

CAL FIRE



CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

Sonoma-Lake-Napa Unit
1199 Big Tree Lane
Saint Helena, CA 94574

INVESTIGATION REPORT

CASE NUMBER: 17 CALNU 010049
CASE NAME: Nuns
DATE: October 08, 2017
INCIDENT TYPE: Wildland
INCIDENT INVESTIGATOR(s): Lead investigator: [REDACTED]
[REDACTED]

1 1 - VIOLATION(S):

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3 None

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1 **2 - SUMMARY:**

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3 On October 08, 2017 at 11:11 p.m., the CAL FIRE Saint Helena Emergency Command
4 Center (ECC) dispatched a wildland fire at 2 Nuns Canyon Road in the community of
5 Glen Ellen, located in Sonoma County, California. The ECC named the fire Nuns.
6 Firefighting resources from CAL FIRE and various other Fire Departments responded to
7 the fire.

8
9 The Nuns fire originated in a field at the address of 1210 Nuns Canyon Road in the
10 community of Glen Ellen on the night of October 08, 2017. Within the field a section of
11 tree detached from the stem and contacted a powerline conductor. The powerline
12 conductor fell to the ground, contacted a receptive fuel bed, and ignited the Nuns Fire.

13
14 Around the time of dispatch for the Nuns Fire, a remote automated weather station located
15 1.6 miles away recorded an average wind speed of 17 miles per hour and gusts at 45
16 miles per hour. The wind contributed to the advancement of the Nuns Fire. A red flag
17 warning was issued by the National Weather Service for the Sonoma-Lake-Napa Unit
18 starting at 11:00 AM on October 08, 2017.

19
20 The Nuns Fire burned into adjoining fires and became part of the Central LNU Complex.
21 The Nuns, Adobe, Norrbom, Pressley, Partrick and Oakmont/Pythian fires are all
22 incorporated into the Central LNU Complex. The Central LNU Complex was contained on
23 October 31, 2017. The Central LNU Complex consumed 56,556 acres and damaged and
24 destroyed 1,527 structures (See Damage Inspection Summary Report).

25
26 Based on my origin and cause investigation, I determined the Nuns Fire ignited as a result
27 of a section of an alder tree detaching from the stem and contacting an energized
28 powerline conductor causing the conductor to fall to the ground contacting a receptive
29 fuel bed and ignited the Nuns Fire.

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32 LE80 (Rev. 7/2011)

1 **3 - SUBJECT:**
2 A powerline conductor located on the property of 1210 Nuns Canyon Road, Glen Ellen,
3 CA.
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5 Global positioning system coordinates: N 38 23.648, W 122 30.977
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1 **4 - VICTIM(S)**

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3 In total the Nuns incident burned 56,556 acres within Napa and Sonoma Counties. The
4 fire damaged and/or destroyed 1527 structures in Napa and Sonoma County (See
5 Damage Inspection Summary Report) and resulted in 2 fatalities.

6
7 **WITNESSES:**

8
9 W-1 Name: [REDACTED]
10 Address: [REDACTED]
11 Phone: [REDACTED]
12 Can testify to: Seeing fire coming from Nuns Canyon and Nelligan Road toward
13 her property the night of October 08, 2017

14
15 W-2 Name: [REDACTED]
16 Address: [REDACTED]
17 Phone: [REDACTED]
18 Can testify to: Performing structure protection at 1210 Nuns Canyon Road on the
19 night of October 08, 2017

20
21 W-3 Name: [REDACTED]
22 Address: [REDACTED]
23 Phone: [REDACTED]
24 Can testify to: Being at 1210 Nuns Canyon Road the night of October 08, 2017

25
26 W-4 Name: [REDACTED]
27 Address: [REDACTED]
28 Phone: [REDACTED]
29 Can testify to: Arborist at Nuns Fire, evaluated tree and provided report

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1 W-5 Name: [REDACTED]
2 Address: [REDACTED]
3 Phone: [REDACTED]
4 Can testify to: Forestry Assistant II at Nuns Fire, evaluated trees and provided
5 report
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7 W-6 Name: [REDACTED]
8 Address: [REDACTED]
9 Phone: [REDACTED]
10 Can testify to: Providing scene security at the origin of Nuns Fire
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12 W-7 Name: [REDACTED]
13 Address: [REDACTED]
14 Phone: [REDACTED]
15 Can testify to: Providing scene security at the origin of Nuns Fire
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17 W-8 Name: [REDACTED]
18 Address: [REDACTED]
19 Phone: [REDACTED]
20 Can testify to: Providing scene security at the origin of Nuns Fire
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22 W-9 Name: [REDACTED]
23 Address: [REDACTED]
24 Phone: [REDACTED]
25 Can testify to: Providing scene security at the origin of Nuns Fire
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27 W-10 Name: [REDACTED]
28 Address: [REDACTED]
29 Phone: [REDACTED]
30 Can testify to: Providing scene security at the origin of Nuns Fire
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1 W-11 Name: [REDACTED]
2 Address: [REDACTED]
3 Phone: [REDACTED]
4 Can testify to: Providing scene security at the origin of Nuns Fire

5
6 W-12 Name: [REDACTED]
7 Address: [REDACTED]
8 Phone: [REDACTED]
9 Can testify to: Provided investigation assistance

10
11 W-13 Name: [REDACTED]
12 Address: [REDACTED]
13 Phone: [REDACTED]
14 Can testify to: Provided investigation assistance

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16 W-14 Name: [REDACTED]
17 Address: [REDACTED]
18 Phone: [REDACTED]
19 Can testify to: Provided investigation assistance

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21 W-15 Name: [REDACTED]
22 Address: [REDACTED]
23 Phone: [REDACTED]
24 Can testify to: Provided contact telephone number for [REDACTED]

25
26 W-16 Name: [REDACTED]
27 Address: [REDACTED]
28 Phone: [REDACTED]
29 Can testify to: Assisted with evidence transportation

1 W-17 Name: [REDACTED]
2 Address: [REDACTED]
3 Phone: [REDACTED]
4 Can testify to: Assisting with investigation of Nuns Fire

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6 W-18 Name: [REDACTED]
7 Address: [REDACTED]
8 Phone: [REDACTED]
9 Can testify to: Assisting with investigation of Nuns Fire

10
11 W-19 Name: [REDACTED]
12 Address: [REDACTED]
13 Phone: [REDACTED]
14 Can testify to: Origin and cause investigation

15
16 W-20 Name: [REDACTED]
17 Address: [REDACTED]
18 Phone: [REDACTED]
19 Can testify to: PG&E representative during evidence collection

20
21 W-21 Name: [REDACTED]
22 Address: [REDACTED]
23 Phone: [REDACTED]
24 Can testify to: Fire Investigator hired by Pacific Gas and Electric

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26 W-22 Name: [REDACTED]
27 Address: [REDACTED]
28 Phone: [REDACTED]
29 Can testify to: Reviewing collected evidence

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1 OTHERS:

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O-1 Name: [REDACTED]
Address: [REDACTED]
Phone: [REDACTED]

Can testify to: Clearing Nuns Canyon Road of downed trees

O-2 Name: [REDACTED]
Address: [REDACTED]
Phone: [REDACTED]

Can testify to: Providing aerial bucket truck for Nuns Fire

1 **5 - EVIDENCE:**

2

3 E-1 Section of tree limb

4 E-2 Section of tree limb

5 E-3 Section of tree limb

6 Evidence items E-1-E-3 were sections of the detached tree that came in contact with the
7 powerline conductor. In the narrative referred to as detached section of tree/tree top.

8 E-4 Short section of wire

9 Evidence item E-4 was section of powerline conductor connected to the wooden cross
10 member of the power pole located in the field at 1210 Nuns Canyon Road.

11 E-5 Wood pin

12 Detached from wooden cross member on power pole located in field at 1210 Nuns
13 Canyon Road.

14 E-6 Center phase wire

15 Collected as part of the powerline conductor span located at 1210 Nuns Canyon Road

16 E-7 East span powerline conductor

17 Collected as part of the powerline conductor span located at 1210 Nuns Canyon Road

18 E-8 West span powerline conductor

19 Collected as the powerline conductor span that was in contact with the ground at 1210
20 Nuns Canyon Road.

21 E-9 West span wood pin and conductor

22 Collected as part of the power line equipment

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1 **6 – CONDITION(S):**

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3 **Fuel:**

4 Grass oak woodlands in lower elevations and valley, brush mid slope, timber/hardwood
5 mix at higher elevations.

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7 **Weather:**

8 The National Weather Service put out a red flag warning for the North-East Bay and Santa
9 Cruz Mountains starting at 11:00 AM Sunday October 08, 2017 through October 15, 2017
10 (See attachment 4).

11

12 Weather station ID: KENWW

13 Weather station distance from Nuns SOA: 1.6 miles, Northwest

14 Time: 11:00 PM

15 Temperature: 72 degrees Fahrenheit

16 Relative humidity: 12%

17 Wind speed: 17.1 mph

18 Wind gust: 45.7 mph

19 Wind direction: North

20

21 Weather station ID: E2362

22 Weather station distance from Nuns SOA: 9 miles, Northwest

23 Time: 11:39 PM

24 Temperature: 73 degrees Fahrenheit

25 Relative humidity: 13%

26 Wind speed: 12 mph

27 Wind gust: 36 mph

28 Wind direction: North

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1 Weather station ID: Hawkeye RAWS
2 Weather station distance from Nuns SOA: 30 miles, North
3 Time: 11:56 PM
4 Temperature: 64 degrees Fahrenheit
5 Relative humidity: 12
6 Wind speed: 48 mph
7 Wind gust: 79.01
8 Wind direction: North/Northeast

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10 **Topography:**

11 The Nuns Fire burned in various terrain from the valley floor to the mountains.

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1 7 – EQUIPMENT:

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3 A powerline conductor located at 1210 Nuns Canyon Road, Glen Ellen, CA

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1 **8 - PROPERTY:**

2 The origin of the Nuns Fire was located in a flat field on the following property:

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4 APN: 052-040-008

5 Address: 1210 Nuns Canyon Road, Glen Ellen, CA

6 Owner: [REDACTED]

7

8 In total, the Central LNU Complex burned 56,556 acres within Napa and Sonoma
9 Counties. The fire damaged and/or destroyed 1527 structures in Napa and Sonoma
10 County (See Damage Inspection Summary Report) and resulted in 2 fatalities.

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1 **9 - NARRATIVE:**

2 (All times and measurements are approximate)

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4 On October 08, 2017 at 11:11 p.m., the CAL FIRE Saint Helena Emergency Command
5 Center (ECC) dispatched a wildland fire at 2 Nuns Canyon Road in the community of
6 Glen Ellen. The ECC named the fire Nuns. Firefighting resources from California
7 Department of Forestry and Fire Protection (CAL FIRE) and various other Fire
8 Departments responded to the fire.

9
10 On October 09, 2017, I was employed by the California Department of Forestry and Fire
11 Protection (CAL FIRE) as a peace officer. On October 09, 2017, I responded to the Nuns
12 Fire to conduct an origin and cause investigation of the fire. I drove to the fire's dispatched
13 location on Nuns Canyon Road. Nuns Canyon Road is a rural county road that runs north
14 to south with wooden power poles and powerline conductors running parallel to the road
15 located on the west side. For my safety and to avoid any potential contact with downed
16 powerline conductors, I visually examined the powerline conductors confirming all were
17 intact as I drove down the road. I parked near the driveway to 1210 Nuns Canyon Road.
18 The address of 1210 Nuns Canyon Road was located one half mile off Sonoma Highway
19 toward the north east. The road past 1210 was blocked with downed tree limbs and
20 debris.

21
22 Powerline conductor is used in this report based on the following definitions.
23 Collins English Dictionary defines power line as a cable, especially above ground, along
24 which electricity is passed to an area or building. State of California rules for Overhaed
25 Electric Line Construction General Order No. 95 defines conductor as a material suitable
26 for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2)
27 transmitting light in the case of fiber optics. The Guide to Wildland Fire Origin and Cause
28 Determination published by the National Wildfire Coordinating Group defines the category
29 of powerlines to include all electrical equipment associated with the production,
30 transmission, and use of electricity.

31

1 I walked north on Nuns Canyon Road. I observed thick smoke and active fire burning. I
2 observed two powerline conductors laying on the road between pole #6459, PG&E
3 019636 and pole # 15630. I continued to walk cautiously past the downed span to the
4 fire's edge. For my safety and to avoid any potential contact with downed powerline
5 conductors, I continued to look up at the powerline conductors to confirm all were intact.
6 I walked to the fire's edge (N 38 23.892, 122 30.805) and observed a backing fire on both
7 sides of Nuns Canyon Road. I did not observe any additional powerline conductors down.

8
9 I returned to the section of downed powerline conductors between pole #6459, PG&E
10 019636 and pole # 15630. I observed what appeared to be an oak limb suspended on a
11 utility line over the span of downed powerline conductors (IMG_1519). I visually examined
12 the limb and the base of the tree where the limb detached. The exposed wood located at
13 the top of the base of the tree appeared to be fresh wood and displayed minimal signs of
14 fire damage. The bark around the tree base had signs of fire damage (IMG_1550).

15
16 I returned to 1210 Nuns Canyon Road. I walked the span of powerline conductors located
17 to the south of 1210 Nuns Canyon. I visually examined pole #120120432. The wooden
18 power pole appeared to have three wooden cross arms with two transformers and
19 powerline conductors that went to the east and west. I walked out the powerline
20 conductors to the west. The powerline conductors appeared to run to a weather head
21 located in a large gravel turn out. The weather head and all powerline equipment
22 appeared to be in good working order. I visually followed the powerline conductors to the
23 east from pole# 120120432 to a wooden power pole located in a field at 1210 Nuns
24 Canyon Road, east of Calabazas Creek.

25
26 I walked on to the property at 1210 Nuns Canyon attempting to locate the wooden power
27 pole located on the east side of Calabazas Creek. The wooden power pole was located
28 next to what appeared to be a pump house. The pump house contained what appeared
29 to be a pressure tank and water storage container. There were no identifying marks on
30 the wooden power pole. The wooden power pole was surrounded by vegetation in close
31 proximity to powerline conductors. (IMG_1415). Three powerline conductors run north to

1 south from the pump house power pole, connecting to another power pole in the field and
2 eventually attaching to a residence. I identified the three powerline conductors as the west
3 span, center span, and east span based on their cardinal point location on the power
4 pole. The west span was closest to Calabazas Creek, on the west side of the power pole.
5 The east span was on the field side of the power pole. The center span was located
6 between the east and west span.

7
8 I observed the west span powerline conductor that was connected to the pump house
9 power pole resting on the ground. I observed a section of tree had detached from the
10 stem and was resting on top of the west span powerline conductor. It appeared when the
11 section of tree detached from the stem, it fell towards the east and came in contact with
12 the west span powerline conductor, causing the powerline conductor to separate and fall
13 to the ground. A short section of the west span powerline conductor remained attached
14 to the cross arm of the power pole next to the pump house. The center and east powerline
15 conductors remained suspended. The center span powerline conductor appeared to have
16 a bow in it (IMG_1629).

17
18 At 4:30 p.m., CAL FIRE Investigator [REDACTED] arrived to assist with the
19 origin and cause investigation. I briefed [REDACTED] on the fire and investigation. We
20 flagged off an area with yellow and black flagging to the north and south of 1210 Nuns
21 Canyon Road, designating an area not to be entered.

22
23 At 5:25 p.m., I contacted the ECC to request a security guard to maintain overnight scene
24 security at the Nuns Fire.

25
26 Scene security was provided and maintained through the duration of Nuns Fire
27 investigation. Each security officer parked their vehicle on Nuns Canyon Road, south of
28 the address of 1210, outside of the flagged off area. Clear and concise direction were
29 given that nobody is to enter the flagged off area and to complete an ICS 214, logging
30 any activity throughout the day and night. Each morning I arrived at 1210 Nuns Canyon
31 Road, I collected a filled-out ICS 214 from the previous night security guard (See
LE80 (Rev. 7/2011)

1 attachment 11).

2

3 At 9:35p.m. I left the Nuns Fire.

4

5 On October 10, 2017, at 7:35 a.m., I returned to the Nuns Fire. [REDACTED] arrived a
6 short time later.

7

8 At 8:15 a.m. [REDACTED] conducted a follow up interview at the [REDACTED] with
9 [REDACTED]. In summary [REDACTED] stated on October 08, 2017 around
10 10:35 p.m. she smelled smoke and called 911 to report she smelled smoke. While on the
11 phone with 911 she saw fire coming from Nuns Canyon Road and Nelligan Road toward
12 [REDACTED]. A LE 78a witness statement was left with [REDACTED] to fill out at a later
13 time.

14

15 [REDACTED] and I walked out Nuns Canyon Road to the north of 1210 Nuns Canyon
16 Road. We observed macro fire direction indicators of foliage freeze and protection. For
17 our safety and to avoid any potential contact with downed powerline conductors we
18 looked at all the powerline conductor spans as we walked out Nuns Canyon Road. All
19 powerline conductors, power poles, hardware, and power pole fuses were intact. The only
20 span that was not suspended was the span identified the previous day between pole
21 #6459, PG&E 019636 and pole # 15630. We walked back to 1210 Nuns Canyon and
22 observed a power pole on the west side of Nuns Canyon Road that had powerline
23 conductors that ran to west of the power pole.

24

25 At 10:58 a.m., [REDACTED] and I attempted to locate the powerline conductors that ran
26 to the west. We drove onto the [REDACTED] attempting to follow the powerline
27 conductor span. From our vantage point we could see all powerline conductors were
28 intact. We hiked the remaining section of powerline conductors that could not be seen
29 and confirmed all powerline conductors were suspended and intact. We returned to 1210
30 Nuns Canyon Road.

31

1 At 11:31 a.m., [REDACTED] received a LE 78a witness statement from [REDACTED] (See
2 attachment 10).

3
4 [REDACTED] and I examined the wooden power pole located next to the pump house at
5 1210 Nuns Canyon Road. We focused on trying to locate the detachment point of the
6 west span powerline conductor. With binoculars, we looked at the short section of
7 powerline conductor that was attached to the wooden cross arm of the power pole. The
8 tips of the attached section of powerline conductor appeared to be discolored (IMG_1416-
9 IMG_1418) where the powerline conductor detached.

10
11 At 1:15 p.m., I met with [REDACTED]. [REDACTED] identified himself as
12 an owner of 1210 Nuns Canyon Road. [REDACTED] said a tenant named [REDACTED] was
13 renting the house at 1210 Nuns Canyon Road. [REDACTED] did not have contact
14 information for [REDACTED]. I gave [REDACTED] my contact information and asked him to contact
15 me with [REDACTED] information. I obtained [REDACTED] contact information.

16
17 At 1:48 p.m., [REDACTED] and I returned to the downed section of tree and powerline
18 conductor near the pump house. We visually examined the section of tree looking for
19 rub/score marks indicating any contact with the powerline conductors.

20
21 At 2:30 p.m., Glen Ellen Fire Department fire engine 3385 arrived at 1210 Nuns Canyon
22 Road. [REDACTED] introduced himself to me. In summary [REDACTED] told me
23 the following. The night the Nuns fire started he responded to 1210 Nuns Canyon Road
24 and performed structure protection on the residence. He saw fire on both sides of the
25 road. The wind was erratic and blowing in all directions. The shop located on the property
26 was starting to catch fire and the fire was starting to skunk around the back side of the
27 residence. He tried to fill the engine with water from a garden hose on the property and
28 was not able to get any water out of the hose.

29
30 CAL FIRE Investigator [REDACTED] arrived to assist with the
31 origin and cause investigation. [REDACTED] was briefed on the investigation.
LE80 (Rev. 7/2011) 19 Officer Initials [REDACTED]

1 [REDACTED] [REDACTED] and I walked out Nuns Canyon Road. We examined the
2 oak limb suspended on a utility line north of 1210 Nuns Canyon Road I had identified on
3 October 09, 2017. The wood at the base of the tree where the oak limb had detached and
4 the wood at the base of the limb showed minimal fire damage (IMG_ 1542-IMG_1560).
5 Looking at the wood at the top of the base of the tree, from outside to inside, I observed
6 wood colors of tan, red/pink, light brown, and black/dark brown in the center. The bark
7 around the tree base had signs of fire damage. Minimal fire damage to the exposed top
8 wood indicated the tree fell after the fire had passed through. As a group, we concluded
9 the oak limb detached from the base of the tree after the fire passed through that location.
10 The oak limb contacted the suspended powerline conductors, causing the powerline
11 conductors to detach from the power pole and rest on the road.

12 -
13 As a group, we continued our walk out Nuns Canyon Road looking at macro fire pattern
14 indicators. Advancing fire pattern indicators of foliage freeze and protection were
15 observed. For our safety and to avoid any potential contact with downed powerline
16 conductors, we continued to look up at the powerline conductors to confirm all were intact.
17 We continued to look at fire pattern indicators as we walked. A transition of fire pattern
18 indicators was observed further north on Nuns Canyon Road. The fire went from
19 advancing to backing on the north/east side of the road indicating a transition zone. The
20 ground fuels showed less consumption and a lower fire intensity. On the west side of the
21 road the fire pattern indicators made a downhill run. We returned to 1210 Nuns Canyon
22 Road (See attachment 3).

23
24 [REDACTED] [REDACTED] and I returned to the wooden power pole next to the pump
25 house. The power pole was re-examined using binoculars. The short section of attached
26 powerline conductor appeared to be discolored at the tips. Further up the wire near the
27 wooden cross arm the powerline conductor appeared to have separation between the
28 wire strands (IMG_1584).

29
30 Fire pattern indicator flags were placed in the field near the pump house (IMG_1510-
31 IMG_1518). Red flags were placed to mark advancing fire pattern indicators, yellow flags

1 were placed to mark lateral fire pattern indicators and blue flags were placed to mark
2 backing fire pattern indicators. Digital photographs of the flags were taken on October 11,
3 2017. Fire pattern indicators of protection and staining were observed. A general origin
4 area (GOA) was determined based on fire direction indicators. Within the GOA laid the
5 downed powerline conductor and downed section of tree.

6
7 At 8:24p.m. I left the Nuns Fire.

8
9 On October 11, 2017 at 7:57 a.m., I arrived at 1210 Nuns Canyon Road.

10
11 At 8:00 a.m. [REDACTED] arrived.

12
13 At 8:10 a.m., additional fire pattern indicator flags were placed at near the pump house,
14 east side of the creek and on the west side of Nuns Canyon road.

15
16 At 9:30 a.m., [REDACTED] and I focused on fire pattern indicators on the west side of
17 Nuns Canyon Road west of 1210 Nuns Canyon Road. Advancing fire pattern indicators
18 of foliage freeze and spalling were observed indicating the fire advanced uphill, west of
19 Nuns Canyon Road (IMG_1392-IMG_1401). The fire was slope driven and made various
20 uphill runs. We followed the fire pattern indicators uphill until we reached the top of the
21 hill. Backing fire pattern indicators were observed at the top of the hill. The fire burned
22 lower intensity and even staining around rocks was observed (IMG_1566). The fire
23 traveled to the north at the top of the hill and transition to down slope. We continued to
24 follow the fire pattern indicators. We followed the down slope run to Nuns Canyon Road
25 (IMG_1567). The location on Nuns Canyon Road where the downhill fire pattern
26 indicators met the road, was the same area previously identified as transition zone
27 (IMG_1568). Based on the fire pattern indicators observed, the fire made advancing and
28 backing runs and eventually advanced towards the south (See attachment 3 &
29 IMG_1561-IMG_1570).

30
31 At 10:30 a.m., CAL FIRE Forestry Assistant II [REDACTED]
LE80 (Rev. 7/2011)

1 [REDACTED] arrived at 1210 Nuns Canyon Road. He evaluated the detached section
2 of tree and tree stem located near the pump house at 1210 Nuns Canyon. He also
3 evaluated the suspended oak tree limb and tree base located on Nuns Canyon Road. In
4 summary [REDACTED] concluded the tree stem and tree top (detached section of
5 tree) located near the pump house was an Alder. The tree did not have evidence of rot or
6 loss of structural integrity. No infections, insects or pathogens were observed affecting
7 the tree (see attachment 5).

8

9 At 11:39 a.m., [REDACTED] completed his evaluation.

10

11 At 12:13 p.m., I took digital photographs using my state issued digital camera of the fire
12 pattern indicator flag field. I took digital photographs of the wooden power pole and power
13 pole hardware.

14

15 My camera is set on the continuous numbering setting for digital image labeling. The first
16 picture image I took at the Nuns Fire was IMG_1326.

17

18 At 3:42 p.m., observations and measurements of the tree top and stem located near the
19 pump house at 1210 Nuns Canyon Road was taken.

20

21 The tree top had numerous tree branches extending off with green colored leaves. The
22 tip of the tree top was detached (IMG_1640). The tip of the tree appeared to have a
23 rub/score mark on it (IMG_1501-IMG_1503).

24

25 The length of the tree top was twenty-nine feet, six inches. The distance from the stem of
26 the tree to the base of the tree top was three feet, eleven inches. The distance from tree
27 stem to the GOA was thirty feet.

28 The stem of the tree was located near Calabazas Creek. The creek had water in it. The
29 upper section of stem of the tree appeared to have minimal fire damage (IMG_1465-
30 IMG_1467). The base of the tree stem appeared to have fire damage on the northeast
31 side.

1 I walked a large circle around the downed tree top with powerline conductor beneath it
2 two times, once clockwise and once counter clockwise looking at all aspects of the tree.
3 The tree top had advancing fire pattern indicator flags to the south and east, lateral fire
4 pattern indicator flags to the northeast and backing fire pattern indicator flags to the west.
5 The tree top and powerline conductor was located inside of the GOA. The foliage of the
6 tree top appeared to curl in toward the limb (IMG_1469, 1497-1499) and detached twigs
7 on the ground showed signs of backing. The fire pattern indicators support the fire started
8 underneath the tree top. The tree top displayed fire damage on the underside of the limb,
9 indicating the tree top came down before the fire passing through. Fire damage to the
10 tree top displayed low intensity of fire, not a lot of consumption of fuel and minimal depth
11 of char (IMG_1489-IMG_1496).

12
13 Standing near the GOA, I looked up at the center and east powerline conductor span. I
14 observed the center powerline conductor span had an indentation/bow in the line
15 (IMG_1506-1507). The east powerline conductor span did not appear to have the same
16 indentation/bow in the span.

17
18 At 4:16 PM, two reference points were located at 1210 Nuns Canyon Road at. A metal
19 stake was placed in the ground at reference point one (RP1) and global positioning
20 systems (GPS) coordinates (WGS 84) were taken (N 38 23.645 W 122 30.967). The
21 concrete casing around what appeared to be the pump well was identified as reference
22 point two (RP2) and GPS coordinates were taken (N 38 23.643 W 122 30.982).

23
24 Measurements from RP1 and RP 2 to the center of the GOA were taken.

25 RP1 to GOA measured 30 feet.

26 RP2 to GOA measured 43 feet 2 inches.

27 At 4:26 PM, the perimeter of the GOA was measured (See attachment 3).

28 Measurements of fire direction indicators from the GOA to indicators was taken (See
29 attachment 3).

30

31 At 5:12 p.m. I left the Nuns Fire.
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1 On October 12, 2017 at 7:42 a.m., I arrived at 1210 Nuns Canyon Road.

2

3 At 8:00 a.m., [REDACTED] arrived.

4

5 At 8:38 a.m., I took digital photographs of the suspended tree limb resting on utility line
6 and base of tree (IMG_1519-IMG_1560).

7

8 At 9:09 a.m., I listened to a voicemail on my state issued cellular telephone from
9 [REDACTED]. In summary [REDACTED] told me the following. He had spoken to [REDACTED] who
10 was home the night the Nuns Fire started. [REDACTED] told [REDACTED] when he left the
11 residence the night of the fire he could not turn left out of the driveway at 1210 Nuns
12 Canyon Road due to active burning fire near the road and drove right out of the driveway
13 to avoid the fire.

14

15 At 10:56 a.m., I called [REDACTED] using my state issued cellular telephone [REDACTED]
16 gave me a contact telephone number for [REDACTED]. I called [REDACTED] and left a message
17 asking him to return my call.

18

19 At 11:41 a.m., I received a phone call on my state issued cellular telephone from [REDACTED].
20 I received permission to digitally record our conversation (See attachment 13). [REDACTED] told
21 me the following in summary. The night the Nuns Fire started he heard a branch break
22 and the electricity went out. He looked out the window of his residence and did not see
23 anything. He was awakened by family members who told him there was a fire. They tried
24 to evacuate toward the highway and could not due to fire. They drove north on Nuns
25 Canyon Road and waited at Calabasas Preserve for the fire to pass. [REDACTED] saw flames
26 in the meadow toward the highway.

27

28 At 11:45 a.m., Arborist [REDACTED] arrived at 1210 Nuns Canyon.
29 [REDACTED] evaluated the detached tree top and stem located near the pump house at 1210
30 Nuns Canyon Road (See attachment 6). In summary [REDACTED] concluded the tree was
31 an alder and a complete branch failure occurred. Prior to the failure, the health and
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1 condition of the subject tree is judged to be within normal limits for the species. [REDACTED]
2 provided a written report.

3
4 At 1:30 p.m., [REDACTED] completed his evaluation.

5
6 At 2:45 p.m., GPS coordinates (WGS 84) of the fire flag indicators were recorded and
7 documented. (See attachment 3).

8
9 At 5:25 p.m., I left 1210 Nuns Canyon Road.

10
11 On October 13, 2017 at 7:45 a.m., I arrived at 1210 Nuns Canyon Road.

12
13 At 8:00 a.m., [REDACTED] arrived.

14
15 At 10:00 a.m., I walked up and down Nuns Canyon Road and into the burn, re-examining
16 my fire pattern indicators. I confirmed the fire direction of travel based on the indicators I
17 observed. The fire pattern indicators all supported the fire originated from the identified
18 GOA near the pump house at 1210 Nuns Canyon Road.

19
20 At 1:25 p.m., Sonoma County Public Works Supervisor [REDACTED] arrived at
21 1210 Nuns Canyon Road. He asked permission to clear Nuns Canyon Road north of 1210
22 of downed trees and debris. Permission was granted. [REDACTED] was given an ICS 214 to
23 complete and clear and concise instructions to document his purpose and people
24 performing road clearing activities.

25
26 At 2:25 p.m., additional Sonoma County Public Works employees arrived at 1210 Nuns
27 Canyon Road. All employees were logged on ICS 214.

28
29 [REDACTED] supervised the Public Works crew during their road clearing activities.

30
31 At 5:04 p.m., [REDACTED] and his Public Works crew completed their road clean up. I received
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1 a filled-out ICS 214 from [REDACTED] (See attachment 11).

2

3 At 5:45 p.m., [REDACTED] and I left 1210 Nuns Canyon Road.

4

5 On October 14, 2017 at 7:45 a.m., I arrived at 1210 Nuns Canyon Road.

6

7 At 9:41 a.m., I met with the assigned Light Detection and Ranging (LIDAR) . I briefed
8 them on the fire and gave them an ICS 214 to document their activity for the day.

9

10 At 6:20 p.m., the LIDAR team completed their work. I collected a completed ICS 214 (See
11 attachment 11).

12

13 At 6:46 p.m., I left 1210 Nuns Canyon Road.

14

15 On October 15, 2017 at 7:51 a.m., I arrived at 1210 Nuns Canyon Road.

16

17 I took GPS coordinates and digital photographs of the fire's progression (See attachment
18 3 & IMG_1561-IMG_1570).

19

20 At 10:30 a.m., Sonoma Valley Fire Battalion Chief [REDACTED]
21 arrived at 1210 Nuns Canyon Road. He wanted to evaluate access for fire engines on
22 Nuns Canyon Road. Access was granted. An ICS 214 was given to [REDACTED] to
23 complete.

24

25 At 11:03 a.m., an aerial bucket truck from [REDACTED] arrived at 1210 Nuns
26 Canyon. The bucket truck was utilized to take aerial photographs of the GOA. I briefed
27 the crew of the bucket truck on the fire and gave them an ICS 214 to complete.

28 At 11:25 a.m., [REDACTED] dropped off a completed ICS 214 and left 1210 Nuns
29 Canyon Road (See attachment 11).

30

31 The aerial bucket truck was carefully parked outside of GOA, 35 feet to the south.

1 At 11:50 a.m., I took aerial photographs of the GOA from the bucket of the truck
2 (IMG_1571-IMG_1639).

3

4 At 12:40 p.m., I completed my aerial photographs. I received a completed ICS 214 from
5 the aerial bucket truck crew and they left (See attachment 11).

6

7 At 2:03 p.m., I contacted the Sonoma-Lake-Napa Unit warehouse to arrange
8 transportation of the downed tree top within the GOA. A stake side truck was needed to
9 transport the downed limb to evidence storage. I measured the length of the tree top with
10 a measuring tape. The length of the tree top exceeded the length of my state issued
11 pickup truck camper shell.

12

13 At 2:53 p.m., Hayward Engine 308 (E308) arrived at 1210 Nuns Canyon Road. They were
14 assigned by the division of the fire to mop up a smoke located at 1200 Nuns Canyon
15 Road. The engine was given an ICS 214 to complete and permission to complete their
16 task.

17

18 At 4:03 p.m., E308 returned to 1210 Nuns Canyon Road. I received a completed ICS 214
19 prior to their exit (See attachment 11).

20

21 At 4:43 p.m., CAL FIRE Firefighter [REDACTED] arrived at 1210 Nuns
22 Canyon Road in CAL FIRE LNU utility 1404 (U1404) to assist with transportation of the
23 tree top.

24

25 [REDACTED] assisted with the removal of the downed tree top. I instructed [REDACTED] to
26 cautiously work around the perimeter of the tree top. [REDACTED] used a chainsaw to cut
27 the downed tree top into smaller, more manageable sections. He worked around the
28 perimeter of the tree top carefully trying to avoid disturbing the GOA. I was present during
29 the cutting and removal of the tree top. The collected sections of tree top were tagged as
30 evidence E-1 and E-2 (IMG_1640-IMG_1643, IMG_1657) and loaded up in U1404.

31

1 At 5:19 p.m., evidence item E-1 and E-2 were transported to CAL FIRE Middletown
2 evidence storage. I followed U1404 to the evidence storage in my state issued pickup
3 truck. I never lost visual sight of U104 during the transportation of evidence.

4
5 At 6:48 p.m., I arrived at Middletown evidence storage. I entered evidence item E-1 and
6 E-2 into evidence storage. I received a complete ICS 214 from [REDACTED] (See
7 attachment 11).

8
9 On October 16, 2017 at 8:14 a.m., I arrived at 1210 Nuns Canyon Road.

10
11 At 8:35 a.m., I took GPS coordinates of the wooden power poles located in the field near
12 the pump house at 1210 Nuns Canyon road.

13
14 At 8:58 a.m., I took digital photographs using my state issued digital camera of the GOA
15 with the tree top removed. The GOA was littered with small twigs and green, brown and
16 charred tree foliage.

17
18 At 9:02 a.m., I visually examined the GOA.

19
20 I walked around the perimeter of the GOA two times, once clockwise and once counter
21 clockwise looking for micro fire pattern indicators. I observed fire pattern indicators of
22 staining and protection (IMG_1671, IMG_1672). I worked from advancing fire pattern
23 indicators toward backing fire pattern indicators based on the micro fire pattern indicators
24 I observed. The fire appeared to be lower intensity in GOA. I observed dried cured annual
25 grass that was partially consumed by fire and a lack of white ash. The GOA was disturbed
26 by the downed tree top, the tree top foliage contacting the ground within the GOA, and
27 the removal of the tree top.

28
29 Based on the fire pattern indicators I observed, a specific origin area (SOA) four feet by
30 four feet in size was located within the GOA. The downed powerline conductor laid in the
31 center of the SOA. I visually examined the SOA. I used a debris removal tool and hovered
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1 a magnet over the SOA. I did not locate or collect any additional items identified by the
2 magnet or visually.

3

4 At 2:57 p.m., representatives from Pacific Gas and Electric (PG&E) arrived.

5

6 At 3:37 p.m., representatives from the California Public Utilities Commission arrived.

7

8 At 4:45 p.m., additional representatives from PG&E arrived to assist with powerline
9 conductor and power pole hardware removal.

10

11 I identified three powerline conductors and connecting power pole hardware as items I
12 wanted to collect as evidence. As each item was removed, it was identified by colored
13 tape indicating where it was located prior to removal. Red, white and blue tape was used
14 to identify the span location and white tape with a black marking was used at each end of
15 the powerline conductor to identify which end was on the top side.

16

17 At 5:08 p.m., PG&E started removal of power pole hardware and powerline conductors.

18

19 The west powerline conductor was wrapped with red tape. The center span was wrapped
20 with white tape and the east span was wrapped with blue tape. The powerline conductor
21 span was measured from power pole to power pole. The total span measured 113 feet
22 5 inches in length and 23 feet off the ground in the center of the span. The center line was
23 identified by PG&E as the neutral wire and the two outside lines were identified as 120
24 volt lines.

25

26 Line spacing between the powerline conductors was measured at the top of the cross
27 arm of each power pole by the PG&E linemen that removed the powerline conductors.
28 The measurements at the south pole were given as 26 inches from outside to center
29 powerline conductor and 62 inches from center to outside powerline conductor. The
30 measurements at the north pole were given as 16.5 inches from outside to center
31 powerline conductor and 62 inches from center to outside powerline conductor.

1 At 6:20 p.m., I documented evidence items E-3-E-9.

2

3 At 6:54 p.m., I placed and secured all evidence items in the camper shell of my state
4 issued pickup truck to transport to the CAL FIRE Santa Rosa evidence storage.

5

6 At 7:36 p.m., I arrived at the CAL FIRE Santa Rosa evidence storage.

7

8 At 7:40 p.m., I entered all collected evidence items into storage.

9

10 On October 18, 2017 at 6:54 p.m., I arrived at 1210 Nuns Canyon Road. I met with CAL
11 FIRE Investigator [REDACTED] and private fire investigator hired by
12 PG&E, [REDACTED]. [REDACTED] showed [REDACTED] where he
13 believed the Nuns Fire originated prior to my arrival. [REDACTED] showed me [REDACTED]
14 [REDACTED] findings. [REDACTED] and I agreed to revisit [REDACTED] findings the next
15 morning.

16

17 On October 19, 2017 at 8:34 a.m., I arrived at 1210 Nuns Canyon Road. I met with [REDACTED]
18 [REDACTED]. We examined the identified SOA [REDACTED] had identified the previous day.
19 In the SOA laid a downed powerline conductor. [REDACTED] concluded the downed
20 powerline conductor ignited the Nuns Fire. I did not agree with [REDACTED] findings
21 based on the following: When I arrived at the Nuns Fire I walked out Nuns Canyon Road
22 to the fire's edge. The fire's edge was located to the south of where [REDACTED]
23 identified his SOA. I had walked to end of Nuns Canyon Road following out the span of
24 suspended powerline conductors. The downed powerline conductor [REDACTED]
25 identified was suspended when I walked out the road on October 10, 2017.
26 I took GPS coordinates (WGS 84) using my state issued GPS device of [REDACTED]
27 SOA. The GPS coordinates were N 38 23.900 by W 122 30.740. I took GPS coordinates
28 at the location where I observed the fire's edge on October 10, 2017. The coordinates
29 were N 38 23.892 by W 122 30.805.

30

31 On December 18, 2017 CAL FIRE Assistant Chief [REDACTED]
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1 [REDACTED] emailed me a link containing California Public Utilities Commission
2 published electric safety incident reported by PG&E. In summary, the report states on
3 October 16, 2017 PG&E identified a tree top that broke and fell on an open secondary
4 service at 1210 Nuns Canyon Road. (See attachment 12).

5
6 On March 8, 2018 at 1:55 p.m., I met with electrical engineer [REDACTED]
7 [REDACTED] of [REDACTED] [REDACTED] and I reviewed photographic documentation
8 of evidence items that had been collected at the Nuns Fire. In summary [REDACTED]
9 told me the following: The wire strand ends of the downed powerline conductor displayed
10 penciling at the tips, an indication of tension break in the line and beads of melted metal
11 indicating arc marking that would be present at a temperature of 1200 degrees Fahrenheit
12 (IMG_1675 & IMG_1676). Evidence item E-3, section of tree limb, displayed arc tracking
13 indicating that section of the tree came in contact with a heat source.

14
15 On May 21, 2018 at 9:00 a.m. I received a CAL FIRE LE 71 from [REDACTED] The
16 LE 71 contains requests made by [REDACTED] to PG&E for data (See attachment
17 9). All the data is stored on a thumb drive located in the CAL FIRE Santa Rosa evidence
18 storage.

19
20 On May 25, 2018, I received a CAL FIRE LE 71 from [REDACTED] The LE 71
21 contains additional requests made by [REDACTED] to PG&E for data (See attachment
22 9). All the data is stored on a thumb drive located in the CAL FIRE Santa Rosa evidence
23 storage.

24
25 On May 25, 2018, I received data from PG&E that contained the Nuns Incident
26 Description & Factual Summary. Within the summary, PG&E states two smart meters
27 located downstream from 1210 Nuns Canyon Road both reported a Last Gasp event at
28 10:18 p.m. on October 08, 2017. At 10:51 p.m. on October 08, 2017 Line Recloser 47964
29 operated and reclosed, resulting in an approximately 10-second outage at 1210 Nuns
30 Canyon Road. At approximately 12:01 a.m. on October 09, 2017 the Dunbar 1101 Circuit
31 Breaker was remotely opened and de-energized (See attachment 12).

1 **Opinions and conclusion:**

2 Based on my training, education, experience, and facts gathered during my origin and
3 cause investigation, I determined the Nuns Fire was ignited due to a tree top contacting
4 an energized powerline conductor causing the powerline conductor to come in contact
5 with a receptive fuel bed.

6

7 **Transfer of digital photographs:**

8 I transferred 359 photographs (IMG_1326-IMG_1684) that I had taken from my assigned
9 digital camera to digital video disc on October 19, 2017 at 3:25 p.m.. I made a second
10 digital video disc using the same process. I did not alter the photographs during this
11 process. I labeled the digital video disc with "Digital Photographs Copy #1 and "Digital
12 Photographs Copy #2".

13

14 **Transfer of digital voice recording:**

15 I transferred a digital voice recording of my interview with [REDACTED] to a digital video disc on
16 October 19, 2017 at 5:05 p.m. I made a second digital video disc using the same process.
17 I did not alter the digital voice recording during this process. I labeled the digital video disc
18 with "Digital voice recording copy #1 and digital voice recording copy #2".

19

20 *I reserve the right to reexamine this report if additional information is discovered or
21 provided to me that could amend or reinforce my opinions or conclusions.

22

23

24

25 END REPORT

26

27

28

29

30 Fire Captain, CAL FIRE

31

10 - ATTACHMENTS:

1. CAL FIRE FC 34 Dispatch Action Report
2. Fire perimeter map
3. Incident sketches
4. Weather
5. Forestry Assistant II site report
6. Arborist site report
7. Photographs
8. Evidence log
9. CAL FIRE LE 71 Supplemental report
10. CAL FIRE LE 78a Witness Statement
11. ICS 214's
12. Utility reports
13. Digital video discs
 - Damage Inspection Summary Report
 - Digital Photographs
 - Digital Voice Recording
 - LIDAR