

# PG&E Camp Creek Fire Incident

An Online Continuing Education Course for Engineers

**Course Number: ET-3002**

**Credit: 3 Hours / 3 PDH / 3 CPD**

# Engineering Ethics: PG&E Camp Creek Fire Incident

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## Prologue

The first concern related to any incident or accident should be the care for people. With any incident, people will be affected by the consequences of the adverse event. On November 8, 2018, a fire began near Camp Creek Road close to the Pulga community in Butte County, California. The California Department of Forestry and Fire Protection (CAL Fire) had determined the initial cause of the fire was from electric transmission lines owned and operated by Pacific Gas and Electric Company (PG&E) near Pulga. This fire was eventually overtaken by a secondary fire near Concow and Rim Road. The resulting Camp Fire destroyed 153,336 acres, 18,804 structures and caused 85 fatalities.

In America, we are not accustomed to the toll that an incident of this magnitude has on humanity and a community. The lives of the fortunate survivors were adversely impacted and may very well have lasting impacts for years to come. Some may never recover the losses suffered as a result of such a tragic event.

A serious incident impacts every aspect of the community, from dealing with tragic and untimely deaths, loss of livelihood, housing, and business. No one outside those impacted or involved can ever understand what impacts an event of this magnitude has on a community. All we can do as outsiders is pray, support, grieve, and promise to learn from these events. Our hearts and prayers are with all those affected by this incident.

## Why Do We Study Past Incidents?

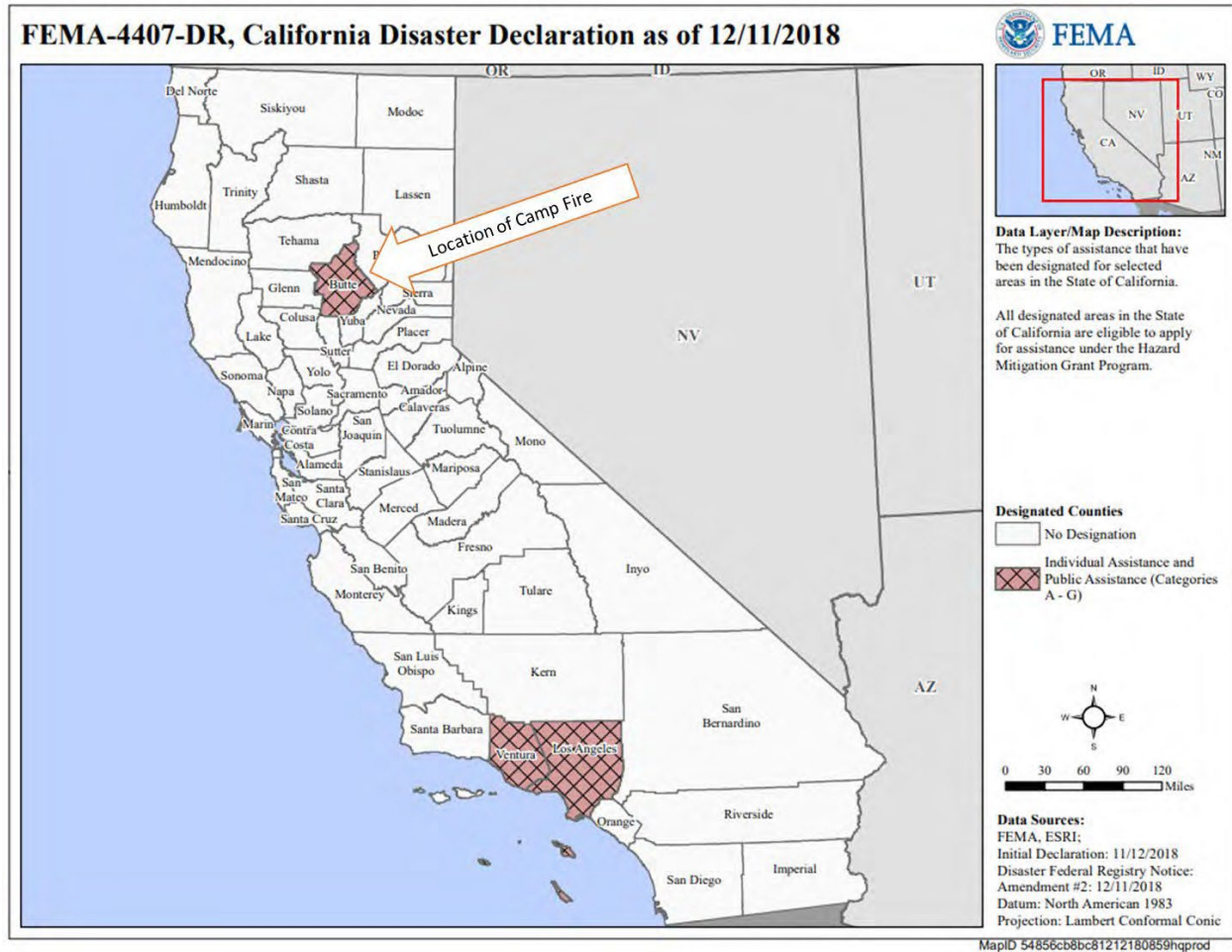
The most costly learning events derive from past failures. This is not the ideal place to learn. However, we cannot ignore the potential learning value of past incidents.

You are cautioned in forming opinions about the findings of this incident investigation. Regulatory incidents start with an inherent bias towards determining whether violations of regulatory law were committed by the parties involved. As with most investigations, the WHAT happened, however, are essentially the same. With this in mind, regulatory agencies will concentrate on what the company involved has developed in their standards, policies, procedures, and management systems to comply with their regulatory standards.

Other areas of discovery for determining WHAT happened are less prone to involve themselves with the culture of the company. Regulatory agencies rely on informational requests and employee

interviews. They are not internal, trusted sources to company personnel. Investigations are inherently a cause for protectionism by employees, whether internal or external. Gaining a feel of how things really work is difficult and even more so for an outside entity. Keep this context in mind as you review this incident.

We study past incidents for the purposes of information sharing so that we do not repeat the same mistakes. However, the contextual structure of any incident investigation is important so that you can determine what the learning value is and any limitations.



## The Camp Creek Fire Incident

This course is not intended to reinvestigate the PG&E Camp Creek and Concow Road fires. Further, it is not intended to draw additional conclusions from the CPUC report other than those already presented in their publicly available incident report. Lastly, this course is not intended to support, defy, debunk, or otherwise change any findings presented. This training module is intended to learn from the issues discovered by the CPUC and PG&E so that we do not continue to have repeat failures. For the complete CPUC report, refer to “CALIFORNIA PUBLIC

## **UTILITIES COMMISSION, Safety and Enforcement Division Electric Safety and Reliability Branch” webpage Report #: E20181108-01.**

The Camp Creek Fire incident, a.k.a. the “Camp Fire” for the purposes of this incident review, provided the context of their investigation as we previously discussed above. The CPUC, Safety and Enforcement Division (SED) Electrical Safety and Reliability Branch investigated the involvement of PG&E facilities in the fire. The goal of the CPUC-SED investigation was to identify whether there were any violations of the Commission’s General Orders, the Public Utilities Code, and related requirements. SED conducted field observations of evidence collection and reviews of PG&E’s operations and maintenance procedures and relevant records.

The SED conducted five field visits and submitted eleven informational requests to collect the evidence and documentation utilized to support their findings. Additionally, several written questions and responses were obtained. The questions included requests for procedures, records, forms, and responses to specific questions related to the Camp Fire. In addition to the responses to the data requests, PG&E also provided results of enhanced inspections that were performed on the Caribou-Palermo Transmission Line subsequent to the Camp Fire. PG&E's enhanced inspections utilized aerial drones and climbing of the Caribou-Palermo Transmission Line.

SED's investigation focused on the first ignition point near the town of Pulga - specifically on the Incident Tower and its adjacent tower, Tower:27/221. SED limited its investigation of the second ignition point (the intersection of Concow Road and Rim Road) because the fire from the ignition point near Pulga consumed the fire that started at the second ignition point.

The Incident Tower and associated equipment were initially installed between 1919 and 1921 and were placed into service on May 6, 1921, by the Great Western Power Company. PG&E took ownership of the Caribou-Palermo Transmission Line in 1930.

The Caribou-Palermo Transmission Line connects PG&E's Caribou #1 Powerhouse to the Palermo Substation. Circuit Breaker (CB) 112 is the protection device on the north end of the line, located at the Caribou #1 Powerhouse. CB 152 is the protection device on the south end of the line, located at the Palermo Substation.

### **Environmental Conditions**

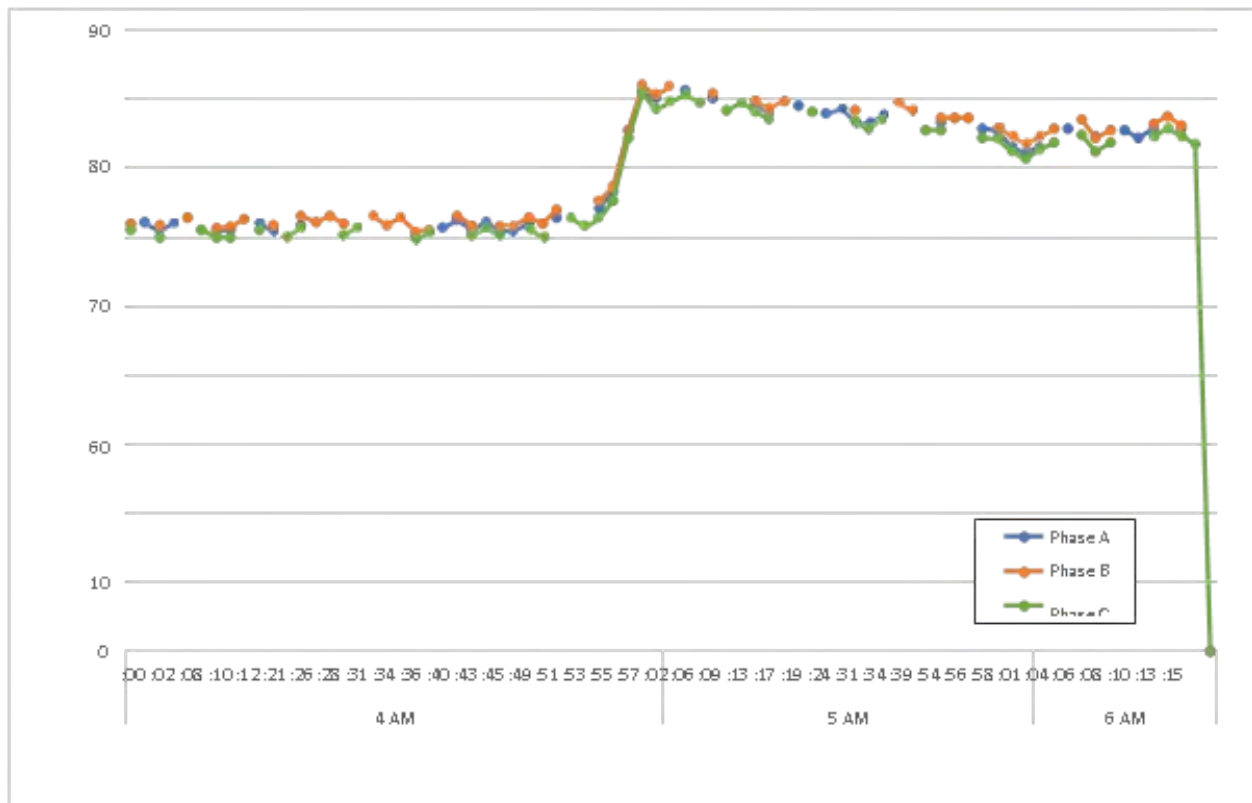
This was available through the nearest weather station to the point of origin of the Camp Fire. Wind gusts ranged from 10 to 36 mph. The California Department of Water Resources reported below-average precipitation for the weather year 2018. Vegetation below where the fire began was sited by the SED investigation to be dry on the day the fire began. It should be noted that the FEMA (Federal Emergency Management Administration) above also depicts two additional hot spots for forest fires in Southern California in 2018. Less than average precipitation was sited with

those areas as well. Quantification for the rainfall sources used in this course was not available. This information is available, but due to the purpose of this course, it was not pursued.

## Incident Timeline

November 8, 2018

- Wind speed and wind gusts recorded at 0610 hours at the Stirling City weather station were 10.27 mph and 36.39 mph, respectively. The Stirling City weather station is a PG&E weather station located closest to the two ignition points identified by CAL FIRE.
- At approximately 0457 hours on November 8, 2018, the Supervisory Control and Data Acquisition (SCADA) data from the Palermo Substation showed the current in the line reached approximately 80 Amps, as shown in Figure 1.
- At 0615 hours, a Palermo Substation relay detected a ground fault current of 256 Amps and opened Circuit Breaker (CB) 152.



**Figure 1:** Chart of SCADA data recorded at Circuit Breaker 152 on the Caribou-Palermo 115 kV Transmission Line just before the incident.

- At 0615 hours, a Caribou #1 Powerhouse relay detected a ground fault current of 202 Amps and opened CB 112. The fault was isolated with both circuit breakers 152 and 112's openings.
- According to CAL FIRE's website, the fire started at 0629 hours at 39.82° latitude and -121.44° longitude. These coordinates correspond to a location near the Incident Tower of the Caribou-Palermo 115 kV Transmission Line.
- At 0630 hours, a PG&E employee observed fire in the vicinity of the Incident Tower, and this observation was reported to 911 by PG&E employees.
- At 0645 hours, PG&E Big Bend 112 kV Distribution Circuit experienced an outage.

To view the remainder of the course material and to take the quiz for PDH credit, you must purchase the course.

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November 15, 2018

- At approximately 1600 hours, PG&E reported the outage on the Big Bend 101 12 kV Distribution Circuit.

November 16, 2018

- At 1600 hours, PG&E reported the outage on the Big Bend 101 12 kV Distribution Circuit.