ISSUING DEPARTMENT:	ETM	x	ETEC		ETPO		ETTS		EFFECTIVE DATE:	05-01-1997		
DEPARTMENTS AFFECTED:	ETM	x	ETEC		ETPO		ETTS		REVIEW DATE:	05-01-2000		
DEPARTMENT GROUP:	ALL		ALL		ALL		ALL					
	P		E		PL		T					
	L	x	C		TOC							
	S				SCO							
	U				EMS							

TOPIC: General PAGE NO.: 1 of 9

TITLE: Wildfire Fighting Near High-Voltage Electric Transmission Lines

Purpose:

The attached document provides safety information and required clearances for personnel involved in fighting wildfires near high voltage, overhead electric transmission lines owned and operated by PG&E. Application of these guidelines will guard firefighters from electrical hazards potentially associated with fighting grass or brush fires. The information and clearances presented in this guideline are applicable for transmission voltages up to and including 500kV.

Definition of Terms:

Ground: An electrical connection to the earth or a large body of zero potential.

Short-Circuit or Short: An electrical connection of comparatively low resistance accidentally made between two or more points.

Size-Up: Evaluate the current situation, examine the alternatives and select the most appropriate one.

Implementation:

This guideline provides suggested ways to comply with corporate policies. Observing guidelines is recommended, but not required. Guidelines provide flexibility for adjustment to local conditions and continuous improvement of our work or business practices.

Qualified company representatives are responsible for safely adhering to all other rules pertaining to this subject matter.

General:

The information in the attached document is formatted to permit printing and submittal to fire fighting agencies as an information brochure.

Date Issued/Updated:

Effective: May, 1997

Revision Date: May, 2000

Signed,

Richard M. Cashdollar Date signed: _____

Richard M. Cashdollar
Director, Grid Maintenance and Construction Support

MABurnham (223-6763)

Attachment

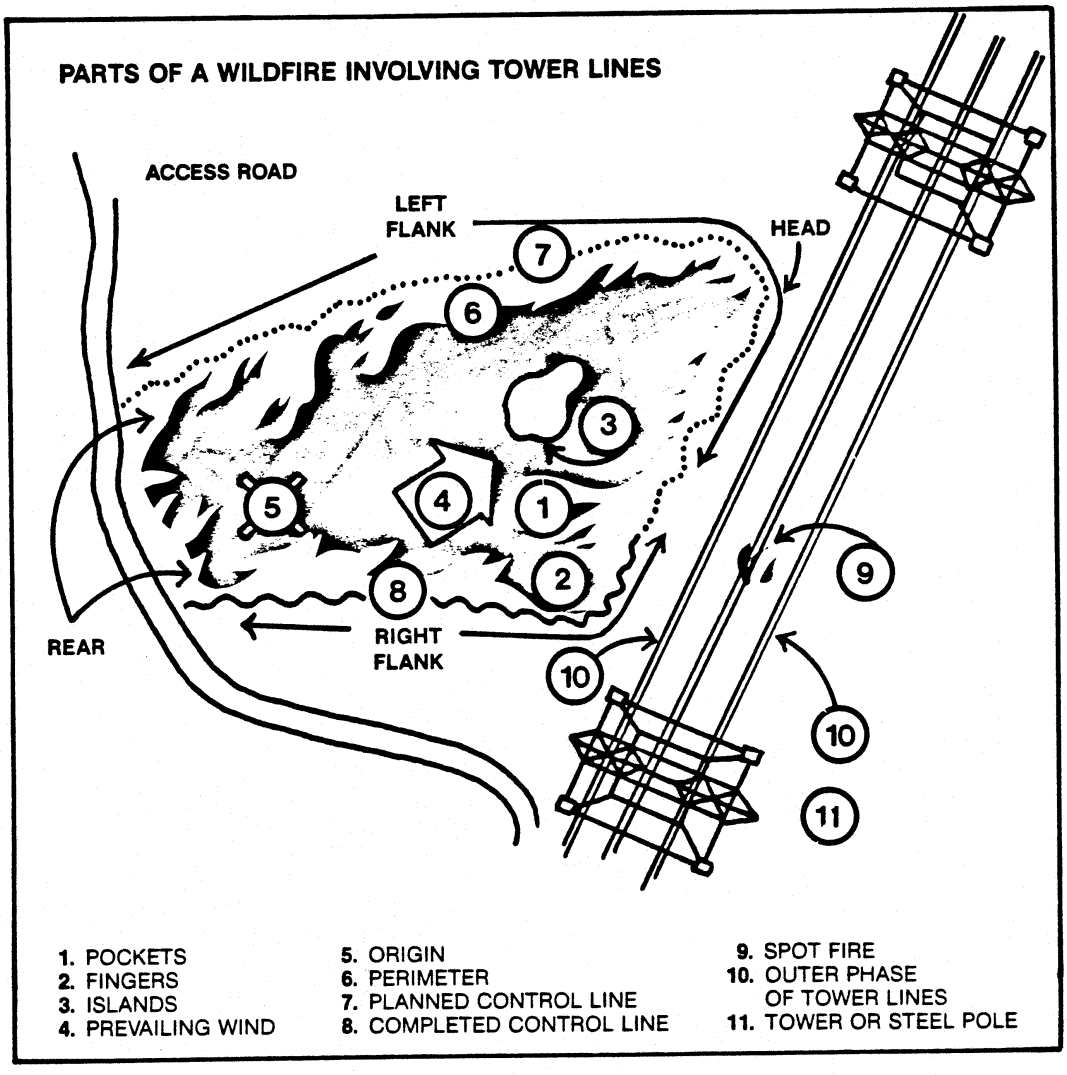
WILDFIRE FIGHTING NEAR HIGH VOLTAGE ELECTRIC TRANSMISSION LINES OWNED BY

PACIFIC GAS AND ELECTRIC COMPANY

Grid Maintenance and Construction

FOREWORD. The purpose of this document is to provide guidelines to agencies involved in wildfire fighting near high voltage electric transmission lines owned and operated by PG&E. Wildfire fighting activities will usually begin before PG&E staff can assist fire fighting personnel. Application of these guidelines will guard agency personnel from electrical hazards associated with fighting grass or brush fires near overhead transmission lines.

FIGURE 1

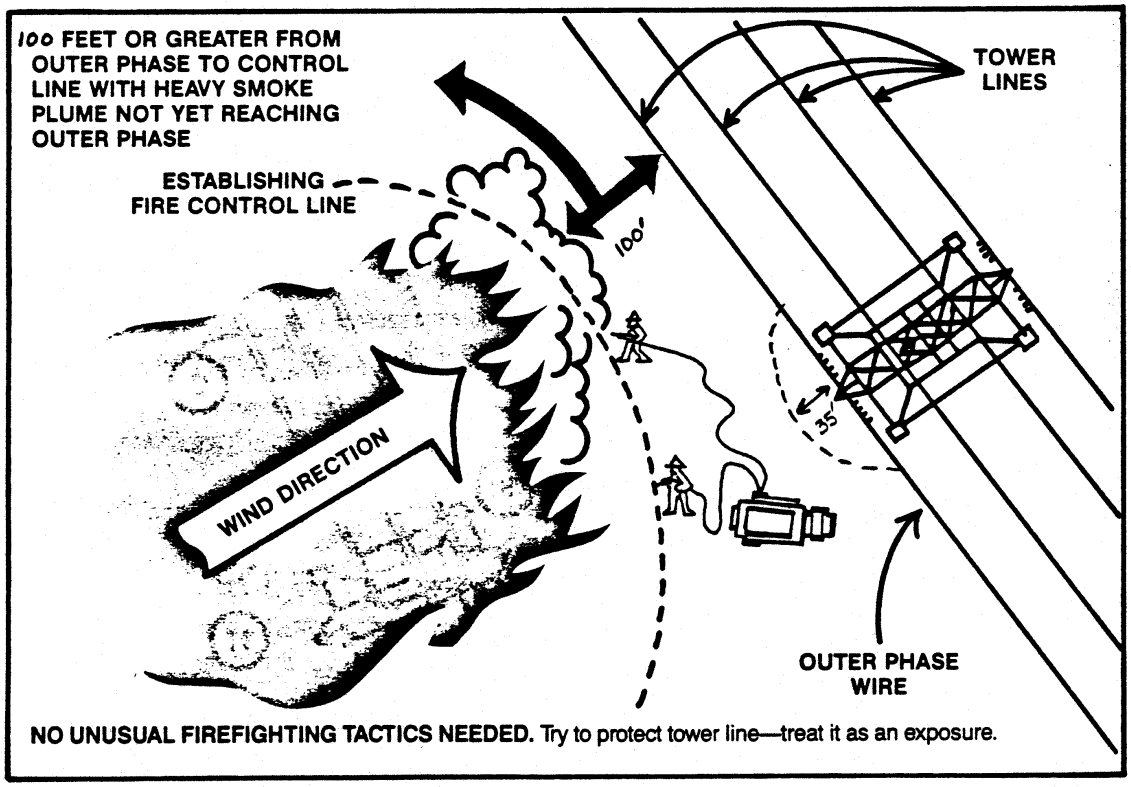


1. FIRE FIGHTING OPERATIONS 100 FEET BEYOND THE OUTER MOST WIRE OF AN ELECTRIC TRANSMISSION LINE REQUIRE NO UNUSUAL TACTICS
(Refer to Figure 2)

Tactics should consider transmission lines to be an exposure requiring protection when threatened by fire. When possible, establish a Control Line to prevent the spread of fire into the area within 100 feet of and parallel to the edge of the outer most phase conductor.

Smoke, ash and incidental mist from fire fighting operations can contaminate the insulators on transmission structures. This contamination may cause a short circuit to occur at the structure, creating an electrical hazard. Maintain a minimum radial distance of 35 feet between firefighters (and vehicles) and transmission structures to protect fire fighting personnel from this electrical hazard.

FIGURE 2



2. FIRE FIGHTING TACTICS WITHIN 100 FEET OF THE OUTER MOST WIRE OR UNDER TOWER LINES REQUIRE SPECIAL TACTICS FOR FIREFIGHTER SAFETY (See Figure 3, Page 5)

If the grass or brush fire has extended to the area within 100 feet of the outer most phase conductor or under the lines, then wildfire fighting tactics and techniques must anticipate and consider the personnel hazard associated with the high voltage lines of 60 kilovolts (kV) or greater.

A. Heavy Smoke Plume on Tower Lines may Cause a Phase to Ground Short.

Heavy smoke, flames, and heat from wildfires can create an electrical path between an energized wire and ground causing electric transmission lines to short circuit. One must maintain adequate clearance for safety when heavy smoke and flames approach energized transmission lines.

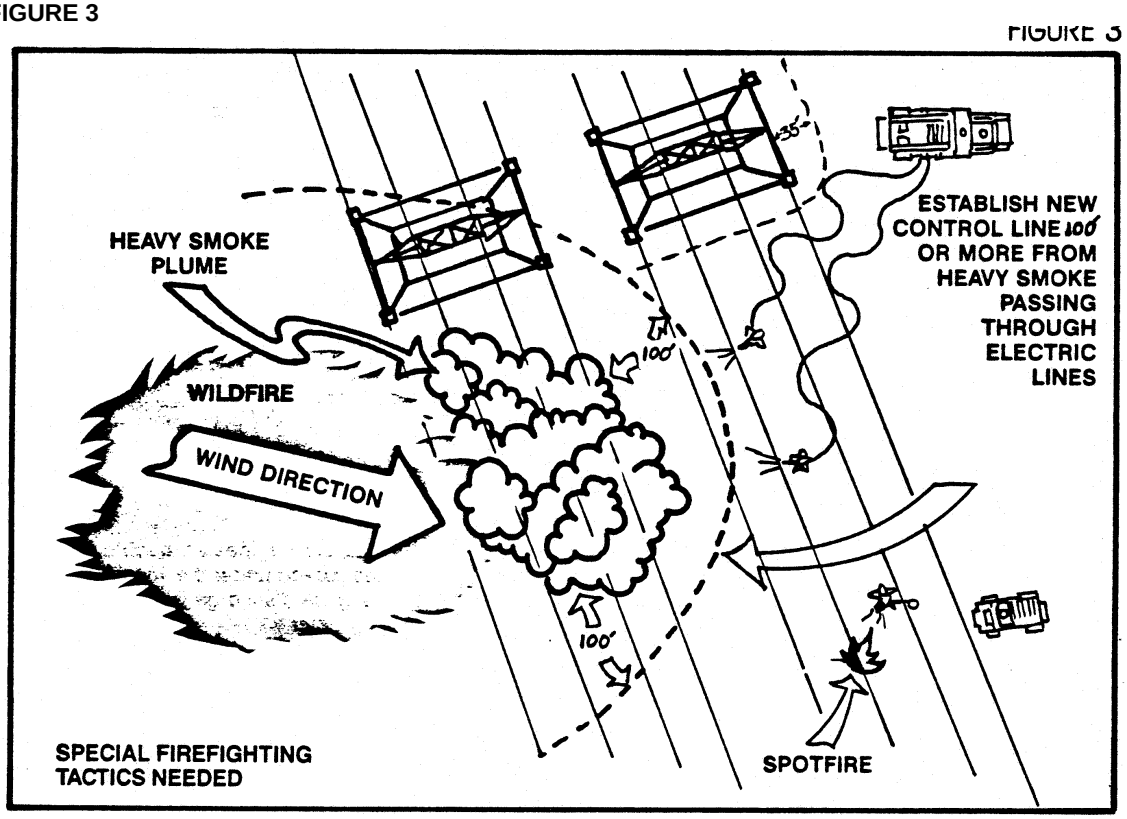
As fire and heavy smoke move toward the transmission line(s), reaching a point within 100 feet of the outer most phase conductor, a Direct Attack (attacking the moving head of the fire) must be abandoned. At that point make a size-up to determine where to establish a new control line. The assessment should anticipate the rate of flame spread so that crews working near the transmission lines can remain at least 100 feet from the heavy smoke generated at the head of the fire, where it passes through the energized lines. The 35 foot minimum distance to any transmission structure must also be observed.

Spot fires that may occur beneath the tower lines, normally do not generate enough smoke to create an electric safety hazard. Spotters should be able to safely work under the tower lines when spot fires are controlled quickly and are at least 100 feet from the main smoke plume passing though the tower lines.

Small burning trees under the tower or steel pole lines that exceed the height of an individual present a real threat of creating a phase to ground short. Therefore, maintain the 100 foot clearance requirement between the trees and fire fighting operations.

The incidental light-colored smoke that has cooled and dropped from the heavy smoke plume represents no threat of being involved in a phase to ground short.

FIGURE 3



B. Hose Line Operations Under Transmission Lines.

When fighting a fire near high voltage transmission lines, one should never direct the hose stream:

* at wires or raise the hose stream above the height of an individual.
* into the heavy plume of smoke that is within 100 feet of the outside conductor.
* at burning trees under the lines.

C. Fire Fighting Vehicles Under Transmission Lines.

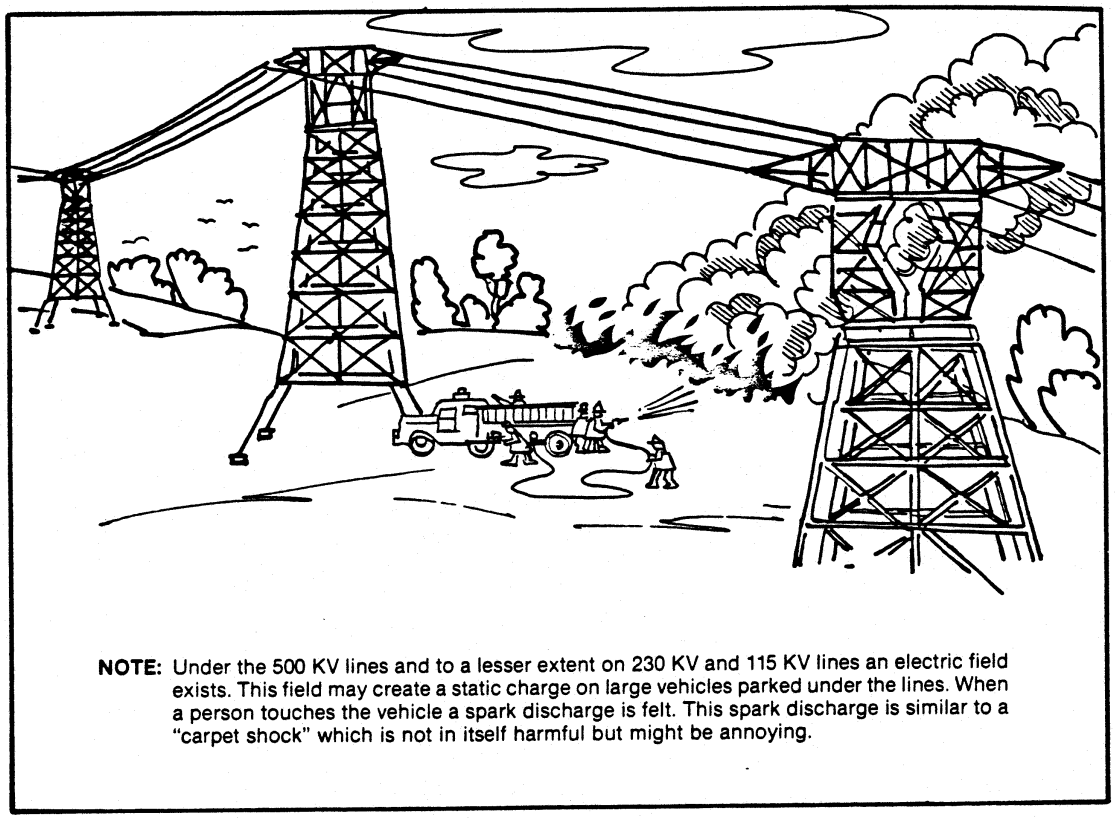
The use of fire fighting vehicles to move equipment and firefighters around the scene of the grass fire or to spread water to wet the fire control line represents no unusual hazard as long as the 100 foot clearance is maintained from overhead tower lines with heavy smoke passing though them and the 35 foot clearance to all transmission structures is observed.

Avoid operation of boom-type or hoisting equipment near electric lines if possible. If erection, operation or dismantling of this type of equipment is required near energized lines, maintain the clearances given in Table 1 between lines and equipment at all times. Consider any overhead electric wire energized until PG&E verifies that the line is not energized, and the line is visibly grounded at the work site.

TABLE 1

Boom-Type Lifting or Hoisting Equipment Clearances Required From Energized Overhead High-Voltage Lines	
Line Voltage	**Minimum Required Clearance**
	(Feet)
50,000 - 75,000	11
75,000 - 125,000	13
125,000 - 175,000	15
175,000 - 250,000	17
250,000 - 370,000	21
370,000 - 550,000	27

FIGURE 4



NOTE: Under the 500 KV lines and to a lesser extent on 230 KV and 115 KV lines an electric field exists. This field may create a static charge on large vehicles parked under the lines. When a person touches the vehicle a spark discharge is felt. This spark discharge is similar to a "carpet shock" which is not in itself harmful but might be annoying.

3. AERIAL FIRE FIGHTING TECHNIQUES

The use of water bombers or helicopters to fight fire does not normally create unusual safety hazards. There are a few items that should be considered during any aerial operations near electric transmission lines:

1. Aerial drops of chemical fire retardant onto electric transmission lines should be avoided. This retardant can contaminate the insulators on a line, leading to arcing and short circuits.

2. Aerial dropping of water does not normally have negative effects on energized lines as long a sufficient amount of water hits the conductors. Mist or light water trailing from water drops when mixed with smoke residue on insulators can cause arcing or short circuiting of the line.

3. In the vicinity of overhead lines, take precautions to prevent accidental strikes of lines by aircraft. Pilots should be aware of the possible hazards created by low level flying near overhead lines.

4. ADDITIONAL PRECAUTIONS ADJACENT TO TRANSMISSION LINES.

In some locations, large grounded metallic objects are located adjacent to transmission lines. Examples include metallic pipelines or fences that may parallel or cross under transmission lines. If a short circuit occurs, the grounded metallic bodies may discharge part of the fault current through the grounding points. Avoid contact with these grounded metallic objects when involved with fire fighting operations near electric transmission lines.

5. PG&E ASSISTANCE DURING FIRE FIGHTING OPERATIONS.

The first PG&E representative on the scene after being notified of the fire will normally be a Troubleman, a Lineman, or a Supervisor.

1. The central alarm person who initially contacts PG&E should provide an accurate location of the fire and as to where the PG&E representative will meet Fire Department personnel.

2. Fire Department personnel should escort PG&E personnel to the fire scene.

3. When possible, Fire Department personnel should identify the transmission line(s) involved in the fire by locating the line name and mile/structure numbers marked on the transmission structures (steel towers, steel and wood poles).

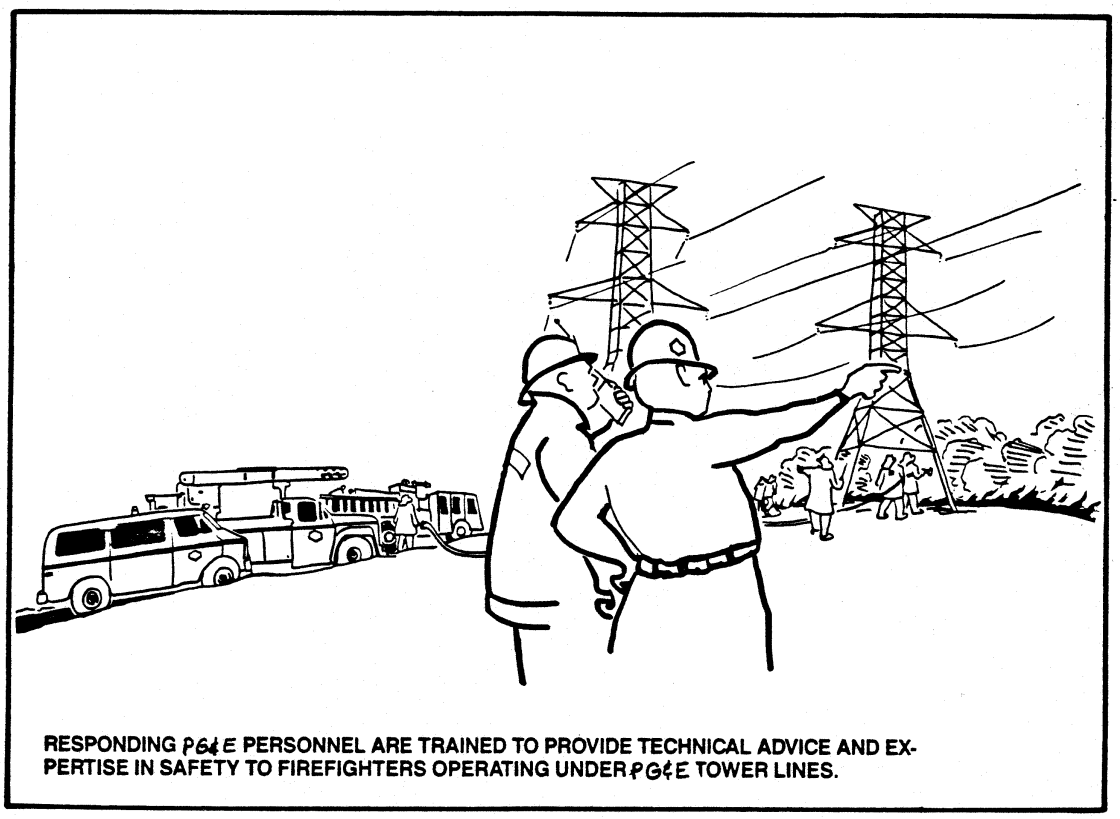
4. The PG&E contact(s) for issues on fire fighting operations near transmission lines are listed in Figure 5.

FIGURE 5

Include in this figure the telephone numbers for PG&E contacts for both normal and emergency situations.

Each area will need to affix a sticker in this box with the appropriate phone numbers.

FIGURE 6



RESPONDING PG&E PERSONNEL ARE TRAINED TO PROVIDE TECHNICAL ADVICE AND EXPERTISE IN SAFETY TO FIREFIGHTERS OPERATING UNDER PG&E TOWER LINES.

This booklet is for guidance only and may not be suitable or completely accurate for all areas outside the service area of Pacific Gas and Electric Company

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Pacific Gas and Electric Company
Grid Maintenance and Construction Support