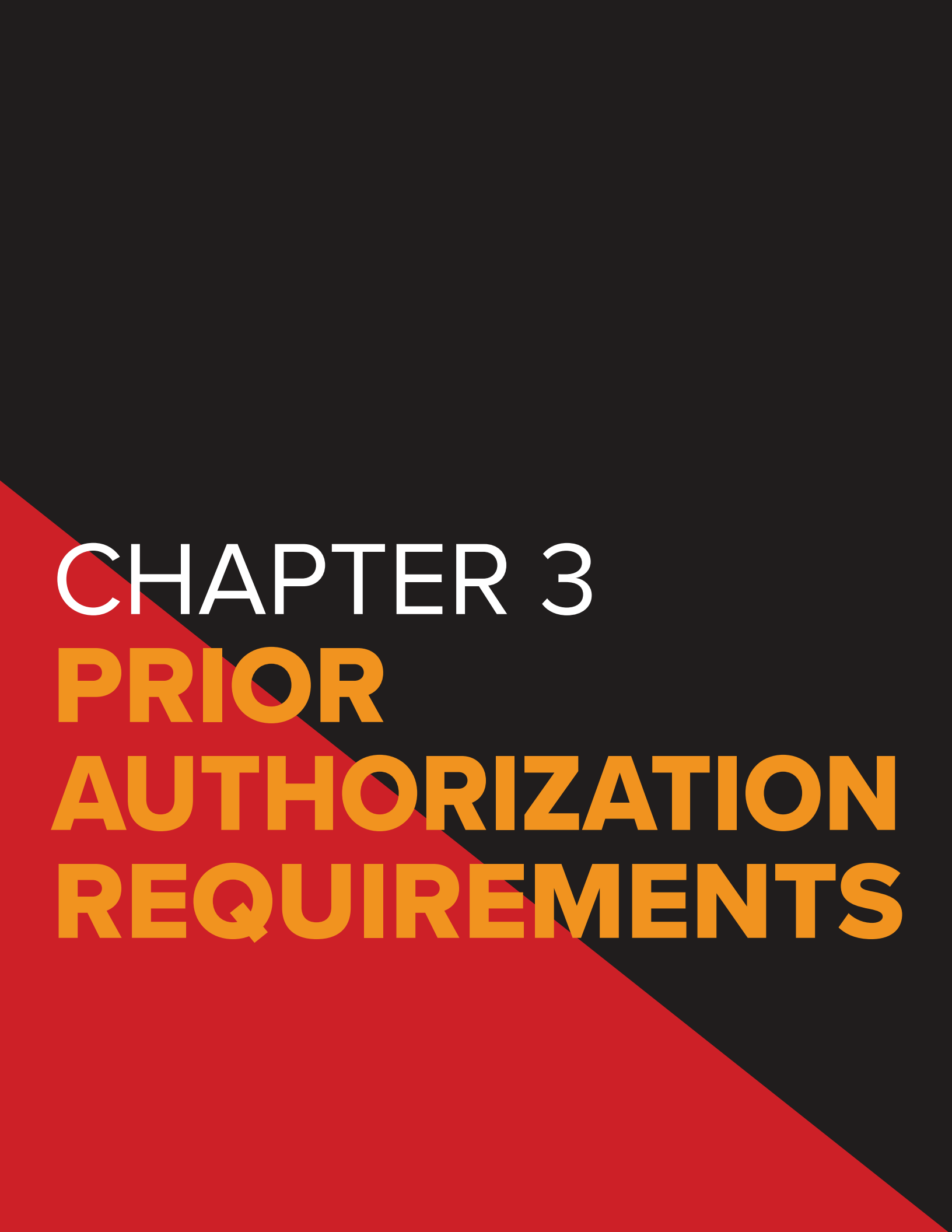


Fig. 4. Maintain a perpendicular orientation when stringing with a side pull.



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CHAPTER 3

PRIOR AUTHORIZATION REQUIREMENTS



CHAPTER 3

PRIOR AUTHORIZATION REQUIREMENTS

This chapter identifies tasks requiring prior authorizations because they have special considerations that shall be looked at on a case-by-case basis to ensure appropriate mitigating factors are in place to perform the task.

3.1 Personnel with the Authority to Grant Authorizations/ Mandatory Stand-Downs

- 3.1.1 Upon successful completion of an audit, the Quanta Aviation director of safety and standardization will produce in the report a written authorization for the ASP to perform the tasks (those selected from Table 1 prior to the audit).
- 3.1.2 Limited/provisional authorizations may be granted by the Quanta Aviation president, vice president, and director of safety and standardization.
- 3.1.3 Immediate stand-downs (stoppage of specific or global aviation work) not to exceed 48 hours may be authorized by the Quanta Aviation president, vice president, and director of safety and standardization.
- 3.1.4 Removal of an approved vendor for repeated poor performance, deception, insubordination, or other reasons may be authorized by the Quanta Aviation president or vice president.

3.2 Tasks Requiring Prior Authorization

Any item identified as “prior authorization required” shall have authorization in writing prior to initiation of the work practice. Persons who have the authority to grant such an authorization are:

For internal (Quanta-owned) ASPs:

- OpU president
- OpU director of flight operations
- OpU director of line operations
- OpU chief pilot
- OpU assistant chief pilot

For external ASPs working on Quanta OpU projects, QAS will be contacted:

- Director of operations and training, David Bilbao, 816-509-8890
- Director of operations and training, Tyler Rose, 760-522-6619
- VP operations, Spencer Duke, 979-338-0533
- VP QAS, Skip Graham, 385-225-1808
- President, QAS, Seth Gunsauls 503-200-1518

Authorizations may be limited in nature or continue for the duration of a project.

- 3.2.1 Energized work or work on towers/shield wires above energized phases requires prior authorization.
- 3.2.2 Helicopter placement of poles between energized phase wires requires prior authorization.
- 3.2.3 HEC between statics or similar obstructions where the helicopter would have to go up to clear an obstruction in an emergency requires prior authorization.
- 3.2.4 The following HEC work tasks are **permitted** without prior authorization, for ASPs that have met the QAS standard requirements:
 - 3.2.4.1 Transfers to/from towers
 - 3.2.4.2 Transfers to/from spacer carts
 - 3.2.4.3 Transfers to/from conductor bundles
 - 3.2.4.4 Spacer installation/replacement (outside statics)
 - 3.2.4.5 Working from a man basket (outside statics)
 - 3.2.4.6 Damper installation/replacement (outside statics)
 - 3.2.4.7 Marker ball installation/replacement (outside statics)
 - 3.2.4.8 Spacer installation/replacement (outside statics)
 - 3.2.4.9 Bird diverter installation/replacement (outside statics)
 - 3.2.4.10 Measuring linear distance (roller counter) (outside statics)
 - 3.2.4.11 Armor rod/splice shunt installation/replacement (outside statics)
 - 3.2.4.12 Hanging Travelers (outside statics) provided:
 - I. The travelers are less than 40 lbs. and that the traveler is being held by the lineman (not attached to the lineman's harness or the HEC line) during the attachment to the structure or insulators
 - II. No more than three travelers may be carried on the HEC line with the lineman
 - III. All rub hazards have been mitigated
- 3.2.5 The following HEC work tasks require prior authorization:
 - 3.2.5.1 Shield clip/de-clip
 - 3.2.5.2 Shield wire splice
 - 3.2.5.3 Shield wire dead-end
 - 3.2.5.4 Full tension splice installation/replacement
 - 3.2.5.5 Installation/removal of guard ropes
 - 3.2.5.6 Installation/removal of master grounds



3.2.5.7 HEC transfers or work that places the long line between statics or similar obstructions

3.2.5.8 Transfers with ladders

3.2.5.9 Hanging bundle blocks

3.2.5.10 Any other task not mentioned above

3.2.6 The following skid/platform work tasks are **permitted, without prior authorization, for ASPs that have met the QAS standard requirements:**

3.2.6.1 Shield clip/de-clip

3.2.6.2 Shield wire splice

3.2.6.3 Shield wire dead-end

3.2.6.4 Measuring linear distance (roller counter)

3.2.6.5 Damper installation/replacement

3.2.6.6 Spacer installation/replacement

3.2.6.7 Marker ball installation/replacement

3.2.6.8 Bird diverter installation/replacement

3.2.6.9 Armor rod/splice shunt installation/replacement

3.2.7 The following skid/platform work tasks require prior authorization:

3.2.7.1 Skid or platform transfer to a conductor bundle/spacer cart if fiber, static, or another conductor exists above

3.2.7.2 Shield wire full-tension sleeve replacement

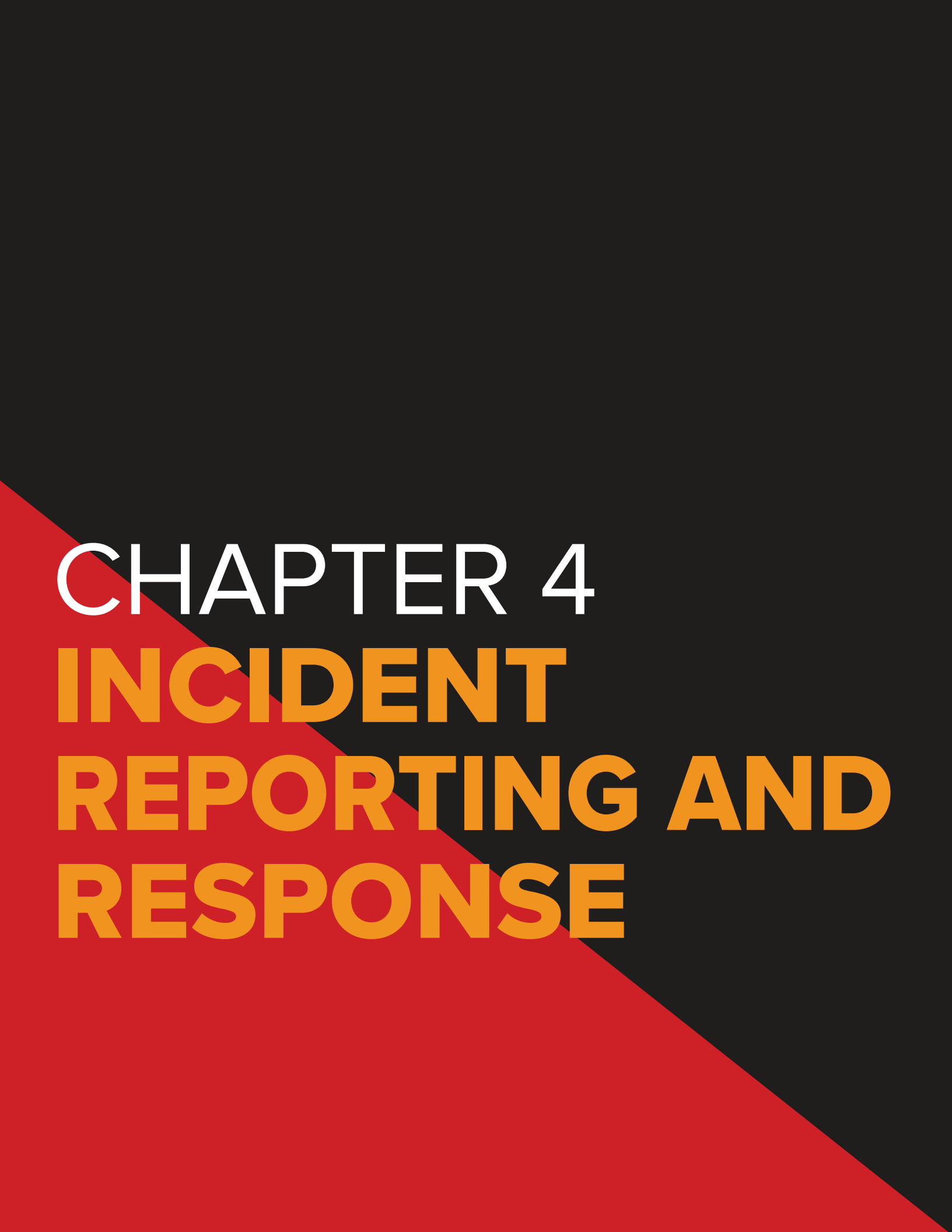
3.2.7.3 Skid or platform transfers or work that places the helicopter between statics or similar obstructions where the helicopter would have to go up to clear an obstruction in an emergency

3.2.7.4 Conductor wire full-tension sleeve replacement

3.2.7.5 Guard rope installation

3.2.7.6 Master ground installation/removal

3.2.7.7 Any other task not mentioned above



CHAPTER 4

INCIDENT REPORTING AND RESPONSE



CHAPTER 4

INCIDENT REPORTING AND RESPONSE

This chapter explains aviation-related incident reporting and response. These requirements are in force for all Quanta OpUs or any ASP contracted to a Quanta OpU.

4.1 Notification Responsibilities

- 4.1.1 It is the responsibility of the pilot/representative of the aircraft to notify ASP management of incidents or accidents (defined in definitions) as soon as possible.
- 4.1.2 It is the responsibility of the registered owner of the aircraft to notify the civil aviation authorities and transportation safety board in accordance with applicable laws, within the time limits placed in regulation.
- 4.1.3 It is the responsibility of the registered owner of the aircraft to notify the contracting agency of any incidents or accidents (defined in definitions) as soon as possible.
- 4.1.4 The contracting agency shall be responsible for notifying the utility or its contracting agency as appropriate, in accordance with the reporting requirements stipulated by the utility or general contractor. This notification shall take place as soon as possible.
- 4.1.5 It is the responsibility of the registered owner of the aircraft to notify Quanta Aviation of incidents or accidents (defined in definitions) as soon as possible.
- 4.1.6 The contracting agency project manager or their designee shall contact Quanta Aviation by the end of the day following any incident to discuss the incident from the contacting agency's perspective, and discuss a plan to move forward.

4.2 Aviation Accident Immediate Response

The steps below give an example of an appropriate response to a serious accident.

- 4.2.1 The ASP is responsible to have and execute an emergency action plan in the event of an emergency.
- 4.2.2 Quanta Services OpUs shall make all possible efforts to support the ASP in response to any accident.
- 4.2.3 Quanta Services will notify its Crisis Management Team.
- 4.2.4 The highest priority in the event of any accident is to prevent the loss of life. No rule or limitation shall prevent any person from reacting to an aircraft accident in any reasonable manner to prevent the loss of life.
- 4.2.5 Call 911 from a mobile phone; if out of range, activate aircraft satellite tracking system, and the aircraft's ELT.
- 4.2.6 If possible, dispatch other persons to lead emergency services to the crash site.

- 4.2.7 Commence first aid until emergency services arrive.
- 4.2.8 DO NOT attempt to remove injured persons from the wreckage if aircraft is near downed conductors until those conductors have been confirmed de-energized and grounded.
- 4.2.9 DO NOT attempt to remove injured persons from the wreckage if back or neck injury is suspected unless if fire or smoke is present, when all persons should be removed from the aircraft immediately.
- 4.2.10 Brief arriving emergency personnel about any fire/electrical hazards, the location/condition of each person, and any treatment administered.
- 4.2.11 Conduct a head count to ensure all persons are accounted for.
- 4.2.12 Determine emergency care destination.
- 4.2.13 Attempt to contain any leaking jet fuel or oils.
- 4.2.14 Preserve the accident scene. Do not allow the media or general public on the scene.
- 4.2.15 Do not touch the aircraft or components except as necessary to rescue persons or contain spills.
- 4.2.16 Refer all media relations to project management.
- 4.2.17 Document any witnesses. Do not allow witnesses to leave except to assist with urgent care.
- 4.2.18 Document (map) but do not touch any wreckage away from the primary wreckage site.
- 4.2.19 Document a factual timeline of events if possible.
- 4.2.20 Lead Quanta Services investigator to take pictures of the accident scene.

4.3 Aviation Incident Immediate Response

- 4.3.1 Seek care for any injured persons.
 - 4.3.2 Land the aircraft at the landing zone (LZ) and determine next steps.
 - 4.3.3 Make the appropriate incident notifications. If there is aircraft, equipment, or power line damage, take pictures (where possible) and include them with the notification. Proper notifications are, in order:
 - I. Internal, ASP management
 - II. Contracting agency, typically the foreman on site
 - III. Quanta Aviation Safety and Standardization (979-338-9217); if no answer, leave a message explaining the incident; if cell service is unavailable, use best judgment and notify Quanta Aviation by the end of the day
- Note:** Quanta Aviation reserves the right to suspend any third-party's status as an "approved" ASP pending the investigation of any incident or accident, but only exercises the right in the most severe cases.
- 4.3.4 If the incident is mechanical in nature (e.g., un-commanded hook release), do NOT operate the aircraft/aircraft system until an ASP mechanic or engineer has identified and fixed the problem.



- 4.3.5 If there is any main rotor or tail rotor damage do NOT operate the aircraft until an ASP mechanic or engineer has inspected the damage in conjunction with the damage tolerances and conducted the appropriate level of sudden stop inspection.
- 4.3.6 If the danger has passed, notifications have been made, and the foreman authorizes it, develop a plan to resume work.
- 4.3.7 Regroup and amend the tailboard. If personnel are still on towers, brief those personnel regarding any changes via radio or bring them back to the LZ.
- 4.3.8 Document corrective and preventive actions.
- 4.3.9 Resume work.

4.4 Accident and Incident Investigation

- 4.4.1 The ASP is responsible to investigate and determine the cause of any and all accidents and incidents that involve its aircraft.
- 4.4.2 The contracting agency, Quanta Aviation, and Quanta Safety have the right to send a representative to observe or assist with the investigation.
- 4.4.3 All accidents and incidents will require:
 - I. Notification as defined above.
 - II. A brief written statement from the ASP explaining what happened (including pictures).
 - III. Corrective and preventive actions.
 - IV. A thorough investigation by appropriate authorities and Quanta Services.

Note: A preliminary report containing II and III is expected within 48 hours.

SOME accidents and incidents may require:

- V. A detailed report with a root cause analysis.
- VI. An aviation safety bulletin (lessons learned) for Quanta-wide distribution.
- VII. Action items to be completed prior to return to work.

4.5 Monthly/Annual Reporting

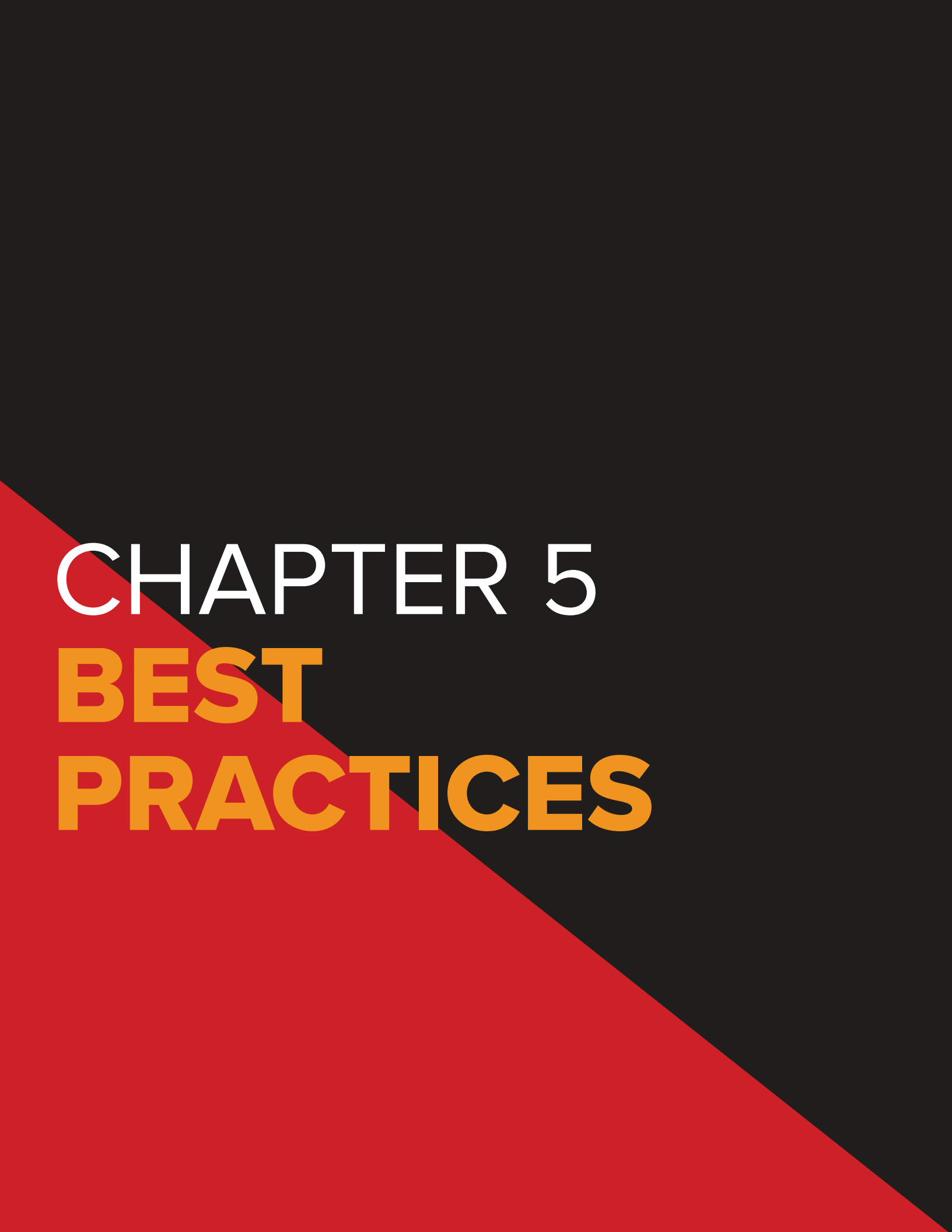
- 4.5.1 At the end of each calendar year, each ASP shall produce a report outlining the following.
- 4.5.2 Monthly reporting:
 - I. Total flight hours, by task, performed for Quanta Services OpUs.
 - II. Pilot qualifications verified/updated.
 - III. Changes in pilot population.

4.5.3 Annual reporting:

- I. Total flight hours of power line work in the preceding five years (broken down by year).
- II. Total flight hours of power line work supporting Quanta Services OpUs in the previous year.
- III. A summary of incidents and accidents from the previous year (Quanta definitions).



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CHAPTER 5

BEST PRACTICES



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This chapter catalogs QAS best practices compiled from input by those conducting operations and from best practices witnessed during audits and assessments. If you have a best practice, forward it to a QAS representative for consideration.

5.1 Best Practices

5.1.1 Rigging to Grapple Hooks

Soft connections: Use nylon or fiber slings. Tools, materials, and equipment should be rigged with a soft connection that is rated for the load. Place the sling over the tine and in the bottom of the trough of the hook, oriented in line with the vertical shaft of the grapple and long line. Soft connections help prevent loads falling from the grapple hook in the event a load stands up (common with clipping ladders and dead-end boards), or if the load catches or hangs up on any object in the work zone during descent to the line crew. Example: A 4-ft jelly sling shackled to the load with the other end rigged to the grapple hook would provide an 8-ft buffer. This allows time for the line crew to signal, and for the pilot to react, to prevent a dropped load.

5.1.2 Transferring Conductor Wire

The preferred method when transferring conductor wire with a helicopter is to use a soft connection (nylon or fiber sling). Obtain the accurate weight of the conductor. Do not rig conductor wire directly to the helicopter grapple or hook system to avoid damaging the conductor. Be cautious when using fiber or nylon slings; calculate wire weight, D-to-D ratio for the sling, wire size, and hitch type (to prevent the sling from running and burning down the wire) and discuss these during the JHA. Maintain constant, clear communication throughout the process.

5.1.3 Rigging of Poles for Flight

To prevent nylon or fiber slings from being cut or damaged by the poles or attached hardware, rig wood and steel poles with a steel sling, with soft connection, or a steel chain. Steel rigging needs to be long enough to clear the pole, or the highest hardware attached to the pole. Steel rigging should be tied or trapped in a way that prevents the rigging from falling to the ground after release from the helicopter. NOTE: Alternate rigging methods may be used when steel poles are outfitted with top-side rigging brackets.

5.1.4 Composite Poles

Many composite pole manufacturers' specifications and installation guides require rigging be done with nylon or fiber slings. When this requirement exists, use two slings of the same length rigged to the helicopter's hook using a single shackle. Each sling shall be able to support the load independently without exceeding the sling's capacity. If possible, rig the slings on different quadrants of the pole. The slings should be rigged to prevent rubbing or cutting damage caused by hardware or pole conditions. Keep the sling tension as equal as possible to prevent shock load on the helicopter if one sling fails or is cut. Ensure all rigging is tied in a way that it cannot come to the ground after being released from the helicopter.

5.1.5 Crossarms and Hardware

Use caution when rigging poles with crossarms or certain types of hardware, such as PUPI-style crossarm mounting brackets and switch arms. These styles of brackets and hardware have keyhole-style holes where the bracket is installed over a preinstalled bolt and then slid downward into the narrow portion of the keyhole where it is tightened in its final position. If pole rigging rolls or slides during initial pick and setting of the rigging it can push up on the bracket, popping the bracket off the bolts and causing the hardware to fall. This has compelled some power companies to require that a new hole be drilled below the bracket and a long bolt installed to keep the rigging from rolling or sliding into the bracket. After the pole set is complete, the bolt may be removed.

Ensure all rigging is tied in a way that does not allow it to come to the ground after being released from the helicopter.

5.1.6 The Flying of Super Sacks or Bulk Bags (“Gravel Bags”)

Inspect all bags to ensure they are not designated as single-use bags. If it is a single-use bag, verify that it is new and being used for the first time. After its single use, mutilate the bag (for example, cut the handles) and disposed of it. Ensure bags are not filled beyond their rated capacity to maintain proper angles on the lifting handles. If a third-party contractor is being used, instruct them to weigh and tag bags so that the loaded weight and date is known. Rigging must follow manufacturer recommendations when lifting while ensuring the extension of the lifting handles to create a better sling angle. Use:

- Four-way chain
- Four-way steel sling
- Four individual slings

Best practices for ensuring safe and reliable bag operations include:

- Inspect all lifting handles and bags prior to attaching to the helicopter.
- Remove any suspect bags from service and mutilate them so they cannot be used.
- Ensure weight and date are tagged on all loaded bags.
- Store bags properly so they are protected from the elements when they will be staged at job sites for long periods of time.
- Remove empty bags from the helicopter. Never fly empty bags back to the LZ because long line damage can occur.
- Do not transport tools and materials in bags. Sharp edges will cut through the bag and create a fall hazard. Use steel fly baskets for these items.

5.1.7 Pilot and Crew Coordination for Rally Points and Emergency Egress

The pole site or structure location shall have a specified rally point known to the pilot and all ground crew members before the helicopter arrives over the work site. This proactively creates an escape route for ground crew members in the event the pilot calls out an emergency and must release the load before it is properly on or in the ground. When all ground crew members know to egress to a predetermined location, the pilot can concentrate on the emergency instead of locating the ground crew.



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