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External Load (Longline) Job Hazard Analysis

1.1 Purpose

This Standard Operating Procedure describes Winco's standard procedure for Helicopter (Non-human) external cargo (longline).

1.2 Scope

This procedure covers only aspects of planning, operations, and conclusions that apply specifically to Winco's standard procedure for *Helicopter (Non-human) external cargo in all aircraft*. This procedure is general in nature and encompasses the many varied tasks that are performed with a longline in power line support operations. These include but are not limited to: general tool and equipment moves, hanging insulators, hanging travelers, hanging ladders, etc. Some of these operations may require additional steps not discussed in this procedure. Consult the Winco pilot with any questions. All general company policies and procedures still apply.

1.3 Requirements

- The lineman shall be trained to perform the task at hand.
 - Equipment required: (**Lineman/Groundman PPE**) ANSI Z89.1 Hard hat, ANSI Z87.1 Eye protection, Work gloves, Ear protection highly recommended, Work gloves,
- Morning Brief/ Scope of work.
- Perform Tailgate.
 - All personnel who will be interacting with the helicopter **must** attend.
 - The hook-up person and load placement crew shall be briefed as to their duties, procedures and safe practices, emergency procedures including safe location and personal protective equipment (hard hats required).
- The pilot is responsible for determining longline and rigging materials down to the grapple hook.
 - Linemen/riggers on the ground are responsible for rigging the material to the grapple hook in proper fashion.
 - All material must be rigged so that the ride in the belly of the tines and not out toward the tip.
 - The pilot will advise the crews of the load weight limitations for the given activity. This load limit must not be exceeded.
 - Ground crews shall have radio and hand/head signal communication with the aircraft.

1.4 Procedure

- Ensure that non-essential personnel are well clear of the operating area.
- Ensure that vehicles are parked well clear and other obstacles are noted.
 - The hook-up person shall indicate the sling attachment point of the load by extending a hand toward the load or empty hook to “accept it” as the helicopter is on final approach.
 - Time spent underneath the helicopter shall be kept to a minimum.
 - The pilot shall with the aid of the signalman and hook-up person, center the helicopter hook over the attachment point of the load and take up the slack in the line.
 - The ground crew shall ensure that the line is freely suspended, not entangled or looped, and that the line is correctly attached to the hook.
 - Once the load is hooked and all personnel are clear, the signalman should indicate clearance to lift.
 - The ground crew shall inform the pilot of any unusual circumstances noted.
 - Receiving linemen should grab the load and control it as soon as it comes into reach.
 - The load is accurately placed with the help of the crew or signalman.

1.5 Hazards and Mitigation

Hazards	Mitigation
<ul style="list-style-type: none">• Dropped loads	<ul style="list-style-type: none">• Use proper rigging, Minimize time under the helicopter, PPE
<ul style="list-style-type: none">• Engine/mechanical failure	<ul style="list-style-type: none">• Minimize time under the helicopter, PPE
<ul style="list-style-type: none">• Load Entanglement	<ul style="list-style-type: none">• Choose proper LZ, maintain radio communications
<ul style="list-style-type: none">• Dust	<ul style="list-style-type: none">• Use water trucks. Wear Safety glasses or goggles in dusty pickup sites
<ul style="list-style-type: none">• Struck by/caught between suspended load	<ul style="list-style-type: none">• Stay out of the bite, Keep your fingers out of the bite, Control the load as soon as it comes into reach, PPE



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Human External Cargo Job Hazard Analysis

1.1 Purpose

This Standard Operating Procedure describes Winco's standard procedure for Helicopter Class B Human external cargo (HEC)

This procedure shall be used when, in the judgment of the pilot in command it is determined that it is less hazardous and/or not practical to perform the same work activity from the skid of the helicopter. It should only be used to work on the conductor, static wires, or otherwise inaccessible portions of a structure. All HEC lifts shall originate from the closest available work staging location.

1.2 Scope

This procedure covers only aspects of planning and operations that apply specifically to Winco's standard procedure for *Helicopter Class B Human external cargo*. This procedure is general in nature and encompasses the many varied tasks that are performed with a Human on a longline in power line support operations. These include but are not limited to: Clipping, transfers to structures or baker boards, installation or removal of grounds, guards, marker balls, spacers, dampeners, conductor weights and bird diverters. Some of these operations may require additional steps not discussed in this document. Consult the Winco pilot with any questions. All general company policies and procedures still apply.

1.3 Requirements

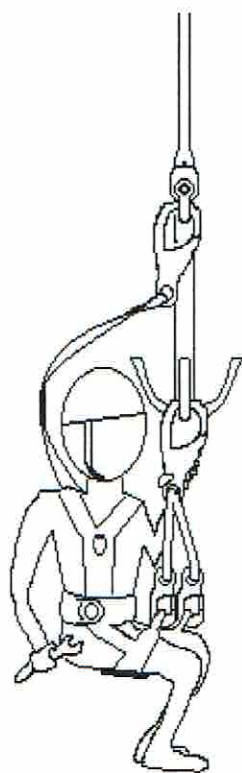
- Winco will supply a pilot whom has been trained, evaluated and has been found proficient in all facets of HEC operations
- Winco will supply an aircraft that meets all FAA requirements and company standards for the task at hand.
- The lineman shall be trained to perform the task at hand in accordance with Winco's *Lineman's Safety Manual*.
 - Linemen on the longline shall be trained on head and hand signals as necessary.
- Equipment required: (Lineman) ANSI Z89.1 Hard hats with three point chin straps, ANSI Z87.1 Eye protection, hearing protection, class 3 full body harnesses, radios capable of communicating with the pilot and members of the ground crew.
 - Work boots, Cotton or FR clothing, gloves, rodsman's, fall arrest, personal floatation devices shall be provided as needed based on the task being performed.

- For longer flights (more than 5 minutes), a harness with an integrated seat should be used to prevent adverse health consequences such as suspension trauma.
- Basic radio communication is required at a minimum. However, since basic radio communication is limited in effectiveness in high noise environments a remote mic, or boom mic setup with noise canceling capabilities is recommended.
- Pilot will receive the morning brief/ scope of work from the foreman or GF.
- Perform Tailgate.
 - All personnel who will be interacting with the helicopter **must** attend.
 - All persons shall be briefed as to their duties, procedures and safe practices, emergency procedures, rigging, and personal protective equipment.
 - All personnel shall have the ability to stop the job if at any point they feel uncomfortable.
- The pilot is responsible for determining longline and rigging materials down to the grapple hook in the case of transfers, or snap hooks in cases where the lineman is to remain on the line at all times.
 - Winco Personal Safety Device (PSD) and bridle must be installed per Winco instructions.
 - Winco Am-steel blue longlines in excellent condition and with legible certification documents are the only longlines acceptable for use to perform HEC.
 - Longlines used for HEC shall be thoroughly inspected prior to each use and shall be treated with the highest standard of care. The longlines shall be kept clean and dry at all times.
 - Longlines with electrical cable (water bucket lines) are not permitted to be used for HEC.
 - When working within Minimum Approach Distance (MAD) to energized wires the longline shall be di-electrically tested each day.
 - Where abrasion hazards exist, (such as a static directly above the conductor being worked on) the longline shall be protected.
 - Where a possible difference in potential exists between contact points on the rigging, (e.g. simultaneous contact with a static wire and isolated conductor) protection shall provide sufficient abrasion and electrical protection.
 - The pilot must ensure through adequate tailgate briefings and observation throughout the day that lineman are attaching themselves to the rigging in an acceptable manner.
 - All shackles used must be safe tied with a wire-tie or safety wire.
- Tools and equipment such as spacers to be installed, conductor weights etc., shall be limited to 200lbs.
- Items and tools (combined) over 40 pounds shall be rigged so the load path does not go through the lineman's harness

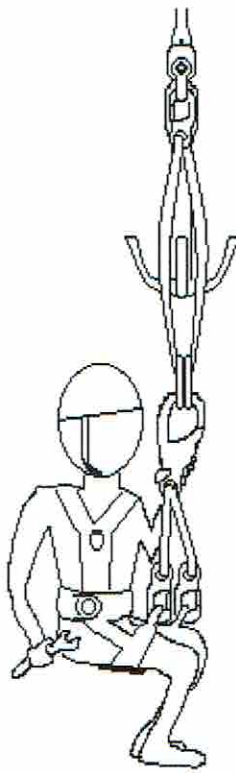
- The long line should be weighted (20# minimum) to prevent rope contact with the tail rotor. A ballast such as a grapple should be used at all times when the work plan calls for the lineman to transfer. If the task calls for the lineman to remain attached at all times no ballast is needed.

1.4 Lineman Rigging

- Three different methods of attaching the lineman to the longline are considered to be acceptable. One of the three methods shall be selected and agreed upon by all parties to be lifted at the tailboard.
- Methods one and two are used for tasks where the lineman is transferred to a tower or wire, method three is used for aerial work where the lineman stays attached to perform work from the longline. Lifts using both methods one and two shall be limited to 5 minutes or less.
 1. In method one a grapple hook is attached to a shackle that is attached to the longline. The lineman attaches his fall arrest (shock lanyard) to the ring or shackle above the grapple and attaches his rodsman (attached to manufacturer approved suspension point(s) on his harness) to the grapple hook.
 2. In method two, two short straps with snap-hooks are attached to the shackle above the grapple. The lineman attaches these snap hooks to any approved personnel suspension points either directly on his harness, or to his harness via a rodsman.
 3. In method three the lineman wears a harness with an integrated seat. These seats vary slightly in design, but shall be rigged as intended by the harness manufacturer. Some models will require a rodsman to join the lifting eyes together. The harness/ rodsman shall be attached as directly as possible to the longline. In this method the Grapple is not utilized because the lineman never disconnects from the line.



Method 1



Method 2



Method 3

- Acceptable methods of lifting two linemen together are as follows:
 - For quick transfer flights, using methods one and two as previously described
 - For longer flights (over 5 minutes) using a derivative of method three with a spreader bar (Spreader bar systems such as the ARS Reach seat system are approvable but must be individually approved by management)
 - Using a man basket (with fall protection rigged to the shackle at the bottom of the longline.
 - No more than two linemen may be carried, regardless of method.

1.5 Procedure

- The pilot shall establish communication with and visibly acquire the lineman to be hooked up
 - The lineman shall indicate the desired hook-up point by standing at the desired spot and raising his hand to accept the longline/hook.
- The pilot shall approach the lineman in such a manner as to come to a hover aligned with and adjacent to the hookup point.
 - The lineman shall approach the suspended hook and attach himself in the manner as discussed in the tailgate meeting.

- Once the lineman is hooked up and all personnel are clear, the lineman shall indicate clearance to lift.
- The lineman shall ensure that the line is freely suspended, not entangled and that the line is correctly attached to the hook.
- The lineman shall inform the pilot of any unusual circumstances noted.
- The pilot shall control the lineman's descent and rate of closure to the work site to prevent excessive aircraft maneuvering.
- The pilot shall bring the helicopter and lineman to a complete hover close to the prearranged work site.
- The pilot shall slowly place the lineman in a position that will allow the lineman to complete his task or if required and consistent with the pre work safety briefing safely transfer to the structure, conductor, or baker board.
 - Simultaneous hookup to the tower/conductor and longline is permitted because the pilot has the capability of jettisoning the load in the event of an emergency.
 - For work that requires an extended period of time on the line the lineman may safely himself to the line being worked on provided he informs the pilot each time he has done so and each time he disconnects his safety. In the event of an emergency such as a mechanical failure, this allows the pilot to immediately release the lineman, leaving him on the line.
- The helicopter should not initiate a departure from the lineman until the pilot can see the lineman is unhooked and the pilot receives a clear command from the lineman.

1.5 Hazards and Mitigation

Hazards	Mitigation
● Load release	● Winco PSD, Use of Amsteel ropes (10:1), Rope inspection, Specific rigging requirements.
● Engine/mechanical failure	● Winco PSD, Winco maintenance program, Daily A&P inspections
● Wire strike	● Pilot screening & training, Radio communication
● Longline Entanglement with T/R	● 20 pound ballast on longline at all times
● Electrical Contact	● Am-Steel Lines, Insulation and testing when working within MAD.



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Skid Work Job Hazard Analysis

1.1 Purpose

This Job Hazard Analysis describes Winco's standard procedure for a variety of tasks performed from the helicopter skid including but not limited to installation/removal of: marker balls, spacers, dampeners, splices and clipping.

1.2 Scope

This procedure covers only aspects of planning, operations, and conclusions that apply specifically to Winco's standard procedure for Transferring Lineman on/off of Structures in MD 369D/E/F aircraft only. All general company policies and procedures still apply.

1.3 Requirements

- The lineman shall be trained to perform the task at hand and signed off per the Winco Lineman's Safety Manual.
 - Equipment required: (**Lineman PPE**) ANSI Z89.1 Hard hat with 3 point chin strap, or flight helmet, Eye protection, Ear protection, Work gloves, Lineman's belt, Full body harness (Separate from belt or integrated), Positioning belt (also known as Rodsman or Rebar Assy), cotton or FR clothing, Work boots. (Alternate PPE may be required on certain structure types)
 - Tools (such as hotsticks) shall be of the shortest length possible and of the lightest weight possible to accomplish the given task.
 - As much of the task as possible shall have been prepared on the ground. Marker ball bolts shall be glued in position and spacer bolts backed off to the optimum position for installation etc.
- Morning Brief/ Scope of work.
- Perform Tailgate.

1.4 Standard Procedure

- The lineman shall be belted to the helicopter's rated attach point(s) via the positioning belt.
- The proper tools and materials must be loaded onboard in a secured yet accessible manner. The lineman shall communicate "Ready for takeoff" when appropriate.
- All tools/supplies must be secured so that they cannot fall out in flight
- The pilot will determine the approach to a given structure or wire based on wind, obstruction clearances etc.
 - The Lineman shall assist the pilot by confirming the helicopter is at the correct work location and that the line is de-energized, if applicable and is not an insulated static.
 - The Lineman shall be cognizant of main rotor and tail rotor clearances and be ready to warn the pilot if clearances are compromised.

- Once in position the helicopter will be bonded to the structure or wire before any further work activity takes place.
- During the work the lineman should hold the wire to keep it within his reach but must not pull down and allow the wire to “spring” upward

1.5 Hazards & Mitigation

Hazards	Mitigation
<ul style="list-style-type: none"> • Engine/Mechanical Failure 	<ul style="list-style-type: none"> • Breakaway cable bond that allows helicopter to pull away at anytime to execute emergency procedure
<ul style="list-style-type: none"> • Sudden weight shift induced oscillations 	<ul style="list-style-type: none"> • Slow and smooth transfer of weight
<ul style="list-style-type: none"> • Tool (hotstick) contact with rotors 	<ul style="list-style-type: none"> • Use of the shortest hotsticks (tools) possible to accomplish a given job.
<ul style="list-style-type: none"> • Induction 	<ul style="list-style-type: none"> • Use of cable bond where necessary
<ul style="list-style-type: none"> • Slips/falls 	<ul style="list-style-type: none"> • PPE
<ul style="list-style-type: none"> • Rotor hazards 	<ul style="list-style-type: none"> • Lineman training, communication



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Tower Transfer Job Hazard Analysis

1.1 Purpose

This Job Hazard Analysis describes Winco's standard procedure for Transferring Lineman on/off of Structures using the helicopter skid.

1.2 Scope

This procedure covers only aspects of planning, operations, and conclusions that apply specifically to Winco's standard procedure for Transferring Lineman on/off of Structures in MD 369D/E/F aircraft only. All general company policies and procedures still apply.

1.3 Requirements

- The lineman shall be trained to perform the task at hand and signed off per the Winco Lineman's Safety Manual.
 - Equipment required: (**Lineman PPE**) ANSI Z89.1 Hard hat with 3 point chin strap, ANSI Z87.1 Eye protection, Ear protection, Work gloves, Lineman's belt, Full body harness (Separate from belt or integrated), Positioning belt (also known as Rodsman or Rebar Assy), 6 ft Shock lanyard with rebar hook, cotton or FR clothing, Work boots. (Alternate PPE may be required on certain structure types)
 - Tools (such as hotsticks) shall be of the shortest length possible and of the lightest weight possible to accomplish the given task.
- Morning Brief/ Scope of work.
- Perform Tailgate.

1.4 Standard Procedure

- The lineman shall be belted to the helicopter's rated attach point(s) via the positioning belt.
- The lineman's shock lanyard shall also be hooked to the rated attach point for when the positioning belt is disconnected.
- The proper tools and materials must be loaded onboard in a secured yet accessible manner. The lineman shall communicate "Ready for takeoff" when appropriate.
- The pilot will determine the ideal point(s) on a given structure to transfer based on wind, obstruction clearances and handholds/footholds at a given location
 - The Lineman shall assist the pilot by confirming the structure is the correct structure, and that the line is de-energized (if applicable) and is not an insulated static.
 - Once in position the helicopter will be bonded to the structure or wire before any further work activity takes place. (The skid may be used to dissipate static on steel structures)
 - It is extremely important that, whatever the helicopter is bonded to, it must be the same object that the lineman transfers onto.
 - Every piece of equipment and material shall be placed onto the structure in a way so as to prevent any contact with the lower phases. Handlines, hoists, grounds, splices, cables

all have the potential to come into contact with the phases and must be tied up in a manner to prevent inadvertent release.

- Equipment shall be placed in a manner that does not interfere with the hand and footholds that will be used for the lineman transfer.
- The lineman transfer is accomplished by first removing his positioning belt from the helicopter rated attachment point and securing it in such a manner so that it will not snag during the transfer.
- Once released and with the helicopter in position, the lineman shall unstrap his large rebar hook (attached to the shock lanyard) from the helicopter and attach it to the structure, then slowly and smoothly proceed onto the structure.
- The lineman's hands must be free of equipment or tools so that he can maintain three points of contact at all times during the transfer.
- In cases where the crew is utilizing cable bonds the lineman will remove the cable bond from the structure and place it onto the helicopter.
- The lineman will then crouch and then wait in that position until the helicopter has departed.
- The lineman will verify all equipment is clear between the helicopter and the structure and then communicate to the pilot "Clear to depart" the structure.
- **Note:** During a transfer the lineman shall never be safetied off to the structure and the helicopter at the same time.
- The pilot shall always have the option to depart the structure at any time for whatever reason. The practice of un-belted his primary safety and then removing the shock lanyard from the helicopter and attaching it to the structure will, in the event of an emergency, prevent the lineman from falling. This also allows the pilot the option of performing an emergency procedure.

1.5 Hazards & Mitigation

Hazards	Mitigation
● Engine/Mechanical Failure	● Transfer method that allows helicopter to pull away at anytime to execute emergency procedure
● Sudden weight shift induced oscillations	● Slow and smooth transfer of weight
● Tool (hotstick) contact with rotors	● Use of the shortest hotsticks (tools) possible to accomplish a given job.
● Induction	● Use of cable bond where necessary
● Slips/falls	● Use of PPE/procedure as described



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Wire Stringing Job Hazard Analysis

1.1 Purpose

This Job Hazard Analysis describes Winco's standard procedure for *Side Pull Operations* (Wire stringing). Stringing refers to the process where a rope or lead line is fed through travelers to facilitate the stringing of conductors or static wires.

1.2 Scope

This procedure covers only aspects of planning, operations, and conclusions that apply specifically to Winco's standard procedure for wire stringing in MD 369D/E/F aircraft only. All general company policies and procedures still apply.

1.3 Requirements

- Morning Brief/ Scope of work discussion with foreman.
- Perform Tailgate.
- Non-essential personnel shall not be on the right-of-way below the helicopter while pulling sock line. The tailgate must convey this to all personnel.
- It is critical that the pilot and brakeman discuss standard phraseology for terms used during the pull and for possible emergencies.
- Inspect stringing equipment to be utilized
- Inspect and lubricate all travelers (dry graphite works best) prior to hanging them.
- All hot crossings shall be properly guarded and covered.
- Roads and fences shall be guarded appropriately
- Flagger shall be present at all road crossings to control traffic.
- Verify reliable radio communications from helicopter to brakeman and ground supervisors.
- Radio failure procedure must be established prior to starting the pull.
- Communications shall be maintained between the helicopter and the brakeman. Loss of radio contact shall be reason to abort the operation if a relay cannot be established.
- 1/2" shackles only shall be placed into the helicopters cargo hook.
- The pilot will determine the rigging as needed for the particular pull.
- The puller / tensioner / five drum shall be grounded prior to the pull.
- Turns in the line, especially significant turns should be supervised.

1.4 Standard Procedure

- Hookup of the sock line to the helicopter shall use one of the following approved methods:

- Hookup from the ground before the first structure
- Hookup from the ground with the helicopter positioned mid-span or greater from any structure with a sock line running up through the structure.
- If a hookup is to be made closer than midspan to a structure sufficient sockline must be coiled on the ground to ensure it stays coiled on the ground as the helicopter climbs to a height above the structure.
- Hookup using the aerial hookup method from a basket out at least 25' from the structure and level with or above the traveler already strung.
- The line shall be pulled with the helicopter perpendicular to the line. Never at angles approaching parallel.
- The pilot will stop approximately 25 – 40 feet past each tower to thread the line into the traveler
- The pilot will command, “hold the pull” when past the catch off point.
- Linemen will first ground the sock line then secure it using a new and appropriately sized preform.
- Treat strung sock line as potentially energized until it is grounded.
- Once the line is caught off the pilot will release the sock line from the helicopters cargo hook and assure that the sock line has cleared the helicopter. The pilot will announce, “line clear” when appropriate.

1.5 Hazards & Mitigation

Hazards	Mitigation
● Engine/Mechanical Failure	● Keep right-of-way clear during pull
● Inadvertent release/ rigging failure/ sock line failure	● Keep right-of-way clear during pull. Guard/ cover/ ground
● Sudden lockup of tensioner or wire on traveler axle	● Maintain communication/ supervise turns
● Induction	● Treat strung sock line as energized until grounded.