INVESTIGATION REPORT

CASE NUMBER: 21CABTU009205-58
CASE NAME: DIXIE
DATE: July 13, 2021
INCIDENT TYPE: Vegetation Fire
INCIDENT INVESTIGATORS: Matthew Palade (Fire Captain Specialist) Butte Unit
                                        Lance Berry (Battalion Chief) Northern Region
VIOLATIONS

Public Resource Code 4293

Except as otherwise provided in Sections 4294 to 4296, inclusive, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:

(a) For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
(b) For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
(c) For any line which is operating at 110,000 or more volts, 10 feet.

In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

Public Resource Code 4421

A person shall not set fire or cause fire to be set to a forest, brush, or other flammable material that is on land that is not the person's own land, or under the person's legal control, without the permission of the owner, lessee, or owner's agent or lessee of the land.
Penal Code 452

A person is guilty of unlawfully causing a fire when he recklessly sets fire to or burns or causes to be burned, any structure, forest land or property.

(b) Unlawfully causing a fire that causes an inhabited structure or inhabited property to burn is a felony punishable by imprisonment in the state prison for two, three or four years, or by imprisonment in the county jail for not more than one year, or by a fine, or by both such imprisonment and fine.

(c) Unlawfully causing a fire of a structure or forest land is a felony punishable by imprisonment in the state prison for 16 months, two or three years, or by imprisonment in the county jail for not more than six months, or by a fine, or by both such imprisonment and fine.

Penal Code 452.1

(a) Notwithstanding any other law, any person who is convicted of a felony violation of Section 452 shall be punished by a one-, two-, or three-year enhancement for each of the following circumstances that is found to be true:

(1) The defendant has been previously convicted of a felony violation of Section 451 or 452.

(2) A firefighter, peace officer, or other emergency personnel suffered great bodily injury as a result of the offense. The additional term provided by this subdivision shall be imposed whenever applicable, including any instance in which there is a violation of subdivision (a) of Section 452.

(4) The defendant proximately caused multiple structures to burn in any single violation of Section 452.

(b) The additional term specified in subdivision (a) of Section 452.1 shall not be imposed unless the existence of any fact required under this section shall be alleged in the accusatory pleading and either admitted by the defendant in open court or found to be true by the trier of fact.
Penal Code 454

(a) Every person who violates Section 451 or 452 during and within an area of any of the following, when proclaimed by the Governor, shall be punished by imprisonment in the state prison, as specified in subdivision (b):

(2) A state of emergency pursuant to Section 8625 of the Government Code.

(b) Any person who is described in subdivision (a) and who violates subdivision (a), (b), or (c) of Section 451 shall be punished by imprisonment in the state prison for five, seven, or nine years. All other persons who are described in subdivision (a) shall be punished by imprisonment in the state prison for three, five, or seven years.
SUMMARY

On Tuesday July 13, 2021 at approximately 5:07 PM, the Dixie Fire was reported in a remote area above the Cresta Dam in Plumas County, CA, near the community of Pulga. The fire ignited below the Pacific Gas and Electric (PG&E) Bucks 1101 12KV distribution circuit, between pole number 120772797 and an unmarked pole approximately 300 feet east. The fire ignited as a result of a 65' tall, damaged and decayed Douglas-Fir tree when it fell and contacted conductors at approximately 6:48 AM. Two of the three fuses blew (opened) upon initial contact with the conductors, but the third fuse remained closed and kept a line energized. The tree being in contact with energized conductors and the ground created a high impedance fault. The high impedance fault energized the tree, which caused heat and arcing to ignite a dry and receptive fuel bed over the course of 10 hours. Because PG&E had an excessively delayed response to the fault, the fire was not discovered until a PG&E troubleman (Scott CAMBELL) arrived at scene at approximately 4:55 PM. Upon CAMBELL’S discovery, the fire was too large for him to contain and a 911 response was requested. Simultaneously the fire was visible from Highway 70 and multiple parties reported the fire via 911.

The Dixie Fire burned in a remote location which made access by fire personnel extremely difficult. In the initial attack phase of the fire a drone incursion caused critical air resources to be grounded. The Dixie fire was influenced by steep terrain, dry receptive fuel beds and drought conditions. The Dixie fire burned 963,309 acres of federal, state, and private lands in Butte, Plumas, Lassen, Tehama, and Shasta counties before it was contained on October 26, 2021. The Dixie fire destroyed 1311 structures and damaged 94. Of those 1311 destroyed were 763 residential homes, 12 multi family homes, 8 commercial residential homes, 148 nonresidential commercial structures and 466 detached structures. The Dixie fire destroyed the communities of Greenville and Canyon Dam and caused major damage to the communities of Chester and Janesville. One CAL FIRE Captain sustained major injuries and three CAL FIRE firefighters sustained minor injuries when they were struck by a tree while engaged in suppression efforts.
The Dixie fire was the largest non-complex wildfire in California history and the second largest in US history. Smoke from the Dixie fire caused unhealthy air quality over much of the western united states including states as far east as Colorado and Utah. The suppression cost to date is over 650 million dollars.

During the investigation CAL FIRE retained the expertise of Joe McNeil. MCNEIL is a certified arborist and consultant. MCNEIL concluded the tree that fell across the conductors was previously damaged and had visible outward signs of that damage and decay which would have been noticeable at the ground level by inspectors pre fire, without extraordinary effort.

California Public Resource Code 4293 states that dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard.
SUBJECT
Pacific Gas and Electric (PG&E) Corporation
77 Beale Street
PO Box 770000
San Francisco, CA 94177
(415) 973-1000

WITNESSES
W-1 (PG&E Troubleman)
Scott CAMBELL
77 Beale Street
PO Box 770000
San Francisco, CA 94177
(415) 973-1000

W-2 (PG&E Rock Creek Powerhouse)
Mark MALLOY
77 Beale Street
PO Box 770000
San Francisco, CA 94177
(415) 973-1000

W-3 (PG&E Acting Supervisor)
Michael JESSEN
77 Beale Street
PO Box 770000
San Francisco, CA 94177
(415) 973-1000
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LE80 (Rev. 7/2011)
W-9 (Butte County Public Works)

Sean HASSEL

VICTIMS
See attached Damage Inspection Summary (DINS)
(Attachment V)

INVESTIGATORS

I-1 Matthew PALADE
Fire Captain / Peace Officer
CAL FIRE Butte Unit

I-2 Lance BERRY
Battalion Chief / Peace Officer
CAL FIRE Northern Region
1 I-3 Mike THOMPSON
2 Assistant Chief / Peace Officer
3 CAL FIRE Northern Region
4
5
6
7
8 I-4 Shane LARSEN
9 Forester 1 / Peace Officer
10 CAL FIRE Sacramento
11
12
13
14
15 I-5 Jeremy MONROE
16 Deputy Chief / Peace Officer
17 CAL FIRE Sacramento Headquarters
18
19
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22 I-6 Chip FOWLER
23 Battalion Chief / Investigator
24 CAL FIRE Butte Unit
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LE80 (Rev. 7/2011)  10  Officer Initials
SPECIALISTS

SP-1 Joe MCNEIL
McNeil Arboriculture

SP-2 Scott HYLTON
TSH Consulting

SP-3 B&B High Voltage Line Contractors

SP-4 Element Security
1 EVIDENCE

3 E-1  Fuse from conductor #1
4 E-2  Fuse from conductor #2
5 E-3  Fuse from conductor #3
6 E-4  Tree trunk in contact with conductor #1
7 E-5  Tree limb in contact with conductor #1
8 E-6  Piece of conductor #1
9 E-7  Piece of conductor #1 showing arcing.
10 E-8  Piece of conductor #2 showing tree material embedded.
11 E-9  Piece of conductor #3 showing burn where tree rested.
12 E-10 Piece of conductor #2 showing arcing.
13 E-11 Subject tree trunk (bottom)
14 E-11-1 Sub section of E-11 for McNeil Arboriculture
15 E-11-1.2 Sub section of E-11 for McNeil Arboriculture
16 E-11-2 Subject tree trunk (middle)
17 E-11-3 Subject tree trunk (top)
18 E-11-1.2 Sub section of E-11 for McNeil Arboriculture
19 E-12 Subject tree stump (root)
20 E-13 Subject tree stump
21 E-13-1 Sub section of E-13 for McNeil Arboriculture
22 E-13-2 Sub section of E-13 for McNeil Arboriculture
23 E-13-3 Sub section of E-13 for McNeil Arboriculture
24 E-13-4 Sub section of E-13 for McNeil Arboriculture
25 E-13-5 Sub section of E-13 for McNeil Arboriculture
26 E-13-6 Sub section of E-13 for McNeil Arboriculture
27 E-13-7 Sub section of E-13 for McNeil Arboriculture
28 E-13-8 Sub section of E-13 for McNeil Arboriculture
29 E-13-9 Sub section of E-13 for McNeil Arboriculture
30 E-14 Origin photos (SD card) 152 Images
31 E-15 Evidence collection photos (SD card) 152 Images
E-16 Evidence collection photos (SD card) 48 Images
See attached evidence log sheet (Attachment H)
CONDITIONS

Weather conditions on July 13, 2021, at approximately 6:48 AM (time of the initial subject tree failure) as recorded at the Jarbo Gap weather station located at 11972 CA-70, Oroville, CA 95965, were as follows.

Temperature: 76-80 degrees Fahrenheit
Wind: 20-22 MPH from the North East
Relative Humidity: 16 percent

Weather conditions on July 13, 2021, at approximately 5:00 PM (time of the Dixie fire dispatch) as recorded at the Jarbo Gap weather station were as follows.

Temperature: 91-94 degrees Fahrenheit
Wind: 12-14 MPH from the southwest
Relative Humidity: 25 percent

CAL FIRE Lightning database indicated that there was no lightning activity in or around the Dixie Fire origin between at least June 30, 2021 and July 13, 2021.

Typically, high, and gusty winds exist in the Feather River canyon. Great Basin morning heating results in air expansion that is funneled through the Feather River Canyon in the early mornings during normal weather patterns. Several perpendicular creek drainages converge with the Feather River Canyon creating turbulent wind patterns throughout the mornings and afternoons.

California Governor, Gavin Newsom issued a State of Emergency Proclamation on April 21, 2021, due to ongoing drought conditions. That proclamation remained in affect throughout the duration of the Dixie Fire.

See proclamation (Attachment U)
ORIGIN AREA

Elevation: Approximately 2358 feet above sea level.

Latitude & Longitude: 39° 52' 29.14" N X 121° 22' 42.47" W

Fuels: Mixed brush and annual grasses with a mix of conifer and oak trees.

Terrain: Mid slope on an approximate 50% grade west of the Feather River with an east aspect.

Access: Access to the Dixie Fire's origin is Highway 70 to Pulga Road, to Camp Creek Road. Camp Creek Road is a narrow, two track dirt/rock road with several narrow bridge crossings. Camp Creek Road could be accessed via Rock Creek Road, however that section of road is washed out and impassable. It is approximately 11 miles from Highway 70 to the Dixie Fire's origin and takes approximately 1 hour to drive.
EQUIPMENT

The Pacific Gas & Electric Bucks 1101 12KV distribution circuit. Pole # 120772797, an unmarked pole approximately 300 feet east, all 3 conductors and equipment associated with both poles.

No other equipment was identified as being a contributing factor to the ignition of the Dixie Fire.
PROPERTY

Plumas County Assessor's parcel number 002-290-007 located at the origin is a 2,578-acre block of federal land, protected under CAL FIRE direct protection area (DPA). The property is further described in Book 2, Page 29 of the Plumas County Assessors map. (See attachment Y)

See attached CAL FIRE Damage Inspection Summary (DINS) for the list of damaged properties. (See attachment V)
NARRATIVE

On Tuesday July 13, 2021 at approximately 5:07 PM, the California Department of Forestry and Fire Protection (CAL FIRE) Oroville Emergency Command Center (ECC) received multiple reports and 911 calls of a vegetation fire in the Highway 70 canyon on the west side of the Feather River above Cresta Dam.

The first 911 caller identified himself as Mark MALLOY, (PG&E employee) and was calling from 3371 Highway 70 (Rock Creek Powerhouse). MALLOY stated he was relaying the information second hand and could only report the fire was located on the hillside above Cresta Dam in the Highway 70 canyon.

The second report of the fire came from Rich EPPERSON via radio to CAL-FIRE Butte ECC, at approximately 5:12 PM. EPPERSON was the engine strike team leader of a group of engines (ST-3225C) returning home from the Beckworth Fire. EPPERSON reported the fire to be in the Highway 70 canyon approximately 3 miles from the Butte County line and approximately three quarters of the way uphill. EPPERSON stated the fire was well established and approximately forty feet by forty feet in size, burning under powerlines. EPPERSON was reporting the fire from Highway 70.

At approximately 5:15 PM, Oroville ECC dispatched a full (high level) wildland fire response consisting of 6 engines, 2 dozers, 2 hand crews, 2 water tenders, 1 air attack, 2 tankers, 1 copter, 1 battalion chief, 1 training officer and 1 prevention officer. I had prevention coverage and was on the initial dispatch. I responded from my office at 220 Grand Avenue, Oroville, CA.

At approximately 5:42 PM, air attack 120 arrived over the fire, assumed "DIXIE" air attack, and reported the fire to be approximately 2 acres with a slow rate of spread. DIXIE air attack coordinated air resources attempting to surround the fire with retardant and keep it in check until ground resources could arrive. At approximately 6:31 PM, DIXIE air attack reported the fire was holding at approximately 2 acres with retardant...
around the perimeter, and copter 903 was continuing with water drops. At approximately
6:49 PM, Battalion 2113, Byron VANCE arrived at the Incident Command Post located
at 11975 Highway 70, Oroville, CA 95965 (Scooters Café) and assumed DIXIE Incident
Command. At approximately 7:49 PM, VANCE contacted Oroville ECC and requested
a law enforcement response due to a drone operating in the fire area. At approximately
8:01 PM, DIXIE air attack contacted Oroville ECC and advised he was ceasing all air
operations due to drone activity over the fire.

At approximately 9:00 PM, while attempting to access the fire via Camp Creek Road, I
came across a PG&E troubleman who I identified by name as Scott CAMPBELL.
CAMPBELL was located at a bridge approximately 2 miles south of the fire. The bridge
had several signs posted around it stating the bridge was out of service for repair.
CAMPBELL’s PG&E bucket truck was located on the fire side (north) side of the bridge.
CAL FIRE Engine 2183 was parked on the south side of the bridge blocking
CAMPBELL’s egress. It was later determined Engine 2183 had parked at the bridge,
and walked into the fire on foot, not feeling it was safe to drive across the bridge. After
coordinating the movement of Engine 2183 and getting CAMPBELL’s bucket truck
across the bridge, I conducted a brief interview with CAMPBELL who told me the
following in summary:

CAMPBELL stated that earlier in the day Cresta Dam had experienced a power
outage, (later determined thru Supervisory Control and Data Acquisition data to
have occurred at 6:48 AM) and he drove up Camp Creek Road at approximately
1:30 PM to inspect the power lines and determine the problem. When he got to
the bridge, he encountered Butte County Public Works employees who told him
the bridge was closed for repairs and would be impassable for at least a couple
of hours. CAMPBELL stated he waited for the workers to complete the work,
which took approximately two hours, after which he continued up Camp Creek
Road until he found a pole that had two blown fuses and what he described as a
green tree across all three phases of conductors. CAMPBELL stated he
positioned his bucket truck and started to raise his bucket to pull the third fuse...
which was in the closed position. As he raised his bucket, he smelled smoke, 
looked down hill and noticed a fire on the downhill side below the conductors. 
CAMPBELL stated he quickly pulled the remaining fuse, lowered his bucket, and 
attempted to extinguish the fire with his water can (extinguisher). CAMPBELL 
stated the fire was burning in pine needles and wasn't very large, but it quickly 
got into a manzanita bush and he realized he could not contain the fire with the 
water he had. CAMPBELL stated he then attempted to contact anyone he could 
via two-way radio to report the fire. Initially he did not get a response, but a short 
time later someone responded to his calls and called 911. CAMPBELL told me 
that if I continued up Camp Creek Road, I would see the power pole and fire on 
my right-hand side.

I collected a contact number for CAMPBELL and continued up Camp Creek Road to the 
fire. I arrived at approximately 9:45 PM and observed a vegetation fire on the steep 
downhill (east) side of Camp Creek Road burning in brush and timber. The fire was 
backing slowly downhill with approximately one foot flame lengths and appeared to be 
contained on the edges by fire retardant dropped from air tankers. Engine 2183's crew 
had started cutting hand line downhill on the south flank (edge) of the fire. The south 
flank of the fire was located off a power line easement running east down hill toward 
Cresta Dam.

I started to conduct my origin and cause investigation by walking the edge of Camp 
Creek Road and then down the fires south flank looking for macro fire pattern indicators, 
such as needle freeze and angle of char. While walking Camp Creek Road, I observed 
a power pole on the downhill (east) side of Camp Creek road on the edge of the fire. 
The conductors attached to this pole ran downhill toward Cresta Dam and north along 
Camp Creek Road. I photographed the number on the pole (120772797), examined the 
equipment on the top of the pole and noticed all three fuses were in the open position. I 
photographed the equipment on the pole. Due to the time of night, the steep terrain 
and suppression efforts, I found it very difficult to continue the investigation and decided 
it was best to remain on the south flank hand line and not enter the burned area to 
LE80 (Rev. 7/2011)
preserve the scene for the next day. At approximately 9:53 PM, I noticed increased fire activity located in a steep draw. Within a few minutes the fire increased and made an uphill run as it consumed an area of unburned brush and small trees. I observed a moderate amount of ember cast over Camp Creek Road which threatened the unburned (west) slope. As Magalia Crew 5 (Mag 5) arrived at the fire’s edge I expressed my concerns of a possible spot fire to the captain. Mag 5 Captain positioned his crew members along Camp Creek Road to patrol for spot fires. I continued downhill approximately 150 feet along the handline. With my flashlight I observed a pine tree laying across all three conductors. Mag 5 Captain transmitted over the radio that the fire had spotted across Camp Creek Road and was making a run uphill with a moderate rate of spread. I photographed the tree across all three conductors and retreated up the hill to Camp Creek Road.

On July 14, 2021, at approximately 12:30 AM, based upon my conversation with CAMBELL and the evidence at scene, I sent a text message to CAL FIRE Prevention Bureau Chief Mike WATERS and told him the cause of the fire looked to be PG&E as the result of a tree down on power lines. WATERS advised me he would arrange for a CAL FIRE contracted arborist to examine the tree. I remained on scene and became a Division Group Supervisor (DIV B).

At approximately 12:30 PM, I was relieved by the incoming Division Group Supervisor who told me resources would not be accessing the fire via Camp Creek Road due to the road being too narrow for large engines and crew buses. Instead, all fire resources would access the area via Highway 70 across the river or above from the U-Line.
would not be working in or nearby the origin area.

At approximately 2:00 PM, I met with WATERS and members of the Butte County District Attorney's Office at the CAL FIRE Butte County Fire Prevention Bureau office located at 220 Grand Avenue, Oroville, CA. I advised them that due to the time of night and fire conditions, I had not conducted a complete origin and cause investigation of the fire. I advised them that based upon my observations at scene, such as the tree across all three phases of conductor and witness statements taken from CAMPBELL, I could not rule out powerlines as a cause for the Dixie Fire. I advised them I needed to examine the scene more thoroughly and complete my origin and cause investigation prior to making a determination. WATERS advised me in addition to the arborist he would contact additional CAL FIRE contracted specialists and CAL FIRE Investigators to help examine the scene. We agreed to have a briefing the next morning at 9:00 AM, to discuss the details and develop a plan before returning to the scene.

On July 15, 2021 at approximately 9:00 AM, I met with Element Security, TSH Electrical Consulting (Scott HYLTON), Arboriculture Consultants (Todd and Joe MCNEIL) CAL FIRE investigators (Mike WATERS, Lance BERRY and Mike THOMPSON) and Butte County District Attorney's office (Marc Noel, Chris Oakley, John Duffy, Nick Moore and Jennifer Dupre-Tokos). The meeting took place at the CAL FIRE Butte County Fire Prevention Bureau office. During the meeting, I summarized my interview with CAMPBELL and the limited photos I had taken. We developed a plan to place ELEMENT security at the intersection of Camp Creek Road and Dixie Road to restrict access and complete a log of everyone entering or leaving the area. BERRY, THOMPSON, and I would conduct an origin and cause investigation prior to allowing CAL FIRE contractors such as HYLTON and MCNEIL to enter the scene if needed. Butte County DA Investigators would remain out of the area as well while the origin and cause investigation was conducted but would be allowed to observe and photograph as needed.

At approximately 11:00 AM, I placed ELEMENT security at the intersection of Camp Creek Road and Dixie Road.
Creek and Dixie Road. At approximately 11:45 AM, we arrived at the origin and found it to be undisturbed. At approximately 12:30 PM, BERRY, THOMPSON and I started conducting the origin and cause investigation by first walking the edge of Camp Creek Road and identifying the flanks of the fire that I had witnessed the evening of July 13, 2021. Next, we walked around the fire in a clockwise and counterclockwise direction starting with the south flank where power pole 120772797 intersects with Camp Creek Road and Engine 2183's hand line began. We observed macro fire pattern indicators such as angle of char, foliage freeze, and protection that indicated the general origin area (GOA) to be between power pole 120772797 and an unmarked pole approximately 300 feet east and downhill toward Cresta Dam. Between these two poles and nearest the unmarked pole was a tree (subject tree) approximately 65 feet in length laying across all three conductors. This section of line was later determined to be identified by PG&E as the Bucks 1101 circuit.

Fire suppression efforts within the GOA such as retardant drops, helicopter water drops and handline construction in the light sandy soil made determining and locating a specific origin area (SOA) very difficult. Nevertheless, we were able to determine several areas of interest within the GOA. Those areas had fire pattern indicators such as angle of char, lower intensity burning, sooting and staining. These fire pattern indicators would be consistent with those found in the SOA.

Based upon these fire pattern indicators and witness statements from CAMPBELL we determined the SOA was located between pole 120772797 and the unmarked pole. The ignition area, or areas, was located within this SOA. No other sources of ignition
Besides the powerlines and its associated equipment were located within the GOA.

At approximately 2:30 PM, we allowed HYLTON (TSH Electrical) and MCNEIL (arboricultural) to enter the scene to examine the subject tree and powerline.
components. After their initial assessment of the components, I met with each separately and asked how they would like to proceed and what we needed to examine further.

HYLTON informed me he believed the fuses attached to pole 120772797 were classified as "exempt" based upon his examination with binoculars. HYLTON stated two of the three fuses were missing a red cap on the expulsion end (end facing ground when fuse is in the closed position). HYLTON stated that he would need to examine the fuses more closely to determine if they had operated as designed. HYLTON also informed me he would like to examine all the equipment on the pole and all three conductors more closely. I advised HYLTON I would arrange for a CAL FIRE contractor to remove the equipment for his examination.

MCNEIL informed me after his preliminary evaluations of the subject tree he felt the tree was compromised and not healthy before the fire. MCNEIL stated he would need to examine the tree further to determine its pre-existing condition. MCNEIL advised me he would need approximately 6 feet of the trunk removed and hauled out for examination. He advised me it was ok to remove the trunk in sections if I marked the orientation of the tree beforehand. MCNEIL advised me he would also like to have the stump removed for evaluation and would send me picture schematics of how he would like it to be cut. I told MCNEIL I would arrange for the tree and stump to be removed. We then departed the scene for the day.
On July 16, 2021, at approximately 8:00 AM, I met with members from CAL FIRE Technical Services at 220 Grand Avenue, Oroville, CA for a briefing. At briefing we discussed the plan and objectives to conduct a drone flight and Light Intensity Distance and Ranging (LIDAR) scan of the GOA and surrounding area. At approximately 9:30 AM, we concluded our briefing and drove to the origin area. Due to road conditions (rocks and debris) in the travel route, we had a skid steer tractor clear the path. We arrived at the origin area at approximately 1:30 PM. CAL FIRE Technical Service’s members conducted a drone flight of the GOA, overhead powerlines, and surrounding vegetation.

After the drone flight was completed, BERRY and I used a handheld metal detector to look for any type of metallic material that could have been expelled from the blown fuses below the pole labeled 120772797. We conducted our search approximately 20 feet out from the base of the pole to the north, south, east, and west. Other than metal debris from years of utility line work, we did not find anything that would have possibly expelled from the fuses. We did collect one small piece of wire as an item of interest, but later determined it was most likely waste discarded from previous utility work. The wire did not resemble anything that could have been expelled from the fuse or overhead equipment.

After completing our search with the metal detector, CAL FIRE Technical Services members set up their equipment for LIDAR scanning. At approximately 6:00 PM, we departed the origin area with a plan to return and finish LIDAR scanning the next morning.

On July 17, 2021, at approximately 8:00 AM, I met with members from CAL FIRE Technical Services, HYLTON and B&B High Voltage (utility line contractors) at 220 Grand Avenue, Oroville, CA for briefing. At briefing we discussed a plan for HYLTON and B&B High Voltage to examine the Bucks 1101 circuit from the nearest switch to the origin area and determine a plan to safely remove all necessary equipment in the

coming days. After briefing was concluded BERRY took CAL FIRE Technical Services LE80 (Rev. 7/2011)
members to the origin to complete their LIDAR scan. I took HILTON and B&B to the
Cresta Dam to examine the Bucks 1101 circuit from that vantage point. From the area
of Cresta dam I was able to see the subject tree laying across the conductors with the
naked eye and even more clearly with the use of binoculars. We observed the
conductors ran downhill from Camp Creek Road, across the Feather River to the Cresta
Dam and a secondary pole which most likely fed the lighting system for the Elephant
Butte tunnel. We drove up the Highway 70 canyon for several miles following the
conductors looking for the termination point or switch. We traced the conductors to a
pole with a switch located off Highway 70 and labeled 941. The switch was locked with
a PG&E lock and posted with a “MAN on LINE” tag. The tag read “RC For Fire”
attached to 941 and dated 7-13-21. The tag did not have a time referenced. I
photographed the tag and we proceeded to the origin.

We arrived at the origin at approximately 11:30 PM, and staged until approximately 1:00
PM, waiting for the completion of LIDAR. Once LIDAR was complete, we determined it
was safe to remove the fuses from pole 120772797. B&B employees used climbing
equipment to access the fuses. They photographed and removed the fuses and left all
other equipment intact. HYLTON examined all three fuses and tested them for
continuity. In electronics, a continuity test is the checking of an electric circuit to see if
current flows (that it is in fact a complete circuit). A continuity test is performed by
placing a small voltage (wired in series with an LED or noise-producing component such
as a piezoelectric speaker) across the chosen path. If electron flow is inhibited by
broken conductors, damaged components, or excessive resistance, the circuit is “open”
HYLTON concluded the two fuses from conductors 1 and 2 were in fact blown (open).
and did not have any continuity. Conductor 3 was not blown and did have continuity.

After HILTON examined the fuses, BERRY photographed while I packaged and labeled them as evidence.

Fuse from conductor #1 (southern conductor) or far right conductor looking downhill from Camp Creek Road was labeled E-1.

Fuse from conductor #2 (middle conductor) was labeled E-2.
Fuse from conductor #3 (northern conductor) or far left conductor looking downhill from Camp Creek Road was labeled E-3.
After removal and packaging of the fuses we departed the origin.

On July 18, 2021, at approximately 9:00 AM, I met with CAL FIRE Investigators, CAL FIRE private contractors, Butte County District attorney's representatives, Office of Energy and Infrastructure Safety (OEIS), PG&E troubleman, PG&E attorneys and PG&E private contractors at Scooters Café located at the intersection of Highway 70 and Deadwood Road. The plan was to examine, photograph and collect PG&E owned equipment and the subject tree from the GOA. Before the operation took place all representatives who were going to enter the scene were asked to sign a roster for accountability and take part in a safety briefing. The following personnel from the various entities were in attendance.

Jennifer DUPRE-TOKOS (BCDA)
Rick DUPRE-TOKOS (BCDA)
Marc NOEL (BCDA)
Jon DUFFY (BCDA)
Chris OAKLEY (BCDA)
Elizabeth MCALPINE (OEIS)
Caroline Thomas JACOBS (OEIS)
Scott HYLTON (TSH Electrical)
Greg BAIRD (B&B Line)
Alix TAGGART (B&B Line)
Justin RAMIREZ (B&B Line)
Martin CASTRO (B&B Line)
Eumi DAVIS (PG&E)
Scott WRIGHT (PG&E EXPONENT)
Erik CHRISTIANSEN (PG&E EXPONENT)
Chad LAVEZZO (PG&E)
Nicholas FRAM (PG&E)
Shawn ZIMMERMAKER (CAL FIRE)
Lance BERRY (CAL FIRE)
At approximately 10:00 AM we departed Scooters and arrived at the origin at approximately 10:45 AM. Upon our arrival CAL FIRE contactors with B&B High Voltage and a PG&E troubleman worked to ground the electrical equipment and make it safe for tree removal and evidence collection. The line was grounded and deemed safe at approximately 12:00 PM.

Due to fire activity, span of control and scene safety it was asked that all non-CAL FIRE employees/contractors except for Chad LAVEZZO (PG&E Troubleman) stay out of the working area while line work or tree work was taking place. Once the equipment was safely on the ground, respective entities such as PG&E contractors, OEIS and District Attorney officials could observe and photograph. Several times during these operations PG&E contractors and employees had to be reminded to keep their distance.

At approximately 12:30 PM, BERRY accompanied CAL FIRE contract faller Randy SHAULIS down to the subject tree and photographed him while he cut the subject tree free from the conductors. Before the tree was cut, BERRY used orange marking paint to mark the tree’s orientation on the trunk. Once the tree was free of the conductors BERRY examined the tree and advised SHAULIS how he wanted it cut for evidence purposes. SHAULIS cut two sections from the top of the tree that had come into contact and rested on the conductors. BERRY photographed and packaged those sections of the trunk as evidence, labeled E-4 and E-5.
Once the tree was free from the conductors, members from B&B High Voltage removed the following equipment from the pole nearest Camp Creek Road labeled 120772797.

1. South phase cutout
2. Middle phase cutout
3. North phase cutout
4. North phase (top arm) high side jumper
5. Middle phase (top arm) high side jumper
6. South phase (top arm) high side jumper
7. West phase (low side) jumper off buck arm
8. Middle phase (low side) jumper off buck arm
9. East phase (low side) jumper off buck arm

The equipment was laid out on Camp Creek Road in the same orientation as it was removed. The equipment was examined and photographed by CAL FIRE electrical consultant Scott HYLTON. After his initial evaluation HYLTON advised me, he did not see anything that stood out to him that indicated a problem or failure of these items. The equipment was then evaluated and photographed by PG&E contractors who, despite being directed not to handle it continued to do so. At the direction of Butte County District Attorney’s Office personnel, the equipment was packaged, inventoried, and labeled. The equipment was not assigned evidence numbers but were considered items of interest.

Once the equipment was taken from the pole, each conductor spanning from pole 120772797 downhill to the unmarked pole was lowered and examined by HYLTON for damage or signs of failure. PG&E contractors were allowed to examine, measure and photograph. Once again despite being told not to handle potential evidence PG&E employees and contractors continued to do so. Once examined and photographed each piece of damaged conductor was removed in a section and packaged as evidence. The conductor was then spliced with a new section and raised back into position. The following pieces of conductor showed signs of damage or failure. They were removed.

LE80 (Rev. 7/2011)
and packaged as evidence.

Conductor #1 (southern conductor) Approximately 5 feet of conductor was removed and packaged as evidence labeled E-6. This conductor showed remnants of tree bark and materials transfer approximately 4-5 feet uphill (west) from the insulator on the unmarked pole and within 16 inches from the insulator where the tree came to rest. This section of conductor also showed signs of deformation, arcing, and flattening where the tree contacted the conductor.
Conductor #1 (southern Conductor) Approximately 34 feet uphill (west) from the insulator on the unmarked pole. Approximately 12 inches of conductor was removed and packaged as E-7. This section of conductor showed signs of fresh arcing and beading in multiple spots over the approximate 12-inch section.

Conductor #2 (middle conductor) Approximately 5 feet of conductor was removed and packaged as E-8. This conductor showed remnants of tree bark and materials transfer from approximately 6 feet uphill (west) and up to 16 inches from the insulator on the unmarked pole.
Conductor #2 (middle conductor) Approximately 12 inches of conductor was removed and packaged as E-10. This section of conductor was located approximately 32 feet uphill from the insulator on the unmarked pole. This section of conductor showed signs of fresh arcing and beading in multiple spots over the approximate 12-inch section.

Conductor #3 (north conductor) Approximately 4 feet of conductor was removed and packaged as E-9. This section of conductor showed signs of tree bark and material transfer from approximately 34 feet uphill of the unmarked pole to within approximately 12 inches of the insulator on the unmarked pole. It also showed black remnants where the tree trunk made constant contact after coming to rest. This area was located approximately 33 inches uphill from the insulator.
Once we completed the on-site evaluation and collection of the electrical equipment, we used a rope system to winch the base of the subject tree to the roadway. The tree was then marked with orange paint to represent the bottom, middle and top sections. The subject tree was then cut into 3 separate pieces for ease of transportation and evaluation with MCNEIL’s consultation. PG&E contractors were asked not to touch the items but were allowed to examine, measure and photograph. Once again, despite being asked not to touch, they did so anyway. The following evidence numbers were assigned to each section.

"Bottom" was marked as E-11-1
"Middle" was marked as E-11-2
"Top" was marked as E-11-3

At approximately 6:30 PM, all personnel were accounted for and vacated the origin area. All evidence was transported and secured in a CAL FIRE owned storage container.

On July 21, 2021, at approximately 10:00 AM, BERRY and I arrived at the origin area with CAL FIRE Peace Officer Jeremy MONROE and CAL FIRE Battalion Chief Chip LE80 (Rev. 7/2011)
FOWLER both qualified fire investigator's (INVF). MONROE and FOWLER were brought to the origin area to evaluate and if possible, narrow the SOA that had been previously determined. MONROE and FOWLER had no knowledge of the fire, other than what the public knew at that time and had not been involved in any of the previous investigation roles. MONROE and FOWLER were given a brief layout of the area and what I observed upon my arrival at scene on July 13, 2021. MONROE and FOWLER were not given any direction or input as to what was being considered the GOA. BERRY and I stayed on the road while MONROE and FOWLER observed the scene and made their determination. (See attachment K. LE71 supplemental report from MONROE and FOWLER)

On July 21, 2021, CAL FIRE Officer Shane LARSEN conducted interviews with Butte County Public Works employees Sean HASSEL, Miguel FLORES and Kevin THOMAS. HASSEL, FLORES and THOMAS were working on the bridge on Camp Creek Road on July 13, 2021. They told LARSEN the following in summary.

They identified the bridge on Camp Creek as bridge 12C-0432 and stated that they had started work on July 13, 2021 at approximately 9:00 or 9:30 AM. The bridge had been flagged for repair due to some missing and rotten deck boards. At approximately 1:30 PM, a PG&E employee, described as a 6-foot tall, clean cut white male approximately 40 years old arrived at the bridge. The PG&E employee stated, "I guess the bridge really is closed. I will tell the boss we need a helicopter or something". The PG&E employee did not express any need or urgency to get across the bridge and left. No other PG&E personnel attempted to access the bridge while they were there, and they saw no helicopters or drones flying in the area. They stated that they concluded work on the bridge at approximately 3:20 PM and did not see or smell any smoke or fire during their work. (See attachment's R&Q. Supplemental LE-71 reports from LARSEN)

On July 22, 2021, at approximately 11:00 AM, BERRY and I returned to the origin area with a CAL FIRE contracted tree faller to remove the subject tree stump for evidence.
and further examination by CAL FIRE contracted arborist MCNEIL. With a digging tool we exposed the soil around the base of the stump to cut the root system below the soil line. This was done to ensure we had all the pertinent pieces of the stump that had been exposed pre and post fire for forensic analysis.

After exposing the root system below the soil level, the stump and a large portion of the root were photographed and cut loose. The stump and root were then packaged in protective bubble wrap and loaded into a cargo net and flown by long line below the Butte County Sheriff's Department helicopter to the Shady Rest Area along Highway 70. The stump and root were then loaded into a CAL FIRE flatbed vehicle and driven to a secure CAL FIRE evidence storage facility. The flatbed was followed by BERRY during transport. The tap root was labeled as E-12 and the stump was labeled as E-13.

On July 23, 2021, at 9:00 PM, Element Security was relieved, and the scene was released by CAL FIRE Officers.
On July 23, 2021, CAL FIRE Officer Shane LARSEN conducted an interview with PG&E employee Michael JESSEN, who told LARSEN the following in summary.

JESSEN stated he is a troubleman with PG&E, but is also filling in as a supervisor, overseeing 15 troublemen, including Scott CAMBELL. JESSEN stated that CAMBELL had been dispatched late in the morning to check out a fuse at Cresta Dam. JESSEN stated that he was unaware of any outages. JESSEN stated that CAMBELL had not contacted him over the course of the day regarding the tag. JESSEN stated that CAMBELL had later told him that while trying to make access up Camp Creek Road, he had encountered Butte County Public Works and could not cross the bridge and had to wait a couple hours before getting across. JESSEN stated at approximately 4:45 PM on July 13, 2021 he heard CAMBELL, who sounded frantic, calling out via two-way radio to Rocklin PG&E station. Rocklin was not answering back. JESSEN attempted to contact CAMBELL via two-way radio. When CAMBELL responded several minutes later he told JESSEN that there was a fire and he needed someone to come and help fight it. He stated that the fire was up on the hill above Cresta Dam, it was on the ground, and it hadn’t gotten into the trees yet, and they were going to need a helicopter. CAMBELL told JESSEN that the fire was located "approximately 1 span, load side of fuse cut-outs 17733, on the Bucks Creek 1101."

(See attachment T. Supplemental LE-71 report from LARSEN)

On Monday, August 2, 2021, at approximately 11:00 AM, I met with Joe MCNEIL at 220 Grand Avenue, Oroville CA. The purpose of the meeting was for MCNEIL to examine and test portions of the subject tree and stump.

After MCNEIL's examination, he advised me the tree most likely had visible damage he described as "cat facing" that may have been recognizable before the fire occurred.

MCNEIL explained that "cat facing" is a term used to describe damage to the tree trunk.
that generally occurs from a previous injury to the tree, such as fire damage or a mechanical equipment strike. MCNEIL advised me he would like to cut several portions from the stump and trunk for further testing and analysis. Due to the amount of damage the base of the tree and stump sustained from the fire, MCNEIL felt this was the only way to thoroughly examine the tree for age, degree of injury, decay, and stability. These were all factors in determining whether the injury or stability of the tree was recognizable pre fire.

Approximately five pieces were cut from the subject tree stump and labeled as evidence numbers E-13-1, E-13-2, E-13-3, E-13-4, and E-13-5. All five pieces of evidence were turned over to MCNEIL for testing and analysis. A chain of custody form was completed and signed by MCNEIL and I. (See attachment M. LE-71 Stump evidence collection)

After MCNEIL’s first visit he contacted me by phone and advised me he believed the subject tree was damaged by some sort of event (most likely fire) in 2008 and again in 2015 or 2016. MCNEIL asked if I would be able to determine if there had been a fire or other significant event in the area that could have damaged the subject tree. With the use of CAL FIRE archived data and fire history maps, I determined that the 2008 Butte lightning complex fire had burned through the footprint of the Dixie GOA. I was unable to determine what the 2015/2016 event would have been. Based upon that information MCNEIL advised me he would like to return for more samples of the subject tree stump.
On September 11, 2021, at approximately 11:00 AM, MCNEILL returned and met with CAL FIRE Officer Mark HILLSKOTTER. MCNEILL removed four more pieces of the subject stump for further analysis and testing. Those pieces were labeled as evidence numbers E-13-6, E-13-7, E-13-8, and E-13-9. A chain of custody form was completed and signed by HILLSKOTTER and MCNEILL.

On October 10, 2021, I received MCNEILL’s final report. In that report MCNEILL concluded that the subject tree was approximately ninety years old, approximately 15.8 inches in diameter and approximately 65 feet tall. “The tree was growing vertically without a lean” and was “alive and vital at the time of failure”.

Based upon MCNEILL’s evaluation the tree was likely significantly injured by the Butte Lightning Complex Fire in 2008 and by an unidentified event between 2015 and 2016. These injuries caused the live cambium (growing part of trunk) to be severely damaged.
and over time led to significant advanced decay at the base of the tree. MCNEILL’s report also concluded the discovery of two “major buttressing and mechanically supporting” roots had sustained damage from the 2008 Butte Lightning Complex which killed a half to two thirds of the roots circumference. The south side of the lower trunk burned in 2008, killed over half of the circumference, this would have formed a wound with no bark cover, visible as exposed and decaying wood. MCNEILL concludes this wound would have been visible from 18-38 inches above the ground. After the 2008 fire the only live tissue keeping the tree canopy green was on the side away from the conductors. After the unknown 2015/2016 event more than half of the tree in the lower three feet was dead, open, and decaying. This left the tree with insufficient wood to support the tree mechanically.

MCNEIL concluded that the degraded condition of the base of the tree was the primary cause of the failure and that the defect would have been visible without extraordinary discovery effort, from under the conductors. It would have been visible as a cat face, an open injury to the trunk. A visual inspection around the base of the tree would have revealed the poor mechanical condition of the tree. A pre inspector who was close to the tree for a brief visual inspection should have discovered the decay.
MCNEIL stated in the conclusion of his report that the International Society of Arboriculture has adopted a Tree Risk Assessment Protocol within their Tree Risk Assessment Qualification program. It is MCNEIL'S opinion that such an assessment, following the protocol would have resulted in a risk rating of High for this Douglas fir tree. (See MCNEIL'S full report attachment W)

On October 12, 2021, at approximately 11:45 AM, MCNEIL returned all items of evidence to me at 220 Grand Avenue, Oroville, CA. A chain of custody form was completed and signed by MCNEIL and I. All evidence was returned to a secure CAL FIRE storage facility.

On November 29, 2021, I received a copy of HYLTON's report. HYLTON concluded the most probable scenario, based upon pole location, subject tree location, fuse status, SCADA data and markings found on conductors is the subject tree fell across the line approximately 32 feet west (uphill) of its final resting place (up against the unmarked pole) at approximately 6:48 AM on July 13, 2021. The subject tree contacted all three conductors (12kV) and, because the line is built on a steep slope, it slid down the conductors and came to rest next to the pole. Two of the three fuses blew upon the initial contact (fuses 1&2). The third fuse (fuse 3) remained intact and kept the line energized. All three conductors were energized through back feed by the transformers.
at Cresta Dam. This caused the tree to remain energized until the line was de-
energized by PG&E.

HYLTON concluded the tree being in contact with energized conductors (prior to PG&E
de- energizing) and the ground created a high impedance fault. The tree may have
initially stayed connected to the stump; or it may have broken loose and came to rest on
the ground. In either case, the connection to the earth would create a poor (high
impedance) path to ground. Poor electrical connections, especially at high voltage,
create heat and cause arcing. (See HYLTON’S full report attachment X)
CONCLUSION

Based upon my training and experience, my personal observations, witness statements, and final reports generated by CAL FIRE consultants and contractors it is my determination the Dixie Fire was caused when a previously damaged and decaying Douglas-fir pine tree (subject tree) fell, contacted, and remained in all three phases of the Bucks 1101 circuit for approximately 10 hours, causing a high impedance fault and a path to ground. The high impedance fault and path to ground caused heating and arcing and eventually over the span of approximately 10 hours ignited a dry and receptive fuel bed.

It is my determination the prolonged response to the initial outage and fault that occurred at 6:48 AM, was a direct and negligent factor in the ignition of the fire. Had PG&E arrived on scene earlier, they could have detected the fault (subject tree in conductors) and opened the third fuse before it had time to ignite a receptive fuel bed. Per the SCADA data the fault and subsequent outage occurred at approximately 6:48 AM. Per witness statements from Butte County Public Works employees the bridge work did not commence until 9:00-9:30 AM. This provided several hours for PG&E to respond to the location of the fault prior to bridge work.

It is my determination that when PG&E could not access the fault because of the bridge work, they could have opened the 941 switch and deenergized that portion of the Bucks 1101 circuit. It is common and historic knowledge that the Highway 70 corridor is known for extreme fire danger and poor access. Several large and devastating fires, including the Camp Fire, (a PG&E caused fire) have ignited over the last several years in that geographical area. It is also common knowledge that the month of July in Butte County and surrounding areas is peak fire season, yet no sense of urgency was demonstrated by PG&E to determine the cause of the fault in a fire prone area during a severe time of year.

It is also my determination that through vegetative inspections required of PG&E the
subject tree (approximately 65 feet tall and located approximately 50 feet from the conductors) should have been discovered and removed between 2008 and 2021. Had the subject tree have been removed per Public Resource Code 4293 the Dixie Fire would not have ignited on July 13, 2021.
ATTACHMENTS

A. 911 Calls
B. FC-34 Dispatch Report
C. RAWS Weather Data
D. LIDAR Maps
E. Photo Log: Origin Investigation
F. Photo Log: Equipment and Tree Evidence Collection
G. Photo Log: Stump collection
H. Evidence Log Sheet
I. Evidence Chain of Custody
J. Drone Flight Imagery
K. Monroe Fowler LE-71
L. Fire History Map
M. McNeil Stump Evidence Collection #1 LE-71
N. McNeil Stump Evidence Collection #2 LE-71
O. Albert 911 Caller Interview LE-71
P. Epperson 911 Caller Interview LE-71
Q. Flores and Thomas Public Works Interview LE-71
R. Hassel Public Works Interview LE-71
S. Nulph 911 Caller Interview LE-71
T. Jessen PG&E Supervisor Interview LE-71
U. Drought State of Emergency Proclamation
V. DINS Report
W. McNeil Arboriculture Report
X. TSH Consulting (Scott Hylton) Report
Y. Plumas County Assessor’s Parcel Map
END OF REPORT

Matthew Palade
Peace Officer #4416
CAL FIRE Butte