

[FINAL]

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*Eldorado – Lugo – Mohave Series Capacitor Project*

# Helicopter Use Plan

Prepared for  
**Southern California Edison**  
*2244 Walnut Grove Avenue  
Rosemead, CA 91770*

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**Applicable agencies**

*Bureau of Land Management  
California Public Utilities Commission  
National Park Service*

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# Acronyms and Abbreviations

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CAISO	California Independent System Operator
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
GPS	Global Positioning System
HEC	Human external cargo
HLZ	Helicopter landing zone
JHA	Job Hazard Analysis
kV	Kilovolt
LZ/PZ	Landing zone/pour zone
MM	Mitigation Measure
NPS	National Park Service
OPGW	Optical ground wire
ROW	Right-of-Way
SCE	Southern California Edison
TSEF	Treatment, storage and disposal facility
TSP	Tubular steel pole

# 1 Introduction

Helicopter Operations are to be used to complete the optical ground wire (OPGW) reconductoring activities on the Eldorado-Mohave and the Lugo-Mohave 500kV Transmission Lines. The new OPGW will be strung approximately 232 miles through approximately 855 existing lattice steel towers. Helicopters will be used primarily for setting wire travelers at the existing towers for stringing operations across the 500kV transmission lines.

Helicopters will also be used to complete the overhead discrepancy work (tower raises) by providing personnel transport to the remote tower raise sites.

Helicopter support activities planned for this work includes tooling and material delivery, tooling and material installation, and personnel transport. The goal is to complete this work safely and effectively. This Helicopter Work Plan has been developed to meet that goal.

## 1.1 Project Purpose Statement

Southern California Edison (SCE) is a public utility that provides electric service to a population of approximately 15 million people within an approximately 50,000-square-mile service area that encompasses 180 cities throughout Southern California. SCE's Project was approved by the California Independent System Operator (CAISO) following recommendations for approval as a policy-driven upgrade through the CAISO's Transmission Planning Process. As a policy-driven upgrade, the purpose of the Project is to integrate renewable generation and relieve area deliverability constraints. The capability of the existing infrastructure is limited by the existing series capacitors and terminal equipment and needs to be upgraded to meet the Project objectives by increasing the import capability of the existing transmission lines. These upgrades have been approved as CAISO policy-driven upgrades in the 2012-2013 and 2013-2014 Transmission Plans.

## 1.2 Project Overview

This Project will increase capacity and power flow between SCE's existing Eldorado, Lugo, and Mohave Substations to safely deliver renewable power to the Los Angeles Basin from the Eldorado and Mohave Substations. SCE's Proposed Project would:

- Construct 2 new 500-kilovolt (kV) mid-line series capacitors (i.e., the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment.
- Provide 2 communication paths between the series capacitor sites.
  - Install approximately 2 miles of overhead and 700 feet of underground telecommunications facilities as one path to connect the proposed series capacitors to SCE's existing communication system.
  - Install approximately 2 miles of underground telecommunications facilities as a second communication path to connect the series capacitors to SCE's existing communication system.
- Provide station light and power to the proposed series capacitors by extending and/or rerouting existing lines to create approximately 2 miles of overhead and 700 feet of underground 12 kV

distribution circuits. (The new distribution poles would support overhead telecommunication facilities as well as the electric distribution lines.)

- Construct 3 new fiber optic repeater facilities (Barstow, Kelbaker, and Lanfair) within the Lugo-Mohave right-of-way (ROW).
- Install distribution lines for light and power at the 3 proposed fiber optic repeater sites.
- Install underground telecommunications facilities from existing transmission structures to the Barstow, Kelbaker, and Lanfair fiber optic repeater sites.
- Address 16 potential overhead clearance discrepancies at 14 locations by:
  - Relocating, replacing, or modifying existing transmission, subtransmission, and distribution facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV transmission lines to address 14 of the overhead clearance discrepancies. Tower modifications would include raising 9 towers up to approximately 18.5 feet by inserting new lattice-steel sections in tower bodies.
  - Performing minor grading at 2 locations along the Lugo-Mohave 500 kV transmission line to address 2 of the overhead clearance discrepancies.
- Install approximately 232 miles of OPGW (approximately 59 miles on the Eldorado-Mohave transmission line and approximately 173 miles on the Lugo-Mohave transmission line and approximately 3 miles of underground telecommunications facilities in the vicinity of the Mohave Substation).
- Modify and strengthen the ground wire peak of existing suspension towers where OPGW splices would occur. (Some of these towers would also require minor modifications to the steel in the tower body.)
- Install approximately 2,000 feet of underground telecommunications facilities within the existing Lugo, Mohave, and Eldorado substations.
- Within Lugo Substation, perform modifications on the existing series capacitors and install new terminating equipment and remove 2 existing tubular steel poles (TSP) and install 2 new TSPs on the Eldorado-Lugo and Lugo-Mohave 500 kV transmission lines.
- Within the Eldorado Substation, perform modifications on the existing series capacitors and upgrade the terminal equipment on the Eldorado-Lugo 500 kV transmission line.
- Within the Mohave Substation, replace existing series capacitors on the Lugo-Mohave 500 kV transmission line and install new terminal equipment on the Eldorado-Mohave and Lugo-Mohave 500 kV transmission lines.
- Install (if necessary) cathodic protection on approximately 60 miles of SoCalGas's natural gas pipelines parallel to SCE's Lugo-Mohave 500 kV transmission line and on other pipelines as needed.

### **1.3 Project Location**

The Project is located in southern California and southern Nevada, within the Mojave Basin and Range Ecoregion. It will extend northeast from Lugo Substation (located in San Bernardino County, California) to Eldorado Substation (located in the City of Boulder City, Nevada) and Mohave Substation (located in Clark

County, Nevada), and from Mohave Substation northwest to Eldorado Substation. The Project is located on land under the jurisdiction of the Bureau of Land Management (BLM), the Mojave National Preserve administered by the National Park Service (NPS), the Bureau of Reclamation, and the Department of Defense. Portions of the Project will also cross the City of Hesperia in California, as well as the unincorporated communities of Searchlight and Laughlin in Nevada. The majority of the Project will be constructed within existing SCE easements, fee-owned properties, and public franchise areas. SCE will need to acquire a minimum of 1.9 acres of additional ROW from the BLM to construct the proposed Newberry Springs Series Capacitors and a minimum of 1.6 acres of additional private property to construct the proposed Ludlow Series Capacitor.

## **1.4 Lead, Cooperating, and Consulting Agencies**

### **1.4.1 Lead Agencies**

Lead agencies have discretionary approval over the Project and are responsible for reviewing aspects of the measures documented in this Plan. The California Public Utilities Commission (CPUC) is California's lead agency responsible for compliance with the California Environmental Quality Act (CEQA) for Project areas on non-federal lands. The CPUC issued an Initial Study/Mitigated Negative Declaration for the Project under CEQA. The BLM Desert District Office is the federal lead agency responsible for compliance with National Environmental Policy Act for the Project areas on federal lands.

### **1.4.2 Cooperating Agencies**

Because the Project also crosses the Mojave National Preserve, the NPS elected to participate as a Cooperating Agency for the environmental review of the Project. Although the existing transmission lines associated with the Project also cross lands administered by the Bureau of Reclamation and the Department of Defense, the NPS represents the only federal cooperating agency at this time.

### **1.4.3 Consulting Agencies**

Consulting agencies are public agencies, other than the lead agencies, that may provide guidance or information needed to satisfy the requirements of the measures contained in this Plan. Consulting agencies for select mitigation measures listed in Table 1 include the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and Nevada Department of Wildlife.

## **1.5 Regulatory Setting**

There are a number of federal and state regulations that afford varying degrees of protection for birds and their nesting activities. The applicable regulations and permits are summarized below, along with the applicable mitigation measures (MM) from the Project's environmental documents (Section 1.6), which together provide the regulatory framework within which Project activities must comply.

### **1.5.1 Federal Aviation Administration**

The Federal Aviation Administration (FAA) has jurisdiction over U.S. airspace, aircraft, aircraft operations, airports, and pilots.

## 1.6 Mitigation Measures

The mitigation measures and conservation measures addressed in this Plan are listed in Table 1. Implementation of these measures is a condition of the Project's approvals. Additional mitigation measures will be added to updates of this RMP as appropriate.

Table 1. Mitigation Measures and Conservation Measures Addressed	
Measure	Description
<b>CPUC Mitigation Measures</b>	
HH-1	<p><b>Prepare and implement a Hazardous Materials and Waste Management Plan.</b> SCE shall prepare and implement a Project-specific Hazardous Materials and Waste Management Plan pursuant to Title 24, Part 9 of the California Code of Regulations (CCR) that identifies hazardous materials to be transported, used, and stored on site for the proposed construction activities — as well as hazardous wastes generated onsite as a result of the proposed construction activities — and appropriate management procedures according to the specifications outlined below.</p> <ul style="list-style-type: none"> <li> <p><b>Hazardous Materials and Hazardous Waste Handling:</b> The Plan will include the following components: (1) the program shall identify types of hazardous materials to be used during the project and the types of wastes that would be generated; (2) proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures; and (3) all project personnel shall be provided with project-specific training to ensure that all hazardous materials and wastes associated with the project are handled in a safe and environmentally sound manner and disposed of according to applicable rules and regulations. Specifically, employees handling wastes shall have or receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and treatment, storage and disposal facility (TSDF) training in accordance with current OSHA Hazard Communication Standard and Title 22 CCR. The Plan shall identify the landfill facilities that are authorized to accept the types of waste generated and hauled, and these landfills shall be used for hazardous waste disposal during construction.</p> </li> <li> <p><b>Transport of Hazardous Materials:</b> Hazardous materials that would be transported by truck include fuel (diesel fuel and gasoline) and oil and lubricants for equipment. Containers used to store hazardous materials would be properly labeled and kept in good condition. The Plan shall include written procedures for the transport of hazardous materials used in accordance with U.S. Department of Transportation and Caltrans regulations. A qualified transporter would be selected to comply with U.S. Department of Transportation and Caltrans regulations. The Plan shall identify proposed trucking routes.</p> </li> <li> <p><b>Fueling and Maintenance of Construction Equipment:</b> Written procedures for fueling and maintenance of construction equipment shall be included in the Plan. Refueling and maintenance procedures may require vehicles and equipment to be refueled on site or by tanker trucks. Procedures will require the use of drop cloths made of plastic, drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling would be located in areas where absorbent pad and trays would be available. The fuel tanks would also contain a lined area to ensure that accidental spillage does not occur. Drip pans or other collection devices would be placed under the equipment at night to capture drips or spills. Equipment would be inspected daily for potential leakage or failures. Hazardous materials such as paints, solvents, and penetrants would be kept in an approved locker or storage cabinet.</p> </li> </ul>



<b>Table 1. Mitigation Measures and Conservation Measures Addressed</b>	
<b>Measure</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>● <b>Fueling and Maintenance of Helicopters:</b> Written procedures for fueling and maintenance of helicopters shall be included in the Plan. Procedures may require helicopters be refueled at construction work areas, helicopter staging areas, or local airports. Procedures would include the use of drop cloths made of plastic, drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas shall be identified in the Plan and necessary spill response materials shall be available within each refueling area.</li> <li>● <b>Emergency Release Response Procedures:</b> The Plan shall include emergency response procedures in the event of a release of hazardous materials. The Plan must prescribe hazardous materials handling procedures for reducing the potential for a spill during construction and would include an emergency response program to ensure quick and safe cleanup of accidental spills. Hazardous materials shall not be stored near drains or waterways. Fueling shall not take place within 50 feet of drains or waterways with flowing water or within 75 feet of drains or waterways that are dry. All construction personnel, including environmental monitors, would be made aware of state and federal emergency response reporting guidelines for accidental spills.</li> </ul> <p>The Plan shall be submitted to CPUC and BLM 30 days prior to the start of construction for review and approval by the CPUC.</p>
<b>T-3</b>	<p><b>Prepare and implement a final helicopter use plan.</b> SCE and its contractor shall prepare and obtain approval of a Final Helicopter Use Plan 30 days prior to using helicopters to transport personnel, materials, or equipment for the deconstruction of existing project facilities or construction of new or replacement project facilities. The plan shall identify the specific locations requiring deconstruction or construction work using helicopters. The Final Helicopter Use Plan shall draw upon protocols and methods used on previous transmission line projects and shall be submitted to CPUC and BLM for approval.</p> <p>The Federal Aviation Administration (FAA) has jurisdiction over U.S. airspace, aircraft, aircraft operations, airports, and pilots. To the extent that they do not conflict with any FAA requirements, the following shall apply to helicopter use and be incorporated in the Final Helicopter Use Plan.</p> <ul style="list-style-type: none"> <li>● All aircraft and pilots shall be in full compliance with applicable FAA requirements and standards.</li> <li>● On the day before a flight, helicopter flight information shall be provided by email to CPUC/BLM monitors regarding the specific sites to be used for helicopter retrieval of materials, equipment, or personnel and the destination of the materials, equipment, or personnel being transported. Information provided in the email shall include pilot name, contact number, aircraft type, aircraft registration number, aircraft color, work/flight area, anticipated beginning and completion times, and scope of work.</li> <li>● The specific locations requiring deconstruction or construction work using helicopters shall be identified.</li> <li>● Temporary staging of materials outside of approved yards or on access or spur roads shall not occur without prior approval of CPUC or BLM, as appropriate.</li> <li>● The yards to and from which helicopters would fly (fly yards) shall be identified and shall be of sufficient size to ensure safe operations, given the other activities occurring at the yards and the vicinity.</li> <li>● Fly yards shall be no closer than a horizontal distance of 475 feet from occupied residences to avoid unacceptable nuisances.</li> </ul>

<b>Table 1. Mitigation Measures and Conservation Measures Addressed</b>	
<b>Measure</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Site-specific steps taken to avoid nuisances and ensure safe refueling shall be identified for each fly yard.</li> <li>• Flight paths that minimize flights in wilderness areas and near schools, hospitals, nursing homes, and other sensitive group receptors shall be identified and followed.</li> <li>• Except in an emergency, helicopters shall land or hover near the ground only in areas previously approved for landing, and all dust control and biological and cultural resource protection requirements shall apply.</li> <li>• External loads will be secured by appropriate rigging, including boxing, netting, choking, and cabling, or other suitable means. Only qualified riggers shall prepare and attach external loads to helicopters, and rigging shall be appropriate to the nature of the load, including the use of devices as necessary to prevent materials being lost in flight. Where appropriate to reduce load in-flight spinning and movement, drag chutes will be attached to loads. The need for drag chutes will be determined by the pilot and rigging personnel, where appropriate. At locations where rigging is to occur, a sufficient supply of appropriate rigging and containment materials in good repair shall be on hand at all times.</li> <li>• All aircraft are to be configured with weight sensors such that, when preparing to haul external loads, the pilot is able to determine the weight of the load being lifted.</li> <li>• Yards or landing zones shall have a designated qualified individual managing the movement of aircraft in and out of the yard or landing zone when flight activity is high.</li> <li>• Appropriate protocols for communication among pilots and between pilots and the ground shall be developed and implemented.</li> <li>• A GPS-based data system shall be installed in each aircraft. <ul style="list-style-type: none"> <li>○ The system shall identify for the pilot all project-approved project flight paths and those areas where overflights are restricted (such as seasonally restricted bird nesting areas and sensitive residential or institutional areas) and shall be updated as often as any flight restrictions are implemented or lifted.</li> <li>○ The system shall automatically record and preserve flight data sufficient to identify the aircraft’s flight path, including altitude above ground. The system shall be capable of providing the information required with regard to flight path and aircraft identifier and provide a location “ping” no less frequently than once every 3 seconds. These data shall be collected daily and maintained by SCE or its contractor for a period of no less than six months and made available to CPUC or BLM upon request.</li> </ul> </li> </ul> <p>The Helicopter Use Plan shall be submitted to CPUC and BLM for review and approval at least 30 days prior to the use of helicopters on the project. Once the Helicopter Use Plan is made final, a copy shall be provided as a courtesy to each jurisdiction through which the Project passes.</p>
<b>BLM Mitigation Measures</b>	
TC-2	A Helicopter Use Plan shall be prepared and implemented.
TC-3	Helicopter Landing Zones shall be identified.
TC-4	On the day before a flight, helicopter flight information shall be provided by email to the BLM regarding the specific sites to be used for helicopter retrieval of materials, equipment, or personnel and the destination of the materials, equipment, or personnel being transported. Information provided in the email

Table 1. Mitigation Measures and Conservation Measures Addressed	
Measure	Description
	shall include pilot name, contact number, aircraft type, aircraft registration number, aircraft color, work/flight area, anticipated beginning and completion times, and scope of work.

## 1.7 Measures and Conditions by and Project Phases

The measures described in this Plan and listed in Table 1 are applicable for the following periods of the Project, as shown in Table 2.

Table 2. Timing of Applicant Proposed Measure and Mitigation Measure Applicability			
Measure	Period		
	Preconstruction (Mobilization)	During Construction (Active)	Post-construction (Restoration)
CPUC MM HH-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CPUC MM T-3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BLM MM TC-2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BLM MM TC-3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BLM MM TC-4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 2 Coordination and Management

The communication plan for helicopter operations on the ELM Project shall follow the guidelines listed in the Helicopter Subcontractor Communications Program document. Please see Appendix A for the Helicopter Subcontractor Communications Program document.

### 2.1 Administration

The Helicopter Subcontractor shall provide a safety program, Activity Hazard Analysis (AHA), including safe helicopter use practices and programs prior to construction. The final project-specific Helicopter Work Plan (herein) shall be provided and approved by the CPUC and BLM prior to helicopter activities and a helicopter activity specific safety analysis and Job Hazard Analysis (JHA), shall be provided the day of the activity prior to work.

The project Safety Manager shall meet with local emergency medical services prior to project startup and establish communication methods and procedures. An Emergency Response Plan shall be developed as an overview for the project.

The Superintendent shall devise specific plans for each structure or work location prior to work commencing at that location. The Superintendent shall conduct a "dry run" of the Emergency Response Plan and route to ensure plan is as efficient as possible.

Communications shall be tested at each work location prior to startup. If cell phone coverage is not available in that area, satellite phones (or other alternative methods) shall be implemented prior to starting any task or project.

## 2.2 Roles and Responsibilities

Table 3 is a list of project roles and the company or person that will fill that role.

Table 3. Project Roles	
Role	Name
<b>Owner</b>	Southern California Edison
Transmission Contact	TBD
<b>EPC Contractor</b>	Beta Engineering
Transmission Construction Manager	TBD
<b>Overhead (OPGW) Subcontractor</b>	American Power, LLC
Project Manager	Andy Mack
Superintendent	Clayton Hickenbotham
Helicopter Subcontractor	Summit Helicopter
Operations Manager	Bill Nichols
<b>Overhead (Tower Raise) Subcontractor</b>	AmpJack
Project Manager	Chris Stasiuk
Helicopter Subcontractor	Lohman Helicopter
Operations Manager	TBD

The Helicopter Subcontractor shall be responsible for assembling the correct compliment of personnel, aircraft and other required resources. The Overhead Subcontractor Project Manager will be the point of contact for helicopter operation schedule and coordinate resource requests from the Owner and Contractor between the Overhead Subcontractor and Helicopter Subcontractor. The Helicopter Subcontractor's Operations Manager will be the point of contact for flight data collections.

The Helicopter Subcontractor is responsible for Health and Safety Compliance and Accident Investigation related to operations of helicopters on the project. Helicopter Subcontractor Pilot will be responsible for the safety of flight and all final decisions on any and all flight plans.

## 2.3 Notifications

On the day before a flight, helicopter flight information shall be provided by email to CPUC/BLM monitors regarding the specific sites to be used for helicopter retrieval of materials, equipment, or personnel and the destination of the materials, equipment, or personnel being transported. Information provided in the email shall include pilot name, contact number, aircraft type, aircraft registration number, aircraft color, work/flight area, anticipated beginning and completion times, and scope of work. In addition, the flight notification will be faxed to the BLM Federal Interagency Communications Center (FICC) at 909-383-5587 for flights scheduled to occur the next day over BLM land in California.

The Overhead Subcontractor shall appoint a safety representative to notify all stakeholders at least the day before any scheduled helicopter operations and will include notifications to any 3rd parties that may be affected by the flight operations. This notification communication will establish mitigation of risks by delineating safe work zones and establishment of a safety corridor around the operating rotorcraft. Non-ground crew personnel, who are necessarily near the fly operation, are required to maintain a minimum of 100 feet from the heading or hovering area of the rotorcraft.

Ground crew will be stationed in areas likely to be occupied and will maintain the area clear of unauthorized personnel. The pilot and ground crew will ensure the rotorcraft does not fly into an area occupied by unapproved persons.

### **3 Equipment and Communications**

All aircraft and pilots shall be in full compliance with applicable FAA requirements and standards.

#### **3.1 Helicopter**

The helicopter type that will be used by the Overhead (OPGW) Subcontractor is a medium-sized model helicopter, using either a MD 530F or a MD 500E (smallest). There will typically be only one (1) MD 530F used per day for an estimated 12 hours per day. There may possible be a second helicopter used by the OPGW contractor, if necessary, to meet the construction schedule. The MD 530F helicopter performs and operates effectively in hot, high altitude environments.

The helicopter type to be used by the Overhead (Tower Raise) Subcontractor will also be a medium-sized model helicopter, using either the Bell 407 or Bell 212 (largest). This subcontractor will be using the helicopter for personnel and material transport to the two remote sites where tower raising is to occur. Material transport is scheduled primarily during initial mobilization and demobilization. Personnel transport to and from the sites via helicopter will be used each day until the activity is complete.

The helicopter dimensions for the different helicopter types are provided in Appendix B

#### **3.2 Support Equipment**

The helicopter work will be supported by ground equipment including:

- Maintenance truck
- Fuel Truck (600-gallon)
- Long lines and long line attachments (hooks, grapples, etc.)

A complete list of Equipment Specifications is included in Appendix B, including features, standard equipment, dimensions, performance specifications.

#### **3.3 Flight Crew**

Under FAA regulations as directed in Federal Aviation Regulation (FAR) 133, Helicopter Subcontractor and their respective pilots shall be FAA approved operators and charged with responsibility for FAA compliant operation. The pilots will hold necessary licenses for operations on SCE projects, including a FAA (U.S.) commercial Rotocraft license and FAA Class II Medical Certificate.

The pilot performs training and approval of the flight and ground crews in keeping with the FAR 133 approved safety plan. The pilot will demonstrate Aircraft Flight Proficiency and the ability to safely work in power line construction and wire environment. The pilot will conduct training on the first day of operation as per the Helicopter Subcontractor Flight Manuals.

## 3.4 Preflight Communication

Under FAA rules and in compliance with the FAA approved FAR 133 External Load work and Safety Plan, the pilot will perform a fly-over of the work area prior to any work taking place. The purpose of the pre-flyover is to verify the work route, existing conditions (including wildlife concerns), hazards or obstructions in order to establish and execute a hazard remediation plan.

The pilot will then communicate the JHA, and the plan of operation for the day to the flight and ground crew at the Daily Tailboard. The pilot will also complete a Jobsite Safety Inspection Checklist. The pilot will then perform a pre-flight inspection of all of the equipment that will be used in the flight operation.

## 3.5 Methods of Communication during Helicopter Operations

The following lists the communication methods that are approved for use for the various purposes shown.

### 3.5.1 Cellular Phones

Cellular phones may be used for the following purposes:

- Contacting Emergency Services
- Communicating with line switching center
- Notifying headquarters of an accident

Note: It is illegal to use a cellular phone from a helicopter while in flight.

### 3.5.2 Two-Way Radios

Two-way radios can be used for the following purposes:

- Contacting airport control dispatcher
- Communicating with line switching center
- Communicating with headquarters
- Communications between all personnel involved in the helicopter operation, including:
  - Pilot
  - Landing zone
  - Line workers
  - Supervisor
  - FAA air traffic control centers
  - Personnel Communication

Good communications will be maintained at all times between the helicopter pilot, landing zone coordinator, supervisor, line switching dispatcher, and the helicopter line worker. The helicopter must be equipped with a 2-way radio that is capable of operating on a radio frequency used by the line crews, landing zone coordinator, supervisor, and air traffic controller.

Crew will review this document and all crewmembers will sign off that they have reviewed and will comply with the contents therein. A meeting will be held prior to any work activity where all project personnel will review this Safe Work plan. This will allow all crewmembers to ask any questions and assure the

Project Leadership that all personnel understand the breadth and scope of the plan. A sign-off form is included at the end of this document and will be utilized to document the event.

Crew will conduct a Daily Tailboard at the Jobsite.

Crew Superintendent will conduct the job briefing and will document the briefing on the JHA. All employees will sign off on the JHA indicating that they understand all of the information contained on the sheet. This JHA may include, but is not limited to:

- Safety of flight determined by Pilot in command
- Safety of work determined by Superintendent and/or Safety Manager
- Operations Communication
- Site Preparations
- Crew, Materials, Tools and Equipment transported to landing zone by crew members
- Helicopters arrive after landing zone is set up and secured

The crew will confirm clearance with Overhead Subcontractor. Do not proceed with any work activity without clearance authorization. All crewmembers will be informed as to the status of the line and no work will be performed until the line status information is clearly disseminated to the crew.

The crew will confirm that they have all required tools, equipment, PPE, Safety devices, before starting any evolution. Crew will perform a thorough inspection of all tools and equipment. The helicopter will be inspected by the Pilot in Command and will include an inspection of all materials. Workers will utilize gloves to protect their hands.

All Aerial Lineman and Pilot in Command that will be involved in the evolution will don the proper Personal Protective Equipment that was reviewed and listed in the Daily Job Plan discussion.

Aerial Lineman will prepare to be transported to the structure utilizing the short haul method as outlined in the Daily Job Plan.

Aerial Lineman will inspect all hardware and structure integrity to make certain that acceptable standards are met. Any deviation from these acceptable standards will mandate a Work Stoppage immediately and a representative will be contacted.

Aerial Linemen will transfer to the structure according to the Helicopter Subcontractor- Transfer Procedures until all necessary personnel are in place.

## **4 Helicopter Operations and Work Areas**

### **4.1 Flight Path**

The flight path for each helicopter operation will be selected and verified prior to construction. The pilot will then communicate the JHA, and the plan of operation for the day to the flight and ground crew at the Daily Tailboard. The pilot will then perform a pre-flight inspection of all of the equipment that will be used in the flight operation.

In general, the flight paths will be parallel, within close proximity of the existing transmission line alignments. The routes will include the landing zones to be used for the stringing operation. The flight paths selected will minimize crossings over:

- public travel ways
- wilderness areas
- residential areas and schools
- hospitals
- nursing homes
- other sensitive group receptors

An emergency flight plan will also be communicated by the Pilot and in the Emergency Response Plan.

#### **4.1.1 Flight Tracking/GPS Operations**

All flights shall be tracked as required. The GPS equipment and flight tracking instruments used will be identified by the Helicopter Subcontractor.

The GPS-based data system shall identify all project-approved flight paths and areas where overflights are restricted (such as seasonally restricted bird nesting areas and sensitive residential or institutional areas) and shall be updated as often as any flight restrictions are implemented.

The system shall also record the aircraft's location, including altitude above ground. The location of the helicopter shall be provided (or "pinged") no less frequently than once every 3 seconds to establish the flight path. These GPS flight records shall be collected daily and maintained for a period of no less than six months and made available to CPUC or BLM upon request.

## **4.2 Tooling and Material Transport**

Whenever transferring tooling or material using the helicopter load line, it is important to have good communications between the pilot and line worker spotting the load. This communication can be in the form of; radio communications, hand signals or head signals. Before starting the transfer, crew members must agree on the form of communication that will be used. Both the pilot and the line workers must understand the signals that will be used.

The following communication points and information between the pilot and line worker are important to ensure that the operation is performed safely when making these transfers:

- When lifting the load from the ground, the pilot must know:
  - The location where the load will be taken.
  - The load line is OK and the rigging is safe to make the lift.
  - When the load line is positioned correctly for the line worker to connect it.
  - When the load is attached to the load line and ready to be lifted.
  - When the load is clear of the ground.
  - When the load is clear of any surrounding obstacles and it is safe for the pilot to proceed to the work location.

When placing the load on the ground, the pilot must know:



- The location where the load will be placed.
- The distances the load is above the ground, starting at 50-feet and at 10-foot increments until the worker contacts the ground.
- When the load is safely on the ground and free of the load line.
- When the load is in the clear and it is OK for the helicopter to land or proceed to the next location.

Helicopters that are transporting loads will be configured with weight sensors, so that the pilot is able to identify the overall load on the helicopter. When the helicopter is transporting a load, they will not be allowed to fly over any dwellings or major travel ways without traffic control.

Ground crew will be stationed in areas likely to be occupied, landing zone and/or designated pull sites, and will maintain the area clear of unauthorized personnel. The pilot and ground crew will ensure the rotorcraft does not fly into an area occupied by unapproved persons.

### **4.3 Installation Tasks**

#### **4.3.1 Traveler Installation**

Wire travelers are to be installed at every structure of each OPGW wire pull section. The travelers shall be installed by both ground and air crew. The helicopter crew will install travelers either from the skid or using long lining (human external cargo [HEC]) procedures.

#### **4.3.2 Marker Ball Installations**

Marker balls shall be installed by helicopter crews. Marker balls will be installed either from the skid or using long lining (HEC) procedures.

#### **4.3.3 Wire Stringing**

To most efficiently remove the OHGW and install the new OPGW, the OHGW will be used as the hard-line to pull the OPGW into position. However, stringing operations may require helicopter support to complete stringing operations. Helicopters may be used on the ELM Project to perform the stringing activities listed below:

- Sock lines used to pull OPGW
- OPGW may be pulled by helicopter.
- Pulls from tension end to pulling end may be pulled by helicopter.
- All hardware, such as insulators for all dead ends, tangents, dead end platform boards, and ladders may be flown in by helicopter.
- Manpower (if needed) will be flown in by helicopter either by skid transfers or using long lining (HEC) procedures.

#### **4.3.4 Rigging**

Contractor may use a rated grapple hook or rated swivel hook with safety latch for the transportation of materials and tools on the ELM Project. Additional rigging to be used for each Helicopter Operation will be specified by the Helicopter Subcontractor.

External loads will be secured by appropriate rigging methods and by qualified riggers. Drag chutes may also be added to loads to reduce load in-flight spinning and movement, as determined by the pilot and rigging personnel. All rigging equipment and materials will be readily available and in good working order at locations where rigging is to occur.

## **4.4 Fueling and Maintenance**

The following helicopter fueling and maintenance spill prevention measures will be and implemented by the helicopter contractor during the construction of the transmission line to prevent a release to the environment.

### **4.4.1 Rapid (Hot) Refueling**

Rapid (hot) refueling of the helicopter will be conducted at the designated helicopter refueling area and as per the helicopter contractor's safety program. The fuel truck will wait for the helicopter at the designated helicopter refueling area. The fuel truck operator will remain with the fuel truck while it is on the job site. Non-ground crew personnel, who are necessarily near the fly operation, are required to maintain a minimum of 100 feet from the heading or hovering area of the rotorcraft.

The fuel truck has a 600-gallon capacity of Jet A Fuel. The 600-gallon capacity tank on the fuel truck is a DOT-approved fuel tank. Secondary containment will be set up under the fuel truck. A hose from the stationary fuel truck will be used to fuel the rotorcraft. The rotorcraft will be grounded to the fuel truck during fueling operations. There will be a truck to rotorcraft ground. There will be no grounding stake inserted into the ground.

### **4.4.2 Helicopter Fueling and Maintenance Spill Prevention Measures**

At a minimum, the following guidance is to be incorporated in the detailed helicopter fueling and maintenance procedures.

- Helicopters will be refueled only at designated helicopter refueling areas, which would include helicopter landing zones (HLZ), staging yards, or local airports.
- At staging areas, spill prevention measures such as drip pans or trays will be used to prevent a spill to the surrounding area.
- Safety precautions will be used during refueling of helicopters to prevent fueling and spill prevention equipment from interfering with the operation of the helicopter.
- Absorbent pads will be available in designated staging areas to quickly respond to fuel spills if it is not safe to use spill prevention measures during refueling.

The use of landing zones for refueling will be limited by the accessibility of the site to available helicopter fuel trucks and proximity to jurisdictional water features. Refueling on these landing zones will follow the same BMPs and refueling guidelines used at all other helicopter and equipment refueling locations.

### **4.4.3 Reporting**

The release of petroleum products such as gasoline, diesel, and hydraulic fluid (regardless of the quantity spilled) will be immediately reported to the Environmental Monitor and SCE by the construction contractor if the spill enters a navigable water, stream, lake, wetland, or storm drain; impacts sensitive

areas including sensitive habitats, conservation areas and wildlife preserves; or causes injury to a person or threatens injury to public health.

- After notifying SCE and construction personnel of the release, the construction contractor will notify the applicable regulatory agencies immediately, as required by law.
- The CPUC/BLM Environmental Monitor will be notified within 24 hours of spills/releases greater than 1 gallon. For releases occurring on BLM land in California, written notification will be faxed to the BLM Federal Interagency Communications Center (FICC) at 909-383-5587 within 24 hours of the incident. In addition, spill reports will be distributed to the CPUC/BLM via SCE’s Field Reporting Environmental Database within 7 calendar days of the incident, in the project weekly report.
- The construction contractor will first notify the SCE construction manager. SCE will then notify applicable agencies of the incident in accordance with federal, state, and local spill reporting requirements. When notifying agencies of a release, notification forms will be completed to document the agency contact.
- Additional notification will be made per the hazardous communication plan provided in the contractor’s Construction Site Specific Program for that project location.
- When contacting 911 or a government agency, the following information will be provided:
  - The exact location of the release or threatened release;
  - The date and time of the release
  - The name of the person reporting the release or threatened release;
  - The hazardous materials involved in the release or threatened release;
  - An estimate of the quantity of hazardous materials involved;
  - Methods of immediate containment and proper disposal, and
  - The potential hazards presented by the hazardous material involved in the release or threatened release.

#### 4.5 Landing Zones

Helicopters shall utilize any of the CPUC/BLM approved landing zones, which have been identified along the transmission line alignments, for tooling/personnel loading/unloading and refueling. There are 201 HLZs on the ELM Project (Table 4).

<b>Table 4. Helicopter Land Zones</b>		
<b>Line</b>	<b>Number of Helicopter Zones</b>	<b>Work Area</b>
Eldorado-Mohave Transmission Line	38	60 miles of OPGW
Lugo-Mohave Transmission Line	160	173 miles of OPGW
Eldorado-Lugo Transmission Line	3	Discrepancy work areas
<b>TOTAL</b>	201	

Ideally, HLZs should be approximately 75' x 75', have approach/departure path (into the wind) that are clear of wires, towers, structures, and trees. Additionally, all obstacles must be clearly identified and acknowledged by the pilot, and the landing zone should be somewhat level and free of debris that could become a hazard to the helicopter or ground personnel.

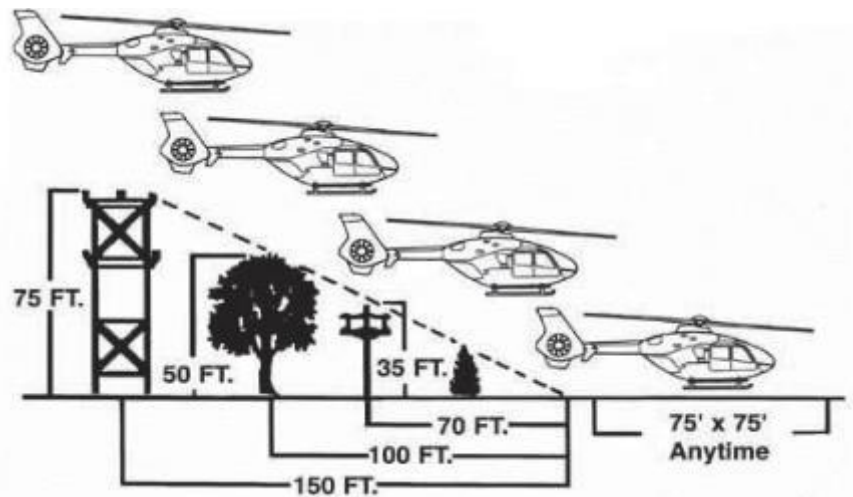
For this Project, the HLZs have been reduced in size to utilize the flat terrain in existing previously disturbed areas and minimize new ground disturbances. It is possible to use these smaller HLZs with smaller sized helicopters used on the Project for stringing new OPGW.

#### 4.5.1 Landing Zone Preparation

Only the pilot, fuel truck operator, and ground crew (designated Project personnel) are allowed in the Landing Zone area when a helicopter is in use. Ground crews will be stationed in areas likely to be occupied and will maintain the area clear of unauthorized personnel. Non-ground crew personnel, who are necessarily near the fly operation, are required to maintain a minimum of 100 feet from the heading or hovering area of the rotorcraft. The pilot and ground crew will ensure the rotorcraft does not fly into an area occupied by unapproved persons.

To control dust, the landing zone will be sprayed with water, if needed, prior to the helicopter landing and as necessary throughout each day of helicopter operation.

Loose items near the landing zone that could be blown by the helicopter will be removed or secured. Loose items blown by the helicopter are a hazard to air and ground crews.



The helicopter is very loud and generates wind gusts in excess of 70 miles per hour. Protect your eyes and body from blowing dirt, and your ears from the loud noise. Do not wear a cap, hat, loose scarf or other items that can be blown by helicopter wind.

#### 4.6 Helicopter Staging Areas/Fly Yards

Helicopters shall utilize any of the Project Staging Yards, which have been identified and approved by the CPUC/BLM across the project transmission line alignments and substations. There are 16 Staging Yards identified for the entire ELM Project. Of those, only the 11 staging yards identified in Table 5 may be used for helicopter landing due to their proximity to substation equipment and/or nearby occupied residences (within 475 feet):

Yard Name	Location	Condition	Approximate Area (acres)	Proposed Project Component
Bear Valley	Lucerne Valley Joshua Rd at Hwy 18	Partially Disturbed	4.2	Transmission
Barstow Road	Lucerne Valley Between Barstow Road and Fern Drive	Undisturbed	10.1	Transmission
Coolwater	Daggett Santa Fe Street at Sunray Lane	Previously Disturbed	21.0	Transmission

<b>Table 5. Potential Staging Yard Locations</b>				
<b>Yard Name</b>	<b>Location</b>	<b>Condition</b>	<b>Approximate Area (acres)</b>	<b>Proposed Project Component</b>
Ludlow Yard - Alt	Ludlow South of I-40 at Ludlow exit	Previously Disturbed	3.2	Transmission
Fenner Yard	San Bernardino County Goffs Road and I-40	Previously Disturbed	5.4	Transmission
Mohave Substation	Mohave Substation	Previously Disturbed	7.5	Transmission/OPGW, Substation, Capacitor
Eldorado Substation	Eldorado Substation	Previously Disturbed	8.5	Transmission/ Substation
South Eldorado Substation	Eldorado Substation	Previously Disturbed	4.2	Substation/ Capacitor
Lugo Substation IV	Lugo Substation	Previously Disturbed	12.4	Substation
Newberry Springs Series Capacitor	Newberry Springs Adjacent – southwest side of site	Partially Disturbed	6.2	Capacitor
Ludlow Series Capacitor	Ludlow Adjacent – south side of site	Partially Disturbed	4.9	Capacitor

The proposed Helicopter staging areas will be used for grounding helicopters for storage or maintenance. Helicopter staging areas will be defined within the larger material laydown yards that have been identified for the project. The staging areas will be selected to minimize impacts to other construction activities and minimize impacts to the environmental setting due to helicopter activities, including down wash during take-off and helicopter refueling.

Staging areas will be demarcated in fluorescent pink striping paint. The approach sides of the helicopter staging location will have signs that state "DANGER Authorized Personnel Beyond This Point", and "NOTICE- Helicopter Landing Zone" with the contact information for the Overhead Subcontractor and Helicopter Subcontractor.

Only approved HLZs and staging yards will be used for landing helicopters or hovering near the ground (within 50 feet above ground level). Dust control and environmental resource protections will be installed, as applicable, prior to landing the helicopter.

## **5 Operational Protocols and Hazards**

The following section outlines the plans and controls to be executed during Helicopter Operations. The systems shall be supplemental to those provided in the safety program, AHA, provided by the Helicopter Subcontractor. The descriptions in these sections shall not replace the instructions included in the AHA, but shall be supplemental.

### **5.1 General Helicopter Safety Guidelines**

The landing zone will be fully manned prior to landing to ensure no one has entered the landing zone. Always approach the aircraft from the front. If you cannot see the pilot, the pilot cannot see you. The tail rotor is hard to see and very dangerous. It spins very fast and is close to the ground. Pay attention and maintain eye contact with the flight crew at all times. Do not walk under the helicopter blades until they have come to a complete stop, or the flight crew instructs you to do so. If you cannot see the blades stay

at least 30 feet from the helicopter. Assist the flight crew. The crew may signal you to approach. If they don't, remain outside the blade area. Make sure that all material is secure and no loose items that can get blown off. Follow the flight crew's direction. Approach from the front. Helicopter parts may be hot or easily damaged. The flight crew will ALWAYS open and close the doors. Assist the flight crew with loading. Keep all equipment below shoulder height when approaching the helicopter. Typically, you do not need to crouch down to avoid the blades. If something is dropped or blows away from you, do not chase it. Depart towards the front of the helicopter.

## **5.2 Traffic Control Plan**

For the safety and welfare of the general public, Helicopter Subcontractor will avoid (whenever possible) ferrying materials and equipment over roads and other crossings. Private and fire access roads will only be crossed when absent of any traffic.

Traffic control measures for this project will be employed for locations where the work areas encroach upon a publicly traveled ROW. As safety of the traveling public is paramount, maintenance of adequate levels of traffic control shall be minded for all work, for all circumstances. This may require utilization of specialty subcontractors with thorough working knowledge of all the applicable laws, standards, means and methods to provide the safest environment for the traveling public.

The measures to be employed to maintain this objective during helicopter operations will vary by work and circumstance, but will include the following at a minimum:

- Controlling the flow of traffic near a work zone through the use of flaggers, signs, cones, and/or other positive directional devices to keep the public safe and to reduce speed of vehicles in the area
- Routing pedestrians along a safe, usable, same-side path of travel that is: (a) adjacent to the worksite along widened and unblocked sidewalk surfaces, or (b) along adjacent landscaping within the ROW, or (c) along closed bike lanes, or (d) along parallel parking areas
- Routing pedestrians across the street to a sidewalk, around and away from the area of work
- Ferrying materials and equipment over roads and other major crossings will be avoided, as possible
- Access roads will only be crossed when absent of any traffic
- Use of only CPUC/BLM approved predefined Landing zones

## **5.3 Aircraft Communication with Federal Aviation Administration Air Traffic Controllers**

The pilot will make daily contact with the appropriate Air Traffic Control Centers.

An established transponder code will be assigned during operations during flight operations.

## **5.4 Aerial Obstacles or Obstructions**

The two (2) 500kV Transmission Lines to be re-conducted will be de-energized during OPGW stringing operations but will remain as aerial obstacles to be carefully considered for all Helicopter Operations. Additionally, there are overhead transmission, sub-transmission, and distribution lines adjacent to the transmission lines under construction.

The adjacent lines will not be de-energized. Isolation and Insulation measures may be employed to protect the air crew during Helicopter Operations. The type and quantity of insulate and isolate components will be determined prior to work. Whenever possible, Helicopter Operations shall be performed when items are de-energized or a portion is de-energized and grounded.

Flight paths and overhead structures to be worked will be selected to minimize approach distances to these aerial obstacles.

## **5.5 Restricted air spaces**

Restricted air spaces near the project include Twenty-nine Palms Marine Corps Base. This restricted air space will be avoided for all helicopter operations as required. Ground crews will be used in project work areas in proximity to these air spaces.

## **5.6 Congested Area Flight Plan**

There will not be a need for a congested area plan on the ELM Project. All pulling operations that involve nearby building, homes, freeways, or major roads will be pulled without the use of a helicopter. Local law enforcement and the FAA will be notified of the intended use of the helicopter in the area.

## **5.7 Emergency Response Plan**

The Emergency Response Plan is an overview of project specific locations and facilities. An Emergency Response Plan is required for each project and is to be communicated and available to each employee. The Superintendent is tasked with reviewing this process upon arrival at the work location and making any alterations needed to ensure all measures are in place to provide the most complete emergency services available.

This process, and any modifications, is to be communicated to all employees prior to start of work. All employees are to be made aware of the location of this document, the nearest medical facility, emergency contacts and roles/responsibilities to be performed in the event of an emergency. Site supervision shall review this with all employees and obtain a sign-off indicating understanding by all employees at the location.

Should an injured employee require being transported by air from the scene to the hospital, air support will be contacted by EMS. Construction personnel should follow the instructions of the Emergency Response Plan and standard guidelines to make the situation as adaptable as possible.

A complete project-specific Emergency Response Plan is included in Appendix C.

## 6 Helicopter Environmental Mitigation and Monitoring

The following section outlines the plans and controls to be executed during Helicopter Operations. The systems shall be supplemental to those provided in the Project environmental documents. The descriptions in these sections shall not replace the instructions included in the environmental documents, but shall be supplemental.

- Local Noise Ordinances
  - Comply with local noise ordinance as they are applied to the Project areas
- Hazardous Materials Management
  - Store fuel tanks in areas to contain all spills.
  - Store gas cans outside trailers or tool rooms in designated areas.
- Spill Response (As identified in the project Hazardous Materials and Waste Management Plan)

Spill or release response procedures will depend on the following factors:

- If large quantities of hazardous materials were released;
- If an environmental specialty contractor will be contacted to manage the clean-up;
- If specialized PPE is required for the cleanup;
- If property owners or the community are concerned about the release;
- If there is a threat to the public;
- If there is a threat to surface waters;
- If a sensitive environment is or may be affected; or
- If a highway or roadway is affected;
  - If a traffic lane is closed due to the release;
  - If regulatory agencies or emergency response personnel are on site; or
  - If there is a reasonable belief that the release poses a significant hazard to human health and safety, property, or the environment.

The following outlines the construction contractor's notification and reporting procedure for a hazardous material release or threat of a release:

- Discovery
  - The first step in the process is to discover the release or threat of a hazardous material release.
- Initial Actions
  - If the release has a potential to be an immediate danger to life or health, the construction worker will move to a safe location and call 911 for assistance.
  - If the release is incidental to the construction worker's job, SCE will be notified immediately, trained spill response personnel will clean up the spill, and the necessity for agency notification will be evaluated by SCE.
  - The spill response personnel will be trained to work with hazardous materials and be familiar with the construction contractor's emergency release response procedures.



- If the release is not incidental to the construction worker's job, then the worker will notify their immediate supervisor or the construction contractor, and the latter will determine whether an emergency response person is capable of cleaning up the spill. If capable, the emergency response person will clean up the spill; but if not, the supervisor or construction contractor will follow the procedure below.
- Evaluation
  - If a spill cannot be cleaned up by an emergency response person, as determined by the supervisor or construction contractor, the latter will notify SCE and construction personnel of the release.
  - Professional hazardous waste cleanup services may be used to clean up large spills that cannot be handled by onsite resources, as required.
- **Agency Notification**
  - After notifying SCE and construction personnel of the release, the construction contractor will notify the applicable regulatory agencies immediately, as required by law. The CPUC/BLM Environmental Monitor will be notified the same day of spills/releases greater than 1 gallon.
  - The construction contractor will first notify the SCE construction manager. SCE will then notify applicable agencies of the incident in accordance with federal, state, and local spill reporting requirements. When notifying agencies of a release, notification forms will be completed to document the agency contact.
  - Additional notification will be made per the hazardous communication plan provided in the contractor's Construction Site Specific Program for that project location.
  - The applicable agencies, in which the spill occurred, will be notified of the spill within 24 hours of the incident.
    - For BLM CA, the spill notification shall be faxed to the BLM Federal Interagency Communications Center (FICC) 909-383-5587 within 24 hrs of incident
  - When contacting 911 or a government agency, the following information will be provided:
    - The exact location of the release or threatened release; (with map, when available)
    - The date and time of the spill
    - The name of the person reporting the release or threatened release;
    - The hazardous materials involved in the release or threatened release;
    - An estimate of the quantity of hazardous materials involved; and
    - The potential hazards presented by the hazardous material involved in the release or threatened release.
  - Documentation of the spill shall be provided to the CPUC/BLM within 7 calendar days of the incident via SCE's Field Reporting Environmental Database Weekly Report
- Water Resources
- Storm Water
  - Storm Water Pollution Prevent Plan requirements shall be communicated and maintained on or near jobsite.
  - Erosion Control Devices shall be installed at the staging areas as required

## **6.1 General**

The Helicopter subcontractor will comply with state, federal, and local environmental laws, conduct business operations in a manner that demonstrates respect for the quality of the environment, assist in finding solutions to environmental problems, respond quickly and effectively to environmental incidents involving Helicopter Subcontractor facilities or equipment under our control.

Additionally, we seek to assist clients with their environmental control procedures and directives when working on their property, promote good environmental attitudes by training employees in sound environmental management, and to maintain corporate environmental monitoring programs to ensure compliance with Helicopter Subcontractor and governmental requirements.

## **Appendix A. Helicopter Subcontractor Communications Program**

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<b>Table A-1 Helicopter Subcontractor Communications</b>	
<b>Potential Hazards</b>	<b>Recommended Action, Procedure, and/or Equipment</b>
<b>All Aircraft Operations</b>	
Authority	✓ The pilot in command is the absolute authority for the aircraft operation.
<b>Emergencies</b>	
Aircraft Accident	<ul style="list-style-type: none"> <li>✓ Designated person will call 911</li> <li>✓ Personnel will comply with tailboard briefing on all emergency actions</li> </ul>
Personnel injury	<ul style="list-style-type: none"> <li>✓ Designated person will call 911 to have trained medical personnel respond to emergency</li> <li>✓ Closest Hospital:</li> </ul>
<b>Pre Flight Brief</b>	
Aircraft Generated Hazards	<ul style="list-style-type: none"> <li>✓ Noise protection shall be worn within 100 feet of operating aircraft.</li> <li>✓ Chin straps shall be worn on hard hats and eye protection will be worn by any workers receiving external loads.</li> <li>✓ Personnel shall have visual contact with the pilot and have approval to approach prior to moving toward the aircraft.</li> <li>✓ Clothing shall consist of protective wear with no loose or dangling items.</li> <li>✓ Gloves shall be worn at all times.</li> <li>✓ Fire protection equipment will be available in the landing zone/pour zone (LZ/PZ)</li> </ul>
Positive Communications	<ul style="list-style-type: none"> <li>✓ As required, personnel working adjacent to LZ/PZ and aircraft will maintain positive communications.</li> <li>✓ Radio frequencies will be kept clear of nonessential traffic.</li> </ul>
<b>Landing Zone/Pour Zone Operations</b>	
Environmental Restrictions	<ul style="list-style-type: none"> <li>✓ Aircraft Operations will be conducted in accordance with Federal Aviation Regulations</li> <li>✓ Aircraft approaching the ROW in the vicinity of known environmentally sensitive areas shall maintain a safe altitude until reaching the Approach Path. Pilots shall make every effort to not over fly to pick up and pour areas via a path that is directly over persons, property or environmentally sensitive wild life.</li> </ul>
Fire	<ul style="list-style-type: none"> <li>✓ Personnel in the LZ/PZ will be briefed by the pilot as to the appropriate use of the fire extinguisher during aircraft operations.</li> <li>✓ Additionally, ground personnel shall monitor the LZ/PZ for ground fires resulting from aircraft operations.</li> </ul>
Fuel Spill	<ul style="list-style-type: none"> <li>✓ The preferred method of refueling shall be accomplished at approved airport facilities.</li> <li>✓ Only if environmental protection measures and fire suppression equipment are present shall fueling be accomplished in the field.</li> <li>✓ Spill containment equipment will be on site and crews trained on usage.</li> <li>✓ Only drivers with appropriate class driver license with HAZMAT and tanker endorsements shall drive the truck on public roads.</li> <li>✓ The applicable agencies, in which the spill occurred, will be notified of the spill within 24 hours of the incident.</li> </ul>
Personnel Contact with Rotor Blades	<ul style="list-style-type: none"> <li>✓ LZ/PZ shall be marked in accordance with pilot's requirements.</li> <li>✓ No unauthorized personnel shall be permitted within the confines without the approval of the pilot or air operations landing zone boss.</li> <li>✓ During aircraft operations, no personnel shall approach aircraft without visual contact and approval of the pilot.</li> <li>✓ Personnel shall only approach aircraft head on toward the front and never toward the tail and tail rotor.</li> </ul>

<b>Table A-1 Helicopter Subcontractor Communications</b>	
<b>Potential Hazards</b>	<b>Recommended Action, Procedure, and/or Equipment</b>
	<ul style="list-style-type: none"> <li>✓ Personnel must be aware of ground slope and the decrease of allowable head space between the ground and overhead turning rotors.</li> </ul>
Aircraft – Vehicle Collision	<ul style="list-style-type: none"> <li>✓ Vehicles shall not be moved within the LZ/PZ without the express approval of the pilot or landing zone boss.</li> <li>✓ All vehicles shall be moved with a ground guide.</li> <li>✓ Never shall a vehicle be driven or steered toward the aircraft.</li> </ul>
Brown Out and Blowing Debris	<ul style="list-style-type: none"> <li>✓ LZ/PZ shall clear of all loose debris.</li> <li>✓ Water tanker for dust suppression will remain on the landing zone and spray to control dust.</li> </ul>
Electrical Shock	<ul style="list-style-type: none"> <li>✓ Prior to human contact with steel lifting lines hanging from a hovering aircraft, workers shall allow the pilot to touch the lifting sling to a ground based structure or the ground. This will dissipate static electricity in the aircraft to the ground. Rope lines used will not create a static discharge issue and will not have to be touched to the ground to dissipate.</li> </ul>
Rigging Failure	<ul style="list-style-type: none"> <li>✓ All Rigging shall be inspected daily for serviceability and suitability prior to operations by the appropriate and qualified personnel.</li> <li>✓ Rigging shall be laid out and connections checked prior to external load operations.</li> <li>✓ External load release mechanisms shall be tested operations prior to operations.</li> <li>✓ In the event of a failure, all operations shall cease until foreman and helicopter operation specialist have inspected and repaired to serviceable conditions all affected components.</li> </ul>
Communications Failure	<ul style="list-style-type: none"> <li>✓ Radio checks will be completed immediately prior to operations with all assigned personnel checking in with net controller by call sign.</li> <li>✓ No flight operations shall proceed until net controller verifies all parties associated with planned work are on the net.</li> <li>✓ Lifting operations will cease immediately until communications are re-established. Loads shall be returned to the fly yard and set back on the ground. Aircraft shall hold on the ground until communications are restored.</li> </ul>
Overhead Hazard	<ul style="list-style-type: none"> <li>✓ No personnel will be allowed to stand under any load carried by the helicopter. All personnel designated as part of the working crew will keep the flying load in view at all times it is within 100 feet horizontally to their position.</li> </ul>
Falls	<ul style="list-style-type: none"> <li>✓ Workers receiving loads on steep slopes with loose soil or gravel, appropriately rated falls arrester harnesses and lanyards must be used.</li> </ul>
Flight Hazard to Personnel or Property on the Ground (i.e., Road, Congested Area or Lines)	<ul style="list-style-type: none"> <li>✓ Aircraft shall be operated in accordance with Federal Aviation Regulations, and crews shall employ the use of guard structures and/or flaggers as appropriate.</li> <li>✓ Aircraft shall be operated at not less than the altitudes as specified in the FARs to include the maintaining of adequate clearance from trees along the flight path both vertically and horizontally.</li> <li>✓ External load operations (i.e., sling loads) shall be conducted in strict accordance with the operators FAR Part 133 certificate. (Not over congested areas. Sparsely populated areas are allowed after area has been cleared and load is flown in a manner posing no risk to person or property on the ground.) Congested Area Plans are not required for this lift due to the remote location and not road crossings.</li> </ul>

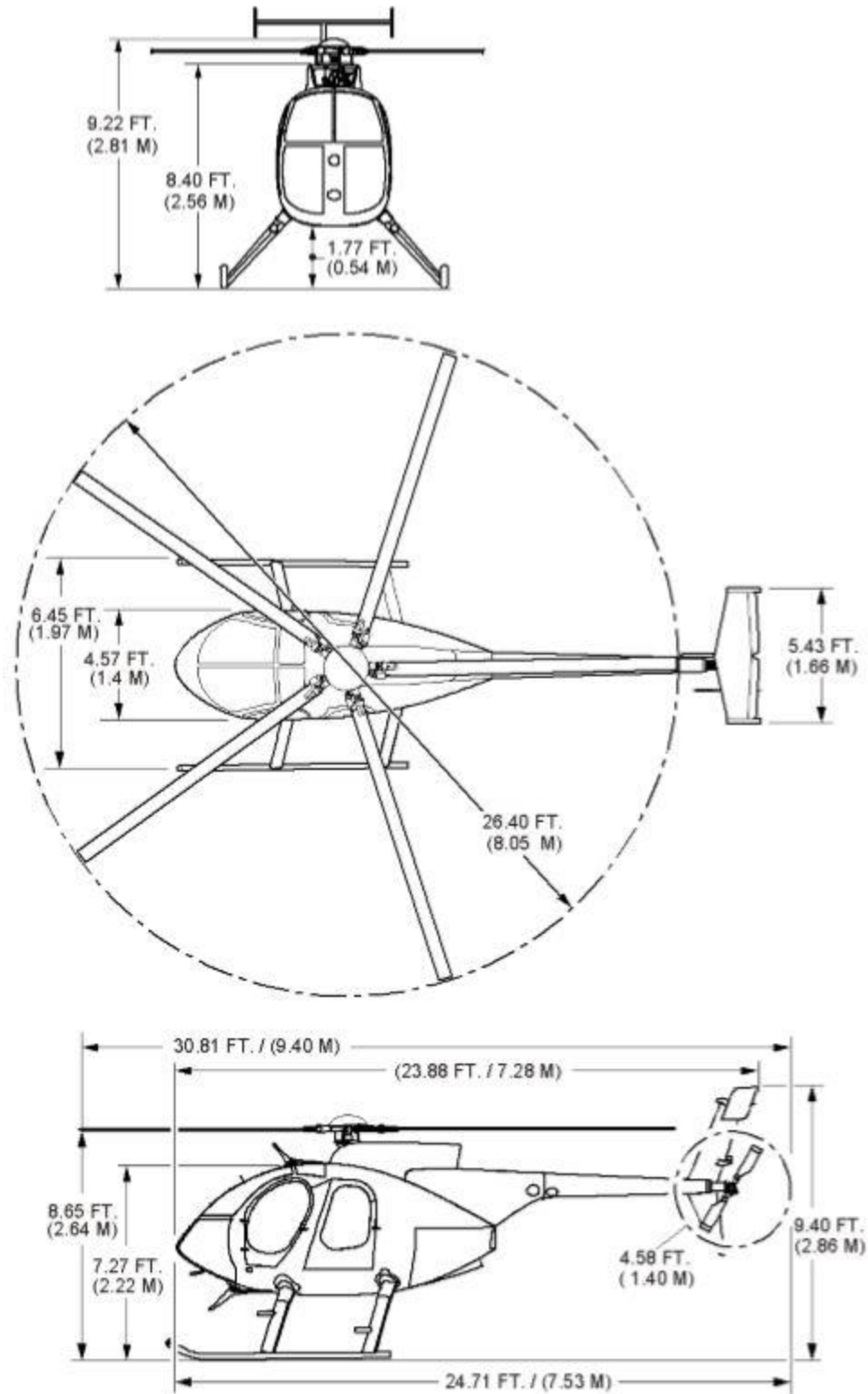
<b>Table A-1 Helicopter Subcontractor Communications</b>	
<b>Potential Hazards</b>	<b>Recommended Action, Procedure, and/or Equipment</b>
Weather Affect	<ul style="list-style-type: none"> <li>✓ Consideration shall be given to prevalent weather conditions with respect to relevant terrain and/or manmade obstacles.</li> <li>✓ All operations will be conducted in visual meteorological conditions with winds no greater than 20 knots.</li> </ul>
<b>Passenger Operations</b>	
External Load Operations	<ul style="list-style-type: none"> <li>✓ No non-essential personnel shall be on board aircraft during the conduct of external load operations.</li> </ul>
Deployment of Personnel	<ul style="list-style-type: none"> <li>✓ Unless addressed in the pre-job safety brief, passenger flights shall not be conducted. Only authorized personnel that have attended the pre-job aircraft safety brief shall be permitted to ride in aircraft. Personnel shall be moved only to and from pre-inspected, pilot approved LZ/PZs. Final authority for passenger operations shall lie with and at the discretion of the pilot in command.</li> </ul>

## **Appendix B. Equipment Specifications**

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# Helicopter Dimensions

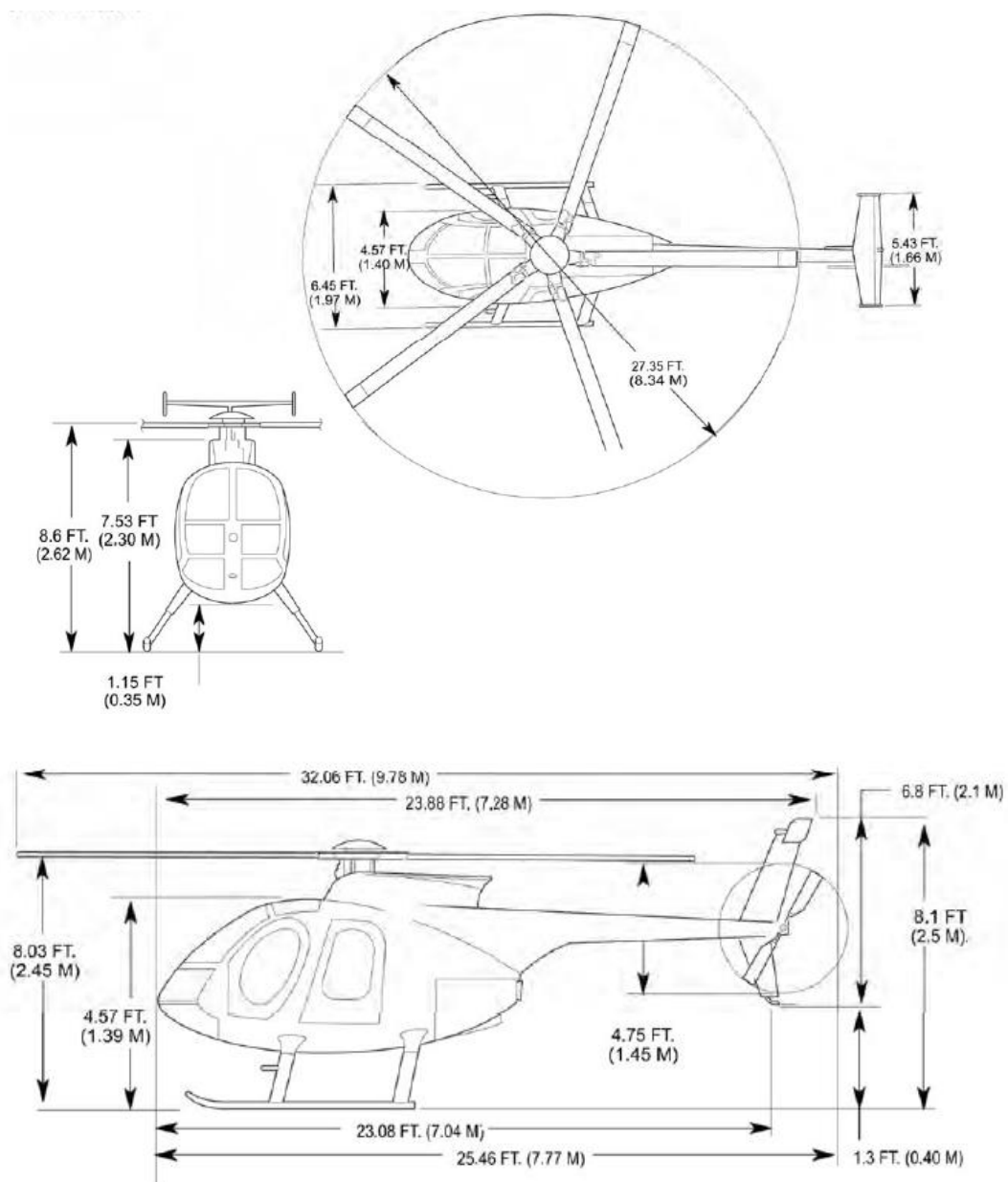
Aircraft Model: MD500E (smallest)





# Helicopter Dimensions

Aircraft Model: MD530F

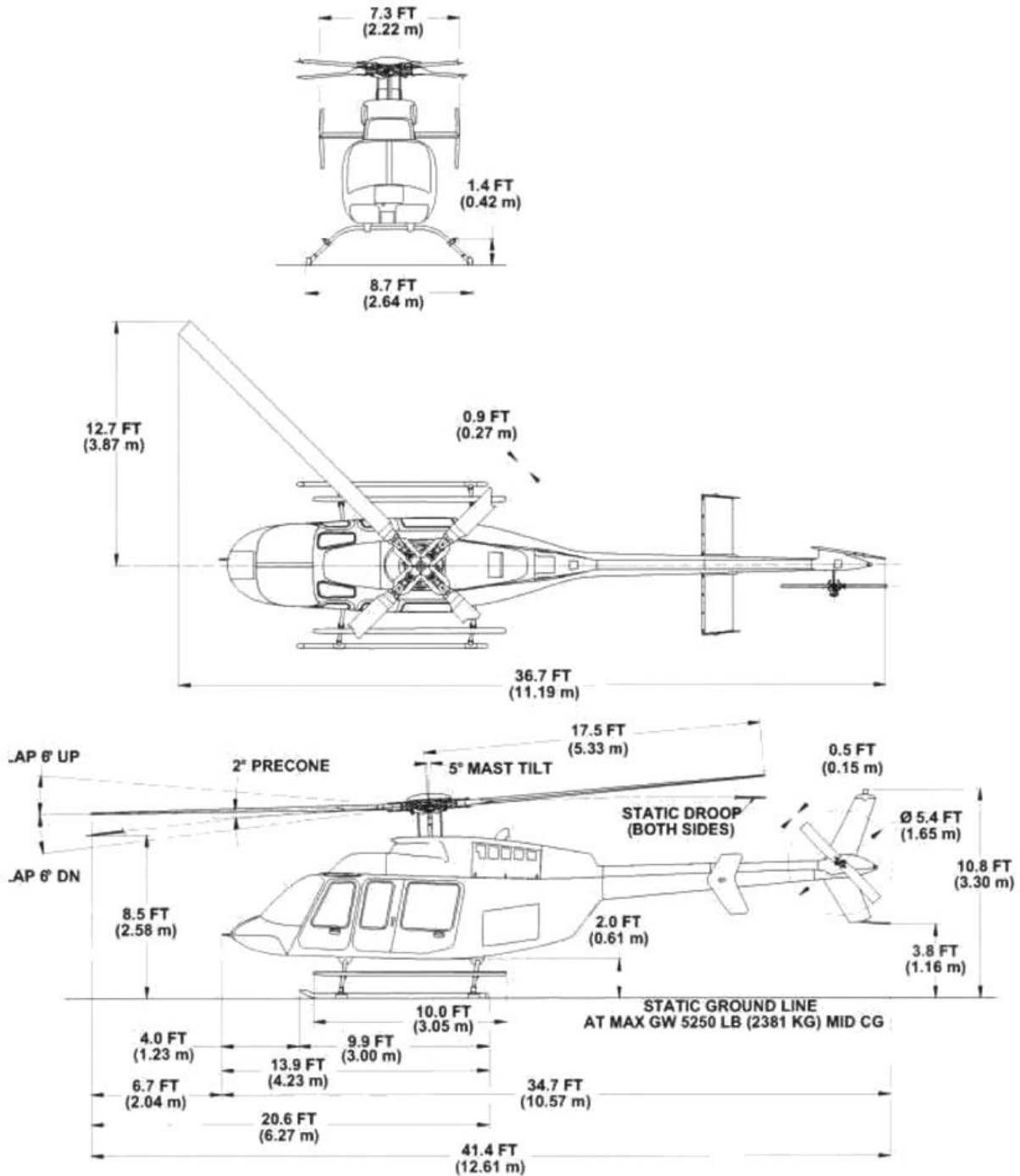


## NOTES

1. Helicopter on ground with full fuel. Typical attitude of cargo deck 5.3 degrees nose up.
2. Height-above-ground dimensions vary with installed equipment, center of gravity and terrain features.
3. If standard landing gear is installed, all vertical dimensions will be 0.3 m (1.0 ft) less.

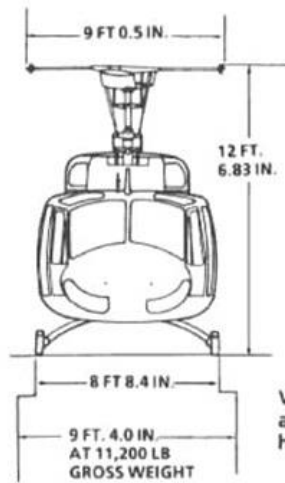
# Helicopter Dimensions

Aircraft Model: Bell 407

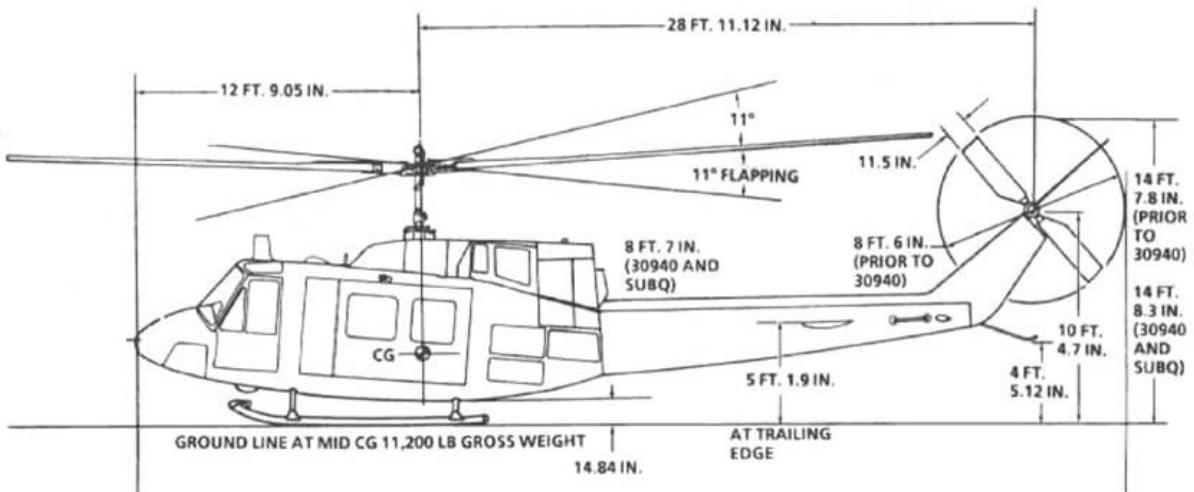
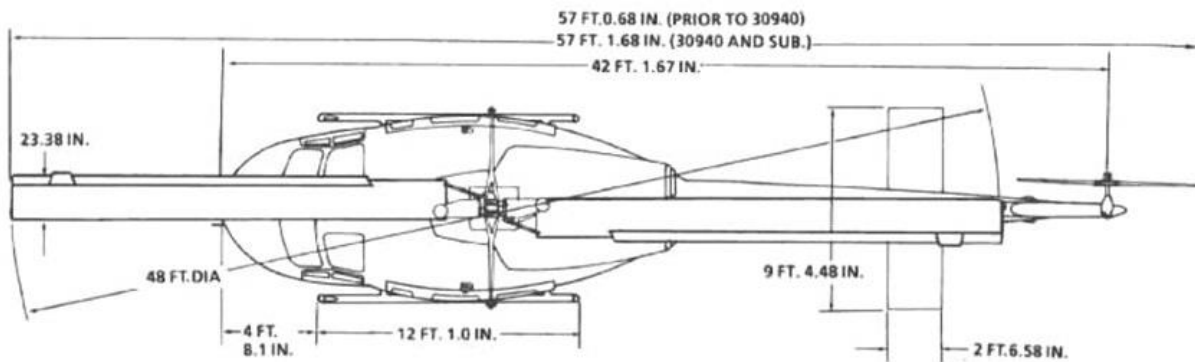


# Helicopter Dimensions

Aircraft Model: Bell 212 (largest)



Vertical dimensions will increase by approximately 1.5 inches when helicopter is empty.



## **Appendix C. Emergency Response Plan**

