

**CALIFORNIA PUBLIC UTILITIES COMMISSION
Safety and Enforcement Division
Electric Safety and Reliability Branch**

Incident Investigation Report

Report Date: May 10, 2019

Incident Number: E20171020-05

Utility: Pacific Gas and Electric Company (PG&E)

Date and Time of the Incident: October 8, 2017, 2200 hours

Location of the Incident: 16200 Norrbom Road
Sonoma, CA 95476
County: Sonoma

Fatality / Injury: 3 fatalities in Nuns Fire

Property Damage: \$179 million (PG&E restoration costs in Sonoma Division)

Utility Facilities Involved: Sonoma 1103, 12 kV Circuit

Violation: Yes

I. Summary

On October 8, 2017, at approximately 2200 hours, a branch of a Black Oak tree failed, fell, and contacted the overhead conductors of PG&E's Sonoma 1103, 12 kV circuit located near 16200 Norrbom Road in the city of Sonoma in Sonoma County. The contact caused a portion of the tree to ignite and fall. The burning tree material or sparks fell to the ground, thus starting the Norrbom Fire. The Norrbom Fire burned approximately 1,836 acres.

The Norrbom Fire was combined with several other fires, which were called collectively the Nuns¹ Fire. The Nuns Fire burned a total of 56,556 acres, destroyed 1,355 buildings, and damaged 172 buildings. Three fatalities occurred as a result of the Nuns

¹ The Nuns Fire included the Nuns, Oakmont/Pythian, Norrbom, Adobe, Pressley and Partrick fires. SED investigated each of these incidents except the Pressley fire, which was a spot fire that ignited from an ember that originated from the Adobe Fire

Fire, with one of those fatalities within the perimeter of the Adobe Fire. SED does not know the locations of the other two fatalities.

Based on SED's review, SED found that PG&E violated the Commission's General Order (GO) 95, specifically, GO 95, Rule 31.1 and GO 95, Rule 35:

GO Rule	Violations
GO 95, Rule 31.1	Hazardous tree not identified and abated
GO 95, Rule 35	Vegetation clearance not maintained

A. Rules Violated

General Order 95, Rule 31.1 – Design, Construction and Maintenance states:

“Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.

For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment.

A supply or communications company is in compliance with this rule if it designs, constructs, and maintains a facility in accordance with the particulars specified in General Order 95, except that if an intended use or known local conditions require a higher standard than the particulars specified in General Order 95 to enable the furnishing of safe, proper, and adequate service, the company shall follow the higher standard.

For all particulars not specified in General Order 95, a supply or communications company is in compliance with this rule if it designs, constructs and maintains a facility in accordance with accepted good practice for the intended use and known local conditions.”

General Order 95, Rule 35 – Vegetation Management states:

“Where overhead conductors traverse trees and vegetation, safety and reliability of service demand that certain vegetation management activities be performed in order to establish necessary and reasonable clearances the minimum clearances set forth in Table 1, Cases 13 and 14, measured between line conductors and vegetation under normal conditions, shall be maintained. (Also see Appendix E for tree trimming guidelines.) These requirements apply to all overhead electrical supply and communication facilities that are covered by this General

Order, including facilities on lands owned and maintained by California state and local agencies.

When a supply or communication company has actual knowledge, obtained either through normal operating practices or notification to the company, that dead, rotten or diseased trees or dead, rotten or diseased portions of otherwise healthy trees overhang or lean toward and may fall into a span of supply or communication lines, said trees or portions thereof should be removed.

Communication and electric supply circuits, energized at 750 volts or less, including their service drops, should be kept clear of vegetation in new construction and when circuits are reconstructed or repaired, whenever practicable. When a supply or communication company has actual knowledge, obtained either through normal operating practices or notification to the company, that its circuit energized at 750 volts or less shows strain or evidences abrasion from vegetation contact, the condition shall be corrected by reducing conductor tension, rearranging or replacing the conductor, pruning the vegetation, or placing mechanical protection on the conductor(s). For the purpose of this rule, abrasion is defined as damage to the insulation resulting from the friction between the vegetation and conductor. Scuffing or polishing of the insulation or covering is not considered abrasion. Strain on a conductor is present when vegetation contact significantly compromises the structural integrity of supply or communication facilities. Contact between vegetation and conductors, in and of itself, does not constitute a nonconformance with the rule.”

B. Witnesses

No.	Name	Title
1	Wilson Tsai	CPUC Lead Investigator
2	Raymond Cho	CPUC Investigator
3	Charlie Laird	CAL FIRE Lead Investigator, Fire Captain
4	Jay Singh	PG&E Director
5	[REDACTED]	PG&E Supervisor
6	Maria Deluca	PG&E Claims Investigator
7	[REDACTED]	PG&E Vegetation Management Supervisor

C. Evidence

No.	Source	Description
1	PG&E	Initial Incident Report, 10/20/17
2	PG&E	20-day Incident Report, 11/17/17
3	CPUC	Site Observation Report, 10/18/17
4	CPUC	Field Notes, 10/18/17
5	CPUC	PG&E Evidence Inspection, 6/11/18
6	CAL FIRE	Norrbom Incident Investigation Report and Attachments
7	CPUC	Site Visit Photos
8	CAL FIRE	Evaluation of California Black Oak Tree Failure
9	CAL FIRE	Chief BERGLAND Norrbom 1 Origin and Cause Investigation Report
10	PG&E	Data Request Response #2
11	PG&E	Data Request Response #3
12	PG&E	Data Request Response #4
13	CAL FIRE	Evidence Viewing Photos
14	PG&E	Data Request Response #5
15	PG&E	Data Request Response #6
16	PG&E	Data Request Response #7

II. Background

On January 17, 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency and directed state officials to take actions to mitigate conditions that could result from the drought and cause a fire. On February 18, 2014, in response to the proclamation, SED issued a letter to PG&E directing PG&E to take all practicable measures to reduce the likelihood of fires caused by utility facilities, including, increasing inspections, taking corrective actions and modifying protective schemes. On June 12, 2014, the California Public Utilities Commission (CPUC) issued Resolution ESRB-4 directing all Investor Owned Electric Utilities (IOU) to take remedial measures to reduce the likelihood of fires started by or threatening utility facilities. On October 30, 2015, Governor Edmund G. Brown Jr. declared a Tree Mortality State of Emergency due to tree mortality caused by the state's prolonged drought and bark beetle infestations.

On October 8, 2017 at approximately 2200 hours, a branch of a Black Oak tree failed, fell, and contacted the overhead conductors of PG&E's Sonoma 1103, 12 kV circuit, located near 16200 Norrbom Road in Sonoma. The contact caused a portion of the tree to ignite causing the portion of the tree to fall which resulted in burning tree material or sparks falling to the ground below thus starting the "Norrbom Fire." The Norrbom Fire burned approximately 1,836 acres. The Norrbom Fire was later combined with other fires, which collectively were called the Central LNU Complex.

On October 9, 2017 at approximately 1240 hours, CAL FIRE responded to reports of a smoke column in the area of Norrbom Road and Gehricke Road near Sonoma. This second fire burned approximately 30 to 40 acres and was located on the hillside above the already burning Norrbom Fire. CAL FIRE identified this fire as the “Norrbom 2 Fire.” Figure 2 shows the Norrbom 1 and 2 Fire Specific Origin Areas (SOA) as determined by CAL FIRE, which are defined as the immediate area surrounding the ignition area².

Weather station EW6860, located approximately 6.5 miles southeast from the incident location, recorded a peak wind speed and gust of 11.0 miles per hour (mph) and 27.0 mph, respectively, at 2250 hours. The ambient condition around the time of ignition was approximately 72 degrees Fahrenheit with a 14% relative humidity.³

Weather station EW9543, located approximately 4.5 miles northwest from the incident location, recorded a peak wind speed and gust of 4.0 mph and 12.0 mph, respectively, at 22:59 hours. The ambient condition around the time of ignition was approximately 70 degrees Fahrenheit with a 13% relative humidity.³

Weather station AA6AV-10, located approximately 7.2 miles east of the incident location, recorded a peak wind speed and gust of 10.0 mph and 14.0 mph, respectively. The ambient condition around the time of ignition was approximately 72 degrees Fahrenheit with a 15% relative humidity.³

² Wildlife Origin & Cause Determination Handbook, National Wildlife Coordinating Group. Revised April 2016. (<https://www.nwcg.gov/sites/default/files/publications/pms412.pdf>)

³ Weather conditions per MesoWest (www.mesowest.utah.edu)

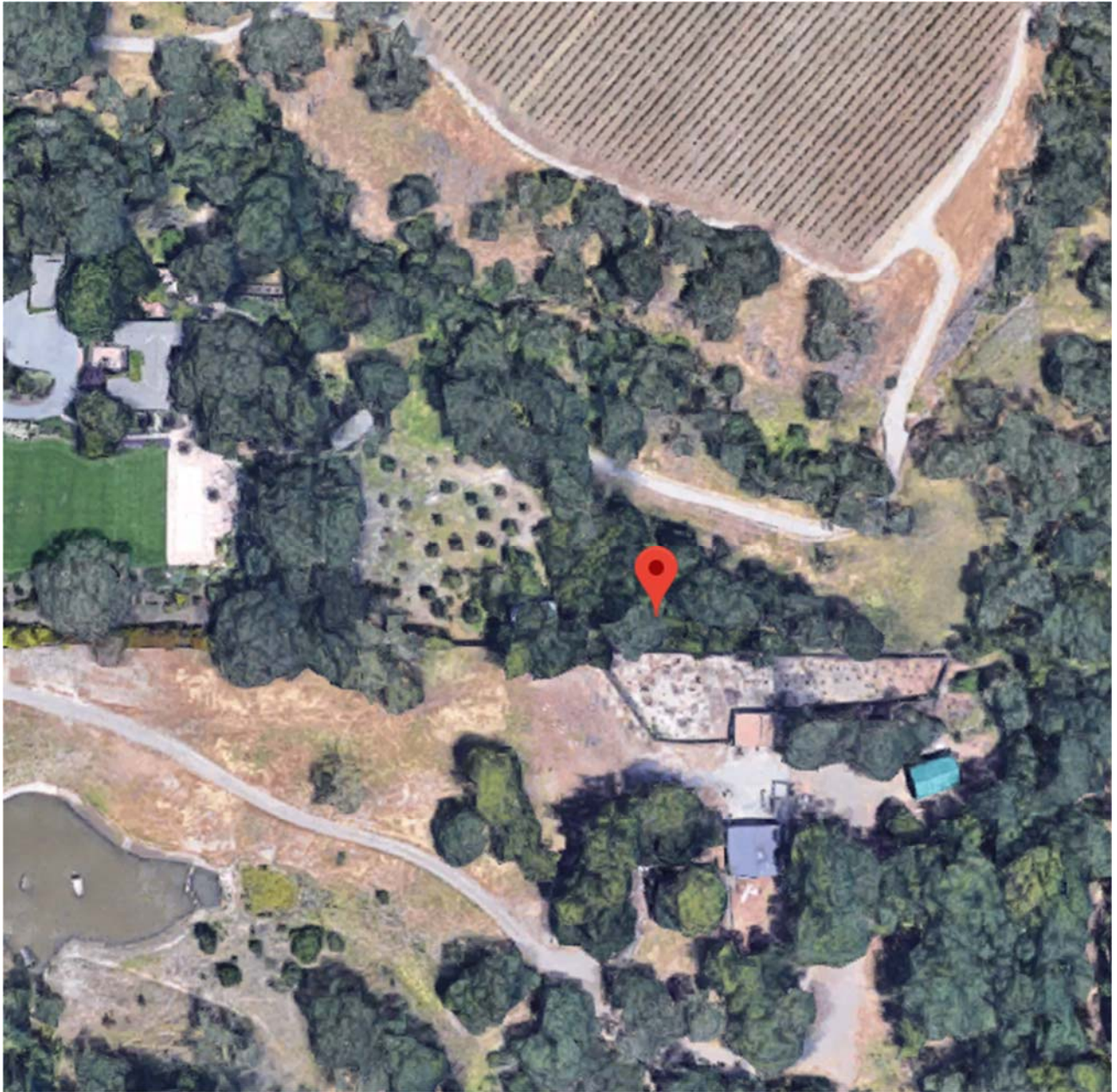


Figure 1: Approximate ignition point/location of the fire via Google Maps.



Figure 2: CAL FIRE Specific Origin Areas for the Norrbom 1 and Norrbom 2 Fires.

On October 20, 2017 at 1703 hours, approximately 12 days after the fire started, PG&E reported the incident to the Safety and Enforcement Division (SED).

III. SED Review and Analysis

A. PG&E's Distribution Facilities Inspection Program

General Order 165 requires biennial patrol inspections and detailed inspections at five-year intervals for rural areas, such as the incident location. Rural areas are defined by GO 165 as “those areas with a population of less than 1,000 persons per square mile”.

GO 165 defines a patrol inspection as a “simple visual inspection” meant to identify “obvious” problems and hazards and may be carried out in the course of other company business. GO 165 defines a detailed inspection as one where facilities are “carefully examined” to gather and record conditions of overhead facilities.

For the incident, SED reviewed the following PG&E distribution patrol and detailed inspection records:

- ... 2010 detailed inspection – Resulted in four Priority E work orders, five Map Corrections, and five 3rd party notifications. One work order required replacement of a leaking overhead transformer. One work order required a pole replacement due to decay and woodpecker holes. One work order required trimming a tree in contact with conductors. The last work order required repair of a broken conductor.
- ... 2014 distribution patrol – No conditions or issues documented.
- ... 2015 detailed inspection – Resulted in 29 work orders, one Map Correction, and three 3rd party notifications. Six work orders required vegetation trimming around a down guy or pole and were assigned as Priorities E and F. One work order required removal of poison oak from around a down guy anchor and was assigned Priority B. Three work orders required filling of woodpecker holes on poles and were assigned Priority E. One work order required replacing a rotten/diseased pole and was assigned Priority E. One work order required replacement of a crossarm and was assigned Priority E.
- ... 2016 distribution patrol – No conditions or issues documented.

Priority B work orders require a completion date within 90 days. Priority E work orders require a completion date within 3-12 months. Priority F work orders require a completion date by the next detailed inspection which would be five years after the most recent detailed inspection was conducted⁴.

B. PG&E's Vegetation Management Program

PG&E performs annual patrols of all primary and secondary distribution lines. PG&E schedules circuits covered by routine patrol to be pruned on an annual basis by the Vegetation Program Manager. PG&E also uses a combination of LiDAR and spectral imagery to allow Vegetation Management to identify hazardous trees in high fire danger areas. Trees identified using these technologies are then inspected from the ground and abated as necessary.

PG&E used two contractors as part of its vegetation management program. Western Environmental Consultants, Inc. conducted the vegetation pre-inspection (PI) to identify tree work while a Tree Contractor (TC), in this case The Davey Tree Expert Company (Davey Tree), conducted the vegetation management work that included trimming or removal. Davey Tree is the prime contractor for this area. PG&E defines a prime contractor as:

⁴ PG&E TD-2305M Electric Distribution Preventative Maintenance (EDPM) Manual. Revised 04/01/16.

“Prime contractors are permitted to engage PG&E-approved subcontractors as necessary to maintain their schedule without advance approval from PG&E. PG&E maintains a system-level list of all tree company subcontractors working for prime contractors, but this is not systematically recorded at the job site level.”

There was no subcontractor recorded for the incident area. Pre-inspection is conducted by a Consulting Utility Forester (CUF), a qualified individual who inspects all vegetation that have the potential to grow into or fall into the primary conductors before the next inspection and vegetation that is currently causing strain/abrasion of secondary conductors.

PG&E's pre-inspection contract specification states the following requirements for a CUF:

“3.2 CONSULTING UTILITY FORESTER I, II, III (CUF-I, II, III), and Post Auditor (PA)

3.2.1 Education/ Experience: As a minimum, a PA/CUF shall have at least two years' experience in line clearance tree pruning work or equivalent experience as determined by the PG&E Representative. It is desired that a PA/CUF have an AA Degree in forestry, arboriculture or a related field, although not required. At start of Work under this Contract, the PA/CUF shall be familiar with the Contractor's work practices, proper arboricultural techniques and practices, proper integrated pest management practices, PG&E's [Vegetation Management Database] VMD and handheld computer, PG&E's Tree Pruning Specification, Pre-Inspection Specification and requirements, and all applicable legal and regulatory requirements.

3.2.2 Basic Responsibility: A PA/CUF is responsible for patrolling distribution circuits and prescribing work to be performed by PG&E's tree contractor, determining when the next trim is required, notifying property owners of tree pruning and tree/brush removal work to be performed relating to this Specification, mapping circuits using PG&E continuity list, managing EC notifications and cases, performing outage investigations and, when necessary, obtaining permits from public agencies, and documenting Work in the VMD using a hand-held computer. In addition the PA/CUF shall be required to use computers and associated software, enter data into and process data from hand-held computers, and prepare for and become certified as an Arborist through the International Society of Arboriculture. As requested by the SCUF, the PA/CUF shall perform all necessary duties for emergency response in accordance with all safety requirements, laws and regulations, and applicable labor agreements.

3.2.3 The PA/CUF shall maintain direct contact with PG&E division personnel, public agencies, and customers as directed by the PG&E Representative.”

SED reviewed PG&E's vegetation management records for the incident area from 2013 to 2017. SED focused on reviewing documented inspections and accompanying

vegetation work orders. PG&E performed vegetation management activities in 2013, 2014, 2015, 2016, and 2017.

CAL FIRE contracted with Mark Porter, an ISA Certified Arborist, to conduct an analysis of the subject tree that failed. In Mr. Porter's report, "Evaluation of California Black Oak Tree Failure" (Attachment B), the subject tree exhibited a branch fracture that showed signs of wood decay. The failed branch was approximately 26 feet long with a column of decay approximately 11 inches in diameter. The branch failure occurred approximately 18.5 feet from the ground. Mr. Porter observed that the tree had a cavity with the decay in the cavity being pre-existing.

A sample of the failed branch was sent to a wood decay lab for analysis. The lab results identified fungal DNA in the sample. Mr. Porter concludes his assessment with the following:

"Decay is often associated with oak tree failures including California black oak. Tree failure statistics, as well as observations at the site, help confirm:

- 1. decay is familiar to the black oak*
- 2. decay is present in the subject tree as confirmed from lab results and visual assessment*
- 3. small pruning wounds are preferred over large pruning wounds that promote entry of decay microorganisms*
- 4. weakened area at fracture point is pre-existing*
- 5. decay weakens wood and is a significant contributing factor to the failure*
- 6. abrasion marks are present on the bark of branches of the subject tree*
- 7. abrasion marks observed on the subject tree branches are consistent with branch contact with distribution lines"*

Mr. Porter also observed abrasions on the bark of branches which indicate contact with high voltage distribution wires.

PG&E's Vegetation Management Distribution Patrol Standard (Version 4, revised 9/12/06)⁵ describes various factors when patrolling or pre-inspecting trees for vegetation work. Under "Hazard Trees/Facility Protection"⁶ the document describes trees that should be identified as such. "Trees that are dead, show signs of disease, decay or ground or root disturbance that may fall into or otherwise impact the primary conductor shall be removed or made facility safe (See Facility Protect Procedure)."⁷

⁵ PG&E Vegetation Management Distribution Patrol Standard, Version 4. Revised 9/12/06.

⁶ PG&E Vegetation Management Distribution Patrol Standard, Version 4, Page 3. Revised 9/12/06.

⁷ PG&E Vegetation Management Distribution Patrol Standard, Version 4, Page 3. Revised 9/12/06.

PG&E's Vegetation Management Hazard Tree Rating and Scoring Procedure⁸ (Utility Procedure: VEG-1015P, dated 10/13/2014) indicates a "Very High" failure potential for the Black Oak species.

The above description of a hazard tree and the tree rating system would apply to this type of Black Oak tree that exhibited visual signs of pre-existing decay. Therefore, PG&E's Vegetation Management Distribution Patrol Standard and VM Hazard Tree Rating contained criteria that could have been used to identify the Black Oak tree that failed and contacted the overhead conductors.

PG&E's vegetation management activities, such as tree removal, are generally performed by specifically trained contractors who have extensive experience in vegetation related work. As the decay was visually evident as noted by Mr. Porter, qualified tree contractors should have identified the black oak for removal prior to the incident occurring.

PG&E's VMQA program audits PG&E facilities for any compliance violations, e.g., GO 95 or Public Resource Code (PRC) Section 4293, while PG&E's VMQC program audits PI and TC personnel for any vegetation work that is missed or not performed correctly. VMQA audits are required to be performed by PG&E's VMQA standard, annually at a minimum. PG&E does not require routine VMQC audits and PG&E describes the VMQC audit locations as "computer-generated" and "randomized".

C. PG&E's Overhead Distribution Facilities' Condition

The incident conductors were size 4CU (Copper) and were installed in 1997 as part of PG&E's Sonoma 1103 12 kV circuit. The subject conductors spanned approximately 360 feet. The conductor sag for each subject conductor at the time of the incident is unknown. The ground clearance for each subject conductor at the time of the incident is also unknown but PG&E provided the following response:

"PG&E has confirmed based on a reasonable search for ground clearance notifications on the subject circuits that no ground clearance issues, at the incident location...were identified from January 1, 2013, to October 8, 2017."

A visual single-line diagram, Figure 3, provided by PG&E shows all protective devices between Sonoma Substation, which feeds the Sonoma 1103 circuit, and the incident area. The symbols are defined in the legend in Figure 4. The incident span was protected by upstream fuses 99309, 5543, Line Recloser 3052 (LR 3052), Line Recloser 418 (LR 418), and the Sonoma 1103 circuit breaker. The brand and type of each protection device is listed under Table 1. A detailed circuit map identifying the

⁸ PG&E Vegetation Management Hazard Tree Rating and Scoring Procedure. Utility Procedure: VEG-1015P. Appendix A, Page 11. Revised 10/13/2014.

locations of the protection devices and the substation relative to the incident location can be found under Attachment E.

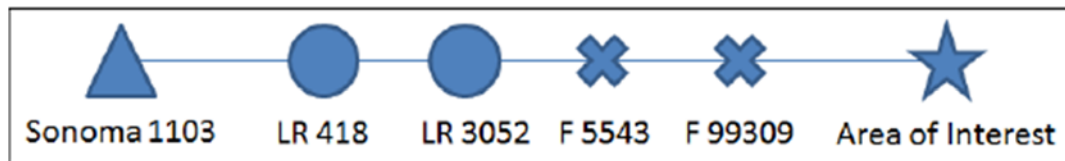


Figure 3: PG&E single-line diagram from the substation to the incident location. The diagram includes all protective devices in-between. Not to scale.

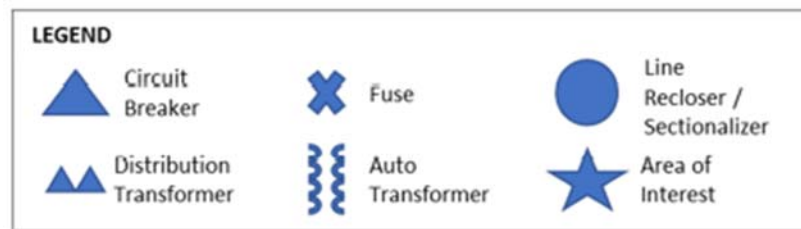


Figure 4: Legend for PG&E single-line diagram.

Device ID	Brand	Type
Sonoma 1103 CB	GE, SEL	F60, 351
LR 418	Cooper	Form 4C
LR 3052	Cooper	Form 6 - PV4
Fuse 5543	Part 24	40T
Fuse 99309	Part 75	10FT

Table 1: List of all source side protection devices from the incident location to Sonoma Substation including brand and type.

The peak load on the Sonoma 1103 circuit within a 12-hour timeframe (six hours prior to and six hours after the incident occurred) was 192.0A. PG&E annually calculates Summer Peak Load forecasts for the subsequent period between April 1 and October 31. The 2017 Summer Peak Load forecasted calculation for the incident circuit was 301.4A.

PG&E identified no abnormal configurations on the Sonoma 1103 circuit within 24 hours prior to the incident start time. An abnormal configuration occurs when additional customers are temporarily added to a circuit. In addition, an abnormal circuit configuration can exist within the same circuit, where a loop exists on a circuit and electricity is sourced from a different section of the same circuit to feed that loop from a different location.

D. PG&E's Overhead Distribution Facilities' Operations and Timing

PG&E provided the timed data for the SCADA devices upstream of the incident location to the substation circuit breaker. The time range of the data extends from 24 hours prior to and 48 hours after the CAL FIRE designated start time. The CAL FIRE designated start times are listed in Table 2.

Incident Name	CAL FIRE Designated Start Date	CAL FIRE Designated Start Time
Potter Redwood	10/8/2017	23:36
Point	10/9/2017	1:10
Cherokee	10/8/2017	21:45
Adobe	10/9/2017	1:00
Sulphur	10/8/2017	23:59
McCourtney	10/9/2017	0:00
Lobo	10/9/2017	0:01
LaPorte	10/9/2017	0:57
Nuns, Norrbom	10/8/2017	22:00

Table 2: CAL FIRE designated start dates and times for several of the October 2017 fires.

SCADA, which stands for Supervisory Control and Data Acquisition, is software that allows for local and remote data collection in real-time and for defined time periods. SCADA is provided in protection devices along circuits to alert personnel as soon as there is a fault or issue on the line. SCADA allows the fault or issue to be isolated quickly and helps mitigate downtime.

The SCADA data from the Sonoma 1103 circuit breaker for the Norrbom Fire is presented in Figure 5.

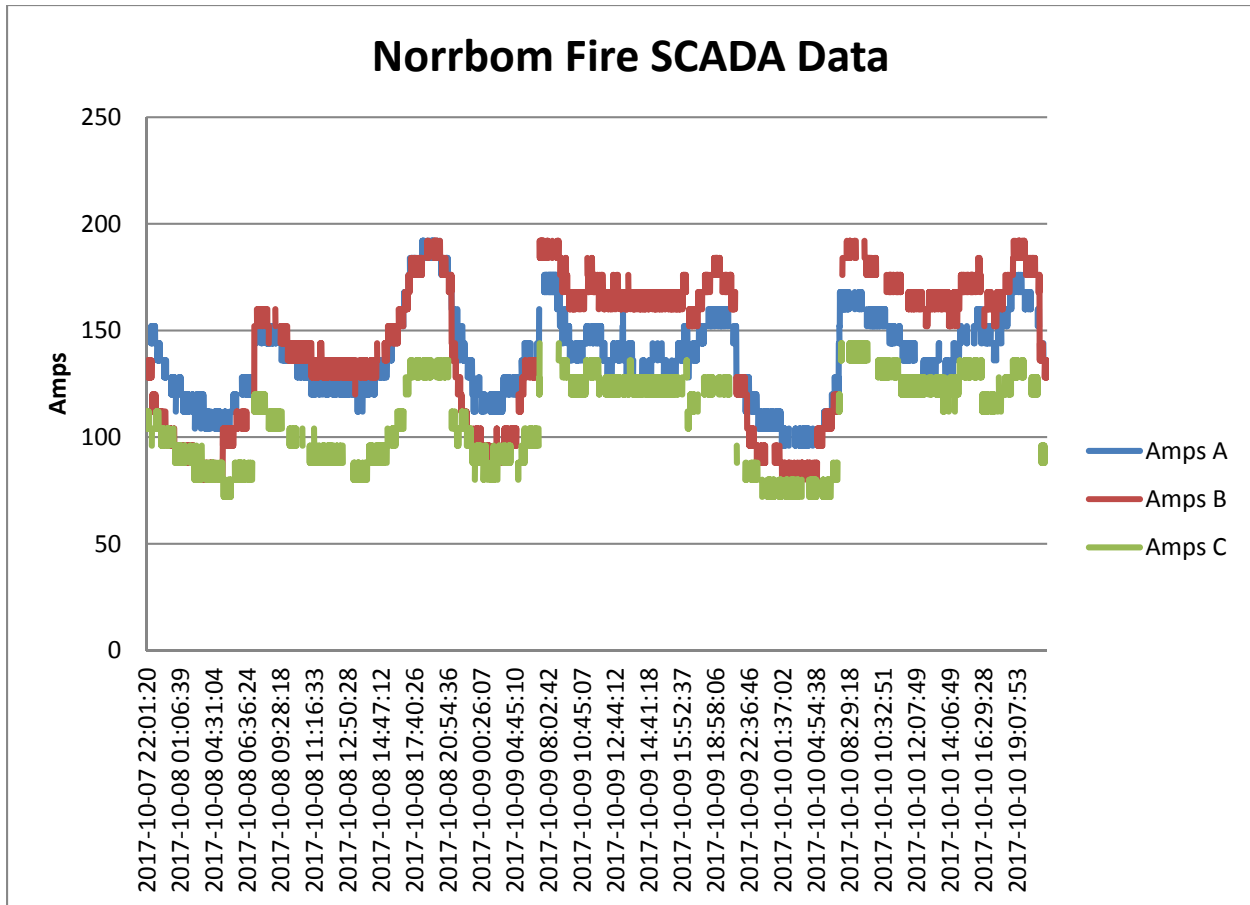


Figure 5: Plot of SCADA data from Sonoma 1103 CB for each phase from 24 hours prior to 48 hours after the CAL FIRE designated start time.

The start time for the Norrbom Fire according to CAL FIRE was 2200 hours on October 8, 2017. Based on Figure 5, on the day of the incident, the circuit experienced an outage between 17:40 and 20:54 hours. The decline in circuit amperage from then on indicates interruption in service either affected by the fire or by protection devices tripping.

i. Event Timeline

PG&E established a timeline of specific equipment operations and actions of PG&E employees at or near the incident locations during the 12 hours prior to the incident start time until the date when CAL FIRE obtained PG&E facilities for evidence, CAL FIRE released the incident scene, or repair and/or restoration work was completed, whichever event came last.

1. October 9, 2017 1308 hours – Based on PG&E records, ten smart meters on the load side of Fuse 99309 recorded NIC Power Down events. Six of these smart meters were downstream of the incident location.

2. October 9, 2017 1319 hours – Based on PG&E records, a smart meter at service point 3918116205 and upstream of the incident location recorded a series of power off/on events until 1353 hours.
3. October 10, 2017 1217 hours – Based on PG&E records, a PG&E troubleman discovered two of three fuses on Fuse 99309 were blown. The troubleman opened the remaining fuse.
4. October 10, 2017 1305 hours – Based on PG&E records, the troubleman reported a wire-down due to a tree six spans on the load side of Fuse 99309. This wire-down location is located three spans to the source side of the incident location.
5. October 11, 2017 1539 hours – Based on PG&E records, a contract crew repaired the line at the wire-down location.
6. October 14, 2017 0352 hours – Based on PG&E records, CAL FIRE requested that the Sonoma 1103 circuit be de-energized east of the intersection of E Napa Street and 2nd Street.
7. October 14, 2017 0413 hours – Based on PG&E records, PG&E troubleman opened Switch 2910, de-energizing the Sonoma 1103 circuit east of the intersection of E Napa Street and 2nd Street, as per CAL FIRE's request. The section of the circuit beyond Fuse 99309, including the incident location, remained de-energized.
8. October 18, 2017 – CAL FIRE visited the incident span with PG&E and collected two primary conductors. Based on PG&E's records, this was PG&E's first visit to the incident span.
9. October 22, 2017 2103 hours – Based on PG&E records, Fuse 99309 was closed, restoring power to the incident location.

IV. SED Site Visit and Evidence Viewing

On October 18, 2017, SED conducted a site visit of the Norrbom 1 Fire SOA. The Site Visit Observation Report can be found in Attachment F. The following observations were made during the site visit by SED:

"The first pole, located uphill, had multiple two-phase primary spans running across it and a small transformer. The incident span was on the highest primary level. Based off Figure 1, the leftmost phase is the field phase while the other is the road phase. The pole also had fuses that did not trip during the incident. Both phases on the incident span had splices on them. A communications cable ran below the incident span. At mid-span, the comm. cable had a lashing wire dangling from it.

Surveying the area under the span, there was a burnt tree stump six feet from the field phase. Another burnt tree stump was found 10-15 feet from the road phase (Figure 3). The hill dips down into the vineyard which runs

along the next hill over. The surrounding area had a significant amount of trees and brush."

On March 29, 2018, SED attended a PG&E evidence collection located at 16700 Gehricke Road in the city of Sonoma. A tree approximately six to seven feet uphill from the conductor span had fallen. CAL FIRE took a three to four foot section of the tree while PG&E collected the rest. This location is most likely the Norrbom 2 Fire SOA.



Figure 6: Two sections of the fallen tree. CAL FIRE took possession of the approximate 3-4' section of the tree that is missing.



Figure 7: Burned base of the fallen tree.

On June 11, 2018, SED conducted an evidence viewing of evidence PG&E obtained for all October fires. According to PG&E, for the Norrbom Fire, PG&E collected “a downed tree three spans to the source side of the incident location on March 29, 2018.” This coincides with the fallen tree mentioned in the March 29, 2018 PG&E evidence collection.



Figures 8 & 9: The fallen tree PG&E took in possession on March 29, 2018.

On November 6, 2018, SED conducted an evidence viewing of all evidence CAL FIRE took in possession for the Norrbom Fire. A list of all evidence CAL FIRE procured for the Norrbom Fire can be found in Attachment D.

V. CAL FIRE's Investigation

CAL FIRE's investigation report (Attachment A) determined that, for the Norrbom 1 Fire, "the fire was caused by a tree, due to rot and in combination with wind, falling into electrical conductor lines owned by PG&E. Burning tree material or sparks fell to the ground litter below and ignited the fire."

The investigator references the origin and cause investigation conducted by CAL FIRE Battalion Chief Bergland. Chief Bergland's Supplementary Investigation Report is referenced in Attachment 9 of CAL FIRE's investigation report (Attachment C to this report) and is titled, "Chief BERGLAND Norrbom 1 Origin and Cause Investigation Report." In this investigation report, Chief Bergland states on Page 2, Lines 16-26:

"It is my opinion the fire was caused by a tree falling into electrical conductors owned by the Pacific Gas and Electric Company. Evidence located in the SOA indicated an oak tree trunk broke from an oak tree

stump due to rot and in combination with wind. I believe the tree trunk did not immediately separate from the trunk. The upper branches of the tree trunk became in contact with the downhill or northern electrical conductor and slid for a bit. The branches came to rest on the electrical conductor causing burn marks on the upper tree limbs. Burning tree material or sparks fell to the ground litter below and ignited the fire. Due to additional wind or gusts, the tree branches became dislodged from the electrical conductor and the tree trunk became dislodged from the tree stump, causing the tree trunk to fall to the ground and the branches coming to rest on the telephone line. Evidence of slide marks above and below the burn marks on the upper branches support my opinion.”

CAL FIRE cites Mr. Porter’s report, “The report from PORTER stated; The decay located at the fracture point (point of failure) indicate to [PORTER] pre-existing defects were present on this oak tree prior to the incident.”

CAL FIRE additionally found that, “Documents provided by PG&E appear to identify a location in close proximity to the Norrbom 1 SOA, where inspections were performed and identified work to be performed in 2014, 2015, and 2016.”

CAL FIRE found PG&E in violation of California Public Resources Code (PRC) §4293 and §4421 and California Health and Safety Code §13007.

PRC §4293 requires PG&E to maintain a four-foot clearance in all directions between all vegetation and all conductors operating at 2,400 or more volts, but less than 72,000 volts.

PRC §4421 states:

“A person shall not set fire or cause fire to be set to any forest, brush, or other flammable material which is on any land that is not his own, or under his legal control, without the permission of the owner, lessee, or agent of the owner or lessee of the land.”

HSC §13007 states:

“Any person who personally or through another willfully, negligently, or in violation of law, sets fire to, allows fire to be set to, or allows a fire kindled or attended by him to escape to, the property of another, whether privately or publicly owned, is liable to the owner of such property for any damages to the property caused by the fire.”

For the Norrbom 2 Fire, CAL FIRE determined the origin and cause of this second fire to be the result of the Norrbom 1 Fire escaping through the handline⁹.

⁹ A handline is a firefighting hose that is operated and maneuvered by firefighters.

VI. Conclusion

Based on the evidence that SED reviewed, SED's investigation found the following:

- ... PG&E violated GO 95, Rule 31.1, by failing to maintain their facilities to allow for safe, proper, and adequate service. PG&E failed to identify a hazardous tree condition despite the tree having visible defects, decay, and rot. PG&E did not take the appropriate steps to prevent the subject tree from falling into the overhead conductors. PG&E did not document the subject tree for trim or removal.
- ... PG&E violated GO 95, Rule 35, by failing to maintain the rule's clearance requirements for the hazardous subject tree that fell into the overhead conductors.

If SED becomes aware of additional information that could modify SED's findings in this Incident Investigation Report, SED may re-open the investigation and may modify this report or take further actions as appropriate.

VII. Attachments

Attachment A – CAL FIRE Investigation Report

Attachment B – CAL FIRE Arborist Report by Mark Porter

Attachment C – CAL FIRE Origin and Cause Investigation Report

Attachment D – CAL FIRE Evidence List

Attachment E – PG&E Sonoma 1103 Circuit Map

Attachment F – CPUC Site Visit Observation Report

ATTACHMENT A

CAL FIRE Investigation Report

1 - VIOLATIONS:**California Public Resources 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.

California Public Resources Code §4421.

A person shall not set fire or cause fire to be set to any forest, brush, or other flammable material which is on any land that is not his own, or under his legal control, without the permission of the owner, lessee, or agent of the owner or lessee of the land.



California Health and Safety Code §13007

Any person who personally or through another willfully, negligently, or in violation of law, sets fire to, allows fire to be set to, or allows a fire kindled or attended by him to escape to, the property of another, whether privately or publicly owned, is liable to the owner of such property for any damages to the property caused by the fire.

2 - SUMMARY:

On Sunday, October 8th, 2017, at approximately 10:35 PM, Redwood Empire Dispatch and Communications Authority (REDCOM) dispatched a reported structure fire in the area of 16250 Norrbom Road, near the city of Sonoma. Arriving resources found a vegetation fire approximately one quarter acre in size with no structures involved, the incident was named the Norrbom Fire. For the purpose of this report, further references to this fire will be made as the Norrbom 1 Fire. The origin and cause investigation determined the Norrbom 1 Fire was caused by a tree falling into electrical conductors, owned by Pacific Gas and Electric Company (PG&E), which caused burning tree material or sparks to fall and ignite the ground litter below.

On Monday, October 9th, 2017, at approximately 12:40 PM, resources responded to a report of a smoke column in the area of Norrbom Road and Gehricke Road, near the city of Sonoma. The fire was described as thirty to forty acres in size, in the drainage and on the hillside above the Norrbom 1 Fire, the incident was named the Norrbom Fire. For the purpose of this report, further references to this fire will be made as the Norrbom 2 Fire. The origin and cause investigation of the Norrbom 2 Fire determined it was the result of the Norrbom 1 Fire escaping through handline.

The Norrbom Fire was considered a single incident with one incident number. The Norrbom Fire burned approximately 1,836 acres before it combined with, and became, the Nuns Fire.

3 – SUSPECT:

Pacific Gas and Electric Company
77 Beale Street 24th Floor
San Francisco, California 94105

4 - VICTIMS

V-1 4400 Cavedale Associates

APN 053-060-034

V-2 BARBER, Paul and Christina

APN [REDACTED]

V-3 Bismark Group

APN 034060005000

034110001000

V-4 CAIN, Ronald Jay

APN [REDACTED]

V-5 COTURI, Phillip Joseph and KREMER, Arden Beth

APN [REDACTED]

V-6 Devils Canyon LLC

APN 034110033000

V-7 ENGLESBE, Andrew and Laurie

APN [REDACTED]

V-8 FARM, Sky

APN [REDACTED]

V-9 GOLD, Ronald and Eileen

APN [REDACTED]

1 V-10 HAMMETT, Kirk and Lani

2 APN [REDACTED]

4 V-11 HANNA, Elias

5 APN [REDACTED]

7 V-12 HANNA, Christine and MADDEN, Noel

8 APN [REDACTED]

11 V-13 HAWLEY, William and Susan

12 APN [REDACTED]

16 V-14 Icon LLC

17 APN 127-011-030

19 V-15 KAMEN, Robert and The Robert KAMEN Living Trust

20 APN [REDACTED]

22 V-16 KEEN, Samuel

23 APN [REDACTED]

25 V-17 KOESTERICH, Russell and Alice

26 APN [REDACTED]

28 V-18 KUBLER, Warren and The Warren H. KUBLER Survivors Trust

29 APN [REDACTED]

1 V-19 LAYMAN, Lynn

2 APN [REDACTED]

4 V-20 MCADAMS, Steven and KOPLOW, Hilarie

5 APN [REDACTED]

7 V-21 MCADAMS KOPLOW Family Trust and KOPLAW, Hilarie

9 V-22 Momtazee Real Estate Investment LLC

10 APN 127-011-001

12 V-23 Mountain Estates Vineyards LLC

13 APN 127-011-025

15 V-24 MXB Family Limited Partnership

16 APN [REDACTED]

23 V-25 Napa County Land Trust

24 APN 034110050000

25 034110053000

26 034110055000

27 034110056000

28 034110057000

29 034110058000

1 V-26 NORRBOM, Peter and Peter NORRBOM Trust

2 APN [REDACTED]

3 V-27 PRICE, Charles and Carol

4 APN [REDACTED]

6 V-28 SIMONS, Nathaniel and BAXTER SIMONS, Laura

7 APN [REDACTED]

11 V-29 Terra LLC

12 APN 034110004000

14 V-30 ZUCKERMAN, David and ROSENBERG, Elsa

15 APN [REDACTED]

18 List was compiled based on the last available perimeter map of the Norrbom Fire before
19 it combined with, and became, the Nuns Fire.

WITNESSES:

CAL FIRE Battalion Chief Vince BERGLAND

1234 East Shaw Avenue

Fresno, California 93710

(559) 243-4115

Assisted in the origin and cause investigation of the Norrbom Fire.

CAL FIRE Assistant Chief Shawn ZIMMERMAKER

6105 Airport Road

Redding, California 96002

(530) 226-3477

Requested Chief BERGLAND to respond to the Norrbom Incident to conduct an origin and cause investigation.

Ken FINN

Schell Vista Fire Protection District, Board Member

(707) 217-0328

Was riding with MULAS on Monday, October 9, 2017, when they located the Norrbom 2 Fire.

Mike MULAS

Schell Vista Fire Protection District, Assistant Chief

22950 Broadway

Sonoma, California 95476

Office (707) 938-2633

Cell (707) 695-8930

Responded to the Norrbom 1 and Norrbom 2 Fires.

1 Patrick Michael LECOMPTE

2 [REDACTED]
3 [REDACTED]

4 [REDACTED]

5 CA DL [REDACTED]

6 DOB: [REDACTED]

7 Contractor working for PG&E whose crew fixed conductor lines within the fire area.

8
9 CAL FIRE Fire Captain Mark HILSKOTTER

10 697 CA-36

11 Susanville, California 96130

12 (530) 257-4171

13 Assisted with the origin and cause investigation of the Norrbom Fire.

14
15 CAL FIRE Assistant Chief Dan WHITE

16 6105 Airport Road

17 Redding, California 96002

18 (530) 226-3477

19
20 SVT Gruppe INC

21 PO Box 270

22 Napa, California 94559-0270

23 (707) 927-2200

24 Provided security of the Norrbom 1 and Norrbom 2 GOA's.

25
26 Mark's Tree Service and Consulting Arborist Mark PORTER

27 [REDACTED]
28 [REDACTED]

29 [REDACTED]

30 Evaluated the subject tree in the Norrbom 1 Fire.

1 Jeff HARMON

2 [REDACTED]
3 [REDACTED]

4 Cell [REDACTED]

5 Saw the smoke on Monday, October 9, 2017, from the Norrbom 2 Fire and called 911.

7 CAL FIRE Battalion Chief Matt GILBERT

8 785 Mountain Ranch Road

9 San Andreas, California 95249

10 (209) 754-3831

11 Brought the survey team to the Norrbom Fire.

13 CAL FIRE Senior Land Surveyor James DEGRAFF

14 Technical Services Section

15 1300 U Street, Suite 100

16 PO Box 944246

17 Sacramento, California 94244-2460

18 (916) 445-7804

20 CAL FIRE Transportation Survey Party Chief Jeff GAWRONSKI

21 Technical Services Section

22 1300 U Street, Suite 100

23 PO Box 944246

24 Sacramento, California 94244-2460

25 (916) 445-7804

27 CAL FIRE Fire Captain Sean JERRY

28 1199 Big Tree Road

29 Saint Helena, California 94574

30 (707) 967-1400

31 Assisted with the collection of evidence from the Norrbom 1 Fire.
LE80 (Rev. 7/2011)

1 Phillip COTURRI

2 [REDACTED]
3 [REDACTED]

4 Cell [REDACTED]

5 CA DL: [REDACTED]

6 DOB: [REDACTED]

7 Saw the glow of fire (Norrbon 1 Fire) and emergency lights from his home on Sunday,
8 October 8, 2017. Went to the location of the Norrbom 2 Fire on the morning of Monday,
9 October 9, 2017, to attempt suppression.

10
11 CAL FIRE Battalion Chief Jake DELLAMONICA

12 6059 Highway 9

13 Felton, California 95018-0316

14 (831) 335-5355

15 Spoke to J. HARMON at the Norrbom Fire.

16
17 Suzanne HARMON

18 [REDACTED]
19 [REDACTED]

20 Cell [REDACTED]

21 On Monday, October 9, 2017 at approximately 7:15 AM, she saw smoke down canyon,
22 to the south west of her residence (Norrbon 2 Fire).

23
24 CAL FIRE Fire Captain Gary UBOLDI

25 1199 Big Tree Road

26 Saint Helena, California 94574

27 (707) 967-1400

28 Assisted with evidence collection and conducted an interview with J. HARMON and S.
29 HARMON.

1 PG&E Senior Claims Investigator Maria DE LUCA

2 300 Burnell Street

3 Napa, California 94559

4 (707) 331-5953

5 Was present when electrical conductor lines were collected from Norrbom 1 Fire.

7 California Public Utilities Commission Engineer Wilson TSAI

8 505 Van Ness Avenue

9 San Francisco, California 94102

10 (415) 703-2236

12 California Public Utilities Commission Engineer Raymond CHO

13 505 Van Ness Avenue

14 San Francisco, California 94102

15 (415) 703-1359

17 Peter NORRBOM

20 Home [REDACTED]

21 Cell [REDACTED]

22 CA DL: [REDACTED]

23 DOB: [REDACTED]

24 Was alerted of the Norrbom 1 Fire on Monday, October 9, 2017, by his employee Juan
25 HERRERA.

27 Juan Pablo Raya HERRERA

30 Cell [REDACTED]

31 Washington DL: [REDACTED]

LE80 (Rev. 7/2011)

1 Worked for NORRBOM. Went to NORRBOM's property at approximately 5:30 AM on
2 Monday, October 9, 2017. Saw the fire hoses and the Norrbom 1 Fire. Attempted to
3 extinguish a flaming tree with water from a bucket. Advised NORRBOM of the fire.
4 Returned to NORRBOM's property between 9:00 AM and 10:00 AM and saw the
5 Norrbom 2 Fire.

6
7 Robert KAMEN

8 DOB: [REDACTED]

9 CA DL: [REDACTED]

10 [REDACTED]
11 [REDACTED]

12 Home: [REDACTED]

13 Cell: [REDACTED]

14 Saw the Norrbom 1 Fire on October 8, and called 911, the next morning he saw the fire
15 had flared up in the same area as the night prior (Norrbom 2 Fire).

16
17 Laurence DICKINSON

18 DOB: [REDACTED]

19 CA DL: [REDACTED]

20 [REDACTED]
21 [REDACTED]

22 Cell: [REDACTED]

23 General Manager for the properties at 16705 and 16250 Norrbom Road. Responded to
24 the properties from his residence at the time of the fire and took digital photographs.

25
26 JH Nolt and Associates, James Nolt

27 [REDACTED]
28 [REDACTED]
29 [REDACTED]

30 Reviewed photographs of evidence.

5 - EVIDENCE:

Collected from Norrbom 1 Fire

Evidence Item #1

Base of branch. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:56AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-A

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-B

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-C

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-D

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

1 Evidence Item #1-E

2 Branch with charring. Excised from branch which fell from tree. Collected on
3 October 15, 2017, at 12:00 PM and secured in the CAL FIRE Middletown
4 evidence storage at 3:37 PM.
5

6 Evidence Item #2

7 Conductor line from downhill side of pole, marked with white tape. Collected on
8 October 18, 2018, at 12:44 PM and secured in the CAL FIRE Santa Rosa
9 evidence storage at 3:23 PM.
10

11 Evidence Item #3

12 Conductor line from uphill side of pole, marked with red tape. Collected on
13 October 18, 2018, at 1:12 PM and secured in the CAL FIRE Santa Rosa
14 evidence storage at 3:23 PM.
15
16

17 At the times of evidence collection, I was not aware if an incident number had been
18 assigned to the Norrbom Fire. Once the incident number was obtained, it was added to
19 the evidence tags.
20
21
22
23
24
25
26
27
28
29
30
31

6 – CONDITIONS:

The Norrbom 1 and Norrbom 2 GOA's were located in an area of predominantly grass and oak woodland. The area was generally flat transitioning down in a north facing slope. The Norrbom 1 GOA contained multiple trees and associated ground litter including leaves. The Norrbom 2 GOA was predominantly grass with more brush and trees towards the east.

Weather**STATION INFO**

ID: F11WW

NAME: Sonoma Valley - Bedrock

LATITUDE: 38.33951

LONGITUDE: -122.50504

ELEVATION: 173 ft

MNET: WWG-SONOMA

LAND COVER: 2001 USGS

DATA COURTESY OF:

Western Weather Group

Distance from GOA's approximately 3.45 miles northeast.

Norrbom 1

October 8, 2017, at 10:00 PM:

Temperature: 72.4°F

Relative Humidity: 10%

Wind: N at 10.6 MPH with gusts to 30.9 MPH

October 8, 2017, at 11:00 PM:

Temperature: 71.6°F

Relative Humidity: 10%

Wind: N at 11.9 MPH with gusts to 40.3 MPH

Norrbon 2

October 9, 2017 at 5:00 AM:

Temperature: 68.7°F

Relative Humidity: 10%

Wind: NNW at 8.2 MPH with gusts to 20.2 MPH

October 9, 2017 at 8:00 AM:

Temperature: 68.2°F

Relative Humidity: 11%

Wind: N at 8.1 MPH with gusts to 20.5 MPH

STATION INFO

ID: F62WW

NAME: Sonoma SE - Napoli

LATITUDE: 38.26403

LONGITUDE: -122.41541

ELEVATION: 70 ft

MNET: WWG-SONOMA

LAND COVER: 2001 USGS

DATA COURTESY OF:

Western Weather Group

Distance from GOA's approximately 4.8 miles southeast.

Norrbon 1

October 8, 2017, at 10:00 PM:

Temperature: 74.8 °F

Relative Humidity: 11%

Wind: NNE at 9.8 MPH with gusts to 30.6 MPH

October 8, 2017, at 11:00 PM:

Temperature: 73.7 °F

Relative Humidity: 11%

Wind: NNE at 13.2 MPH with gusts to 32.9 MPH

Norrbon 2

October 9, 2017, at 5:00 AM:

Temperature: 68.2°F

Relative Humidity: 14%

Wind: N at 5.7 MPH with gusts to 15.8 MPH

October 9, 2017 at 8:00 AM:

Temperature: 68.3°F

Relative Humidity: 13%

Wind: NNW at 7.5 MPH with gusts to 22.2 MPH

7 – VEHICLE/EQUIPMENT:

No vehicles or equipment to report.

8 - PROPERTY:

The Norrbom Incident originated on the following property:

APN: [REDACTED]

Address: [REDACTED]

Owners: SIMONS, Nathaniel Henry and BAXTER-SIMONS, Laura – [REDACTED]

Norrbom 1 Fire SOA

Latitude: [REDACTED]

Longitude: [REDACTED]

Norrbom 2 Fire SOA

Latitude: [REDACTED]

Longitude: [REDACTED]

9 - NARRATIVE:

On Sunday, October 8, 2017, at approximately 10:35 PM, REDCOM dispatched a reported structure fire in the area of 16250 Norrbom Road, near the city of Sonoma. Arriving resources found a vegetation fire approximately one quarter acre in size with no structures involved, the incident was named the Norrbom Fire (Norrbom 1 Fire).

On Monday October 9, 2017, at approximately 12:40 PM, resources responded to a report of a smoke column in the area of Norrbom Road and Gehricke Road, near the city of Sonoma. The initial report on conditions was thirty to forty acres in size, in the drainage and on the hillside above the Norrbom 1 Fire, the incident was named Norrbom (Norrbom 2 Fire).

The Norrbom Fire (Norrbom 1 Fire and Norrbom 2 Fire) was initially part of the LNU Southern Complex and was subsequently moved to the LNU Central Complex. The last available perimeter map of the Norrbom Fire showed 1,836 acres burned, as of October 10th, 2017. The Norrbom Fire later combined with, and became, the Nuns Fire.

On Wednesday, October 11, 2017 at approximately 12:30 PM, CAL FIRE Battalion Chief Vince BERGLAND was requested by CAL FIRE Assistant Chief Shawn ZIMMERMAKER to respond to the Norrbom Fire to investigate the origin and cause. (See Attachment 10)

Chief ZIMMERMAKER provided Chief BERGLAND with contact information for Ken FINN and advised him FINN may have had information regarding the fire. Chief BERGLAND called FINN who told him he was riding with Schell Vista Fire Protection District (SVFPD) Assistant Chief Mike MULAS on Monday, October 9, and they located a vegetation fire at 16250 Norrbom Road (Norrbom 2 Fire). FINN provided Chief BERGLAND with contact information for Chief MULAS. (See attachment 10)

On Wednesday, October 11th, Chief BERGLAND met with Chief MULAS in the City of Sonoma. Chief MULAS told Chief BERGLAND he responded on October 8, 2017, at

1 10:37 PM with SVFPD resources to a reported structure fire at 16250 Norrbom Road.
2 Chief MULAS led Chief BERGLAND to the location of the fire at approximately 1:50 PM.
3 Chief MULAS told Chief BERGLAND; upon arrival, he found a vegetation fire
4 approximately one quarter acre in size with no structures involved (Norrbon 1 Fire).
5 Chief MULAS reported winds out of the north at approximately 40 MPH and gusting to
6 approximately 55 MPH. Chief MULAS told Chief BERGLAND firefighters kept the fire
7 south of the gravel road and east of the water tanks. The east side of the fire was
8 contained by a hose lay and firefighters cut handline on the east flank. On Wednesday,
9 October 9, 2017 at approximately 12:40 PM, Chief MULAS and FINN were advised of a
10 smoke column. They responded to the area and located what Chief MULAS described
11 as a vegetation fire, thirty to forty acres in size immediately north east of the fire which
12 he responded to the night prior (Norrbon 1). He told Chief BERGLAND, the fire was in
13 the drainage and on the hillside above the previous quarter acre fire. (See attachment
14 10)

15
16 Following the interview with Chief MULAS, Chief BERGLAND began the origin and
17 cause investigation of the Norrbom 1 Fire. Chief BERGLAND walked the perimeter of
18 the fire counter clockwise, starting at the fence line where the hand line was tied in.
19 Chief BERGLAND observed the fence to be to separate fences approximately four feet
20 apart. The area of fencing he walked through was partially cut, there was firefighting
21 hose in the opening, some of which was burned. Chief BERGLAND observed the area
22 between the two fences to be burned connecting the Norrbom and Norrbom 2 (P-VB-
23 035, 041). Chief BERGLAND walked down the handline to the north towards the gravel
24 road. At the gravel road, he observed the handline appeared to be incomplete and
25 contained burned vegetation outside the handline (P-VB-043). He walked up the fence
26 line towards the south (P-VB-050). Chief BERGLAND observed macro indicators, angle
27 of char, depth of char, and scorch marks on three trunks and at the base of small
28 bushes. He noticed suspended electrical conductors in an east and west direction over
29 the burned area. Chief BERGLAND returned to the gravel road and walked back and
30 forth from the east and west working from north to south. As he entered the brush area
31 he started dropping colored flags at observed fire spread indicators. This area became
LE80 (Rev. 7/2011)

1 his general origin area (GOA) approximately 50 feet x 50 feet (P-VB-051 thru 056). The
2 flag colors indicate, blue for backing fire, yellow for lateral spread and red for advancing
3 fire. He came to an area where he found it difficult to locate spread indicators due to
4 heavy foot traffic and firefighting efforts. This area was approximately 15 feet by 20 feet
5 (P-VB-054, 055). Chief BERGLAND located a burned tree trunk and observed it was
6 resting on a telephone line (P-VB-061, P-VB-132 thru 136). Directly above the phone
7 line were electrical conductors (P-VB-057). He determined the burned tree trunk came
8 from a tree stump approximately six feet away. It appeared the trunk was that of the
9 main tree and broke off the tree stump approximately 18 feet 6 inches from the ground
10 level. He observed the tree stump did not have any indications of burning at the point of
11 failure (P-VB-068 thru 072, P-VB-119 thru 121). Chief BERGLAND observed several
12 scrape marks and four burn marks on the branches (P-VB-073 thru 105, P-VB-122 thru
13 131). He determined the 15 foot by 20 foot, area to be his specific origin area (SOA).
14 He was unable to locate macro or micro indicators in the SOA due to firefighting efforts.
15 It is Chief BERGLAND's opinion the fire was caused by a tree falling into electrical
16 conductors owned by PG&E. Evidence in the GOA indicated an oak tree trunk broke
17 from an oak tree stump due to rot and in combination with wind. The upper branches of
18 the tree became in contact with the downhill or northern electrical conductor. The
19 branches came to rest on the electrical conductor causing burn marks on the upper tree
20 limbs. Burning tree material or sparks fell to the ground litter below and ignited the fire.
21 (See attachment 9)

22
23 At approximately 3:30 PM, Chief BERGLAND began to investigate the Norrbom 2 Fire.
24 He contacted an individual named Patrick LECOMPTE, who told him he was working as
25 a contractor for PG&E. LECOMPTE told Chief BERGLAND he and his crew were
26 repairing broken electrical conductor lines approximately 500 feet up the hill, as directed
27 by PG&E. LECOMPTE said it appeared a tree came down and broke two electrical
28 conductor lines in one span. Chief BERGLAND walked with LECOMPTE to the area
29 being repaired. Chief BERGLAND saw one line had been repaired and the crew was
30 working on repairing the second line. Chief BERGLAND requested the cut ends of both
31 electrical conductor lines. LECOMPTE and his crew did not keep the cuts from the first
LE80 (Rev. 7/2011)

1 line and Chief BERGLAND and LECOMPTE were not able to locate them on the
2 ground. They cut the ends from the remaining electrical conductor line and provided
3 them to Chief BERGLAND as items of interest. (See attachment 10)
4

5 On Wednesday, October 11, 2017, at 12:36 PM, CAL FIRE Battalion Chief Joe
6 BALDWIN requested me to respond to the Norrbom Fire, located near the city of
7 Sonoma, to assist with the origin and cause investigation.
8

9 When I arrived at Norrbom Road, I had to pass through a law enforcement check point
10 to access the area. I met with Chief BERGLAND, on Norrbom Road, at approximately
11 5:05 PM. Chief BERGLAND told me, while attempting to locate the GOA of the
12 Norrbom 2 Fire he also located what appeared to be an earlier fire, approximately one
13 quarter acre in size, with evidence of suppression efforts (Norrbom 1 Fire). Chief
14 BERGLAND told me he believed there was only a local government response to the
15 Norrbom 1 Fire with no notification to, or response from CAL FIRE. Chief BERGLAND
16 told me he had also contacted an electrical contractor company working on electrical
17 conductor lines to the east. Chief BERGLAND and I walked the fire area looking at
18 macro and micro fire pattern indicators and discussed his initial observations of
19 Norrbom 1 and Norrbom 2. Visibility was poor due to the time of day and smoke
20 conditions, the decision was made to suspend the investigation until the next morning. I
21 secured the origin area until I was relieved by Chief BERGLAND on October 12, at 7:33
22 AM.
23

24 On October 12, Chief BERGLAND proceeded to the location where the PG&E
25 contractors were doing work the day prior. After observing fire spread indicators Chief
26 BERGLAND determined backing fire from the Norrbom 2 Fire moved through the area
27 and burned the base of the oak tree causing the tree to fall and sever the electrical
28 conductor lines. (See attachment 10)
29

30 At approximately 11:00 AM, CAL FIRE Fire Captain Mark HILLSKOTTER arrived and
31 assisted Chief BERGLAND (See Attachment 13). They found leaves and small
LE80 (Rev. 7/2011)

1 branches of the fallen oak tree were noted to be in contact with burned ground litter but
2 did not appear to be burned or scorched. This confirmed the fire had burned through
3 the area, and cooled prior to the oak tree falling. Chief BERGLAND excluded the
4 downed tree and electrical conductors as the cause of the Norrbom 2 Fire and
5 discarded the two electrical conductor ends he had obtained. (See attachment 10)
6

7 On October 12, at approximately 4:09 PM, I returned to the scene. I met with Chief
8 BERGLAND, Captain HILLSKOTTER, Chief ZIMMERMAKER and CAL FIRE Assistant
9 Chief Dan WHITE to receive an update on the status of the investigation. It was
10 decided that we would order an arborist for expert evaluation of a tree, a Land
11 Surveying Team capable of using Light Detection and Ranging (LIDAR) survey
12 technology to assist with scene documentation and security to continue securing the
13 scene for the duration of the investigation. It was decided that Chief BERGLAND would
14 continue working on the origin and cause investigation of the Norrbom 1 Fire and I
15 would work on the origin and cause of the Norrbom 2 Fire. Chief ZIMMERMAKER
16 would facilitate follow up with the ECC to ascertain if there was in incident number for
17 the Norrbom Fire.
18

19 Captain HILLSKOTTER and I began the origin and cause investigation of the Norrbom
20 2 Fire. We walked the area noting macro and micro fire pattern indicators including but
21 not limited to; angle of char, sooting, staining, protection, ash deposits and stem fall.
22 Using prior discussions, observations and interpreting fire pattern indicators, we
23 identified a GOA of approximately forty feet by sixty feet. I took digital photographs of
24 the GOA (See Attachment 7, IMG_0002.JPG through IMG_0005.JPG). The location of
25 the GOA was also supported by the statement from Chief MULAS and later statements
26 from P. COTURRI and HERRERA.
27

28 I noted the north most portion of handline, at the dirt road, contained areas which were
29 not completely cleared to bare mineral soil with small areas containing burned
30 vegetation, as pointed out by Chief BERGLAND. The totality of fire pattern indicators
31 showed a combination of lateral and backing fire spread towards this area, from the
LE80 (Rev. 7/2011)

1 south.

2
3 At approximately 6:56 PM, a security guard from SVT Security arrived at scene. I
4 briefed him on his responsibilities and provided him my contact information. SVT
5 Security maintained 24 hour scene security through the duration of the investigation,
6 until released on October 18, at approximately 1:54 PM. I checked in with the security
7 guards daily. Due to lack of available light, Chief BERGLAND, Captain HILLSKOTTER
8 and I departed the scene for the night.

9
10 I returned to the scene on Friday, October 13, at approximately 7:52 AM, and met with
11 Chief BERGLAND and Captain HILLSKOTTER. Captain HILLSKOTTER and I walked
12 two laps, each in opposing direction, around the Norrbom 2 Fire GOA. Captain
13 HILLSKOTTER and I continued processing the GOA using colored pin flags to mark fire
14 pattern indicators as they were located; red flags represented advancing fire spread
15 indicators, yellow flags represented lateral fire spread indicators, and blue flags
16 represented backing fire spread indicators. We identified macro and micro fire pattern
17 indicators including but not limited to; angle of char, sooting, staining, protection, ash
18 deposits and stem fall. We continued in a serpentine pattern, working around the
19 fences in the area, working back through advancing indicators. We narrowed the GOA
20 down to a SOA of approximately four feet by eight feet. The SOA contained a portion of
21 the containment line, Chief MULAS told Chief BERGLAND, had been constructed
22 during the Norrbom 1 Fire. Two fence lines ran through the SOA. The lower fencing
23 was partially cut and folded onto the ground in the SOA and needed to be removed for
24 processing. The upper fence was completely cut and the remaining fencing was
25 preventing dirt and debris from falling into the SOA, it was left in place until the majority
26 of the SOA was processed, then removed to finish processing.

27
28 With assistance from Captain HILLSKOTTER, I conducted a grid search of the Norrbom
29 2 Fire SOA working from advancing indicators. A total of five grid lanes were searched,
30 each lane was approximately one foot deep by eight feet wide. I visually searched each
31 grid lane, used a hair pick to methodically remove ash and debris and processed each

1 lane with a magnet. While processing the grid lanes, two areas were noted on the hand
2 line, one area on the left side of the lanes and one area on the right side. Both of these
3 areas contained burned and unburned vegetation consisting of dead dry grass and
4 leaves. Micro fire spread indicators, including but not limited to staining and protection,
5 were noted in both areas showing the fire advancing from the October 8th side of the
6 handline. After processing the fourth grid lane a fifth and final grid lane was searched.
7 No backing indicators were found and no ignition sources were identified except the
8 Norrbom 1 Fire.

9
10 I saw electrical conductor lines strung above the Norrbom 2 SOA. I saw no vegetation
11 or other objects which could have contacted the lines. The electrical conductor lines
12 appeared taught with no obvious signs of damage.

13
14 Based on my training and experience, the facts and evidence gathered and on the
15 totality of the fire spread indicators including the micro indicators found in the SOA,
16 which showed the fire advanced from within the Norrbom 1 Fire control line toward the
17 outside of the control line, and having found no additional ignition source, it is my
18 opinion the Norrbom 2 Fire was caused by the Norrbom 1 Fire escaping through hand
19 line.

20
21 On Friday, October 13th, at approximately 8:30 AM, Chief BERGLAND met with Mark
22 PORTER, an arborist from Mark's Tree Service and Consulting to evaluate the tree in
23 the Norrbom 1 Fire SOA. (See attachment 9)

24 On Friday October 13th, at approximately 11:45 AM, Chief BERGLAND went to 16600
25 Gehricke Road to try to locate a female who LECOMPTE said he had spoken to. Chief
26 BERGLAND spoke to a man who identified himself as Jeff HARMON. Harmon was not
27 aware of the woman described by LECOMPTE. Chief BERGLAND identified himself to
28 J. HARMON as a fire investigator for CAL FIRE. J. HARMON immediately told Chief
29 BERGLAND he knew where the fire started and pointed to a drainage below. Due to
30 smoke he was unable to see into the drainage. Chief BERGLAND asked J. HARMON
31 to take him to the location. J. HARMON rode with Chief BERGLAND and directed him

1 to the location which was where I was currently working, at the GOA of Norrbom 2.
2 (See attachment 10)

3
4 I interviewed J. HARMON, who told me the following in summary;

5
6 On Monday morning, October 9, 2017, J. HARMON was outside of his residence
7 talking with a masonry contractor. J. HARMON saw a "small, white plume of
8 smoke" which he believed to be a grass fire starting. J. HARMON told me, when
9 he saw the smoke he believed it was located at or near the location where we
10 were speaking. J. HARMON called 911 to report the fire; once at 7:20 AM which
11 did not go through and then at 9:20 AM which was successful. J. HARMON
12 called Phillip COTURRI, a neighbor and vineyard manager in the area to alert
13 him of the fire. J HARMON told me, his wife Susanne HARMON also saw the
14 smoke.

15
16 I provided J. HARMON with my business card and wrote my cellular telephone number
17 on it. J HARMON told me he would give my contact information to his wife so she
18 would know it was me when I called.

19
20 At approximately 3:25 PM, I departed the scene.

21
22 On Saturday, October 14, at approximately 11:17 AM, I returned to the scene and met
23 with CAL FIRE Battalion Chief Matt GILBERT, CAL FIRE Senior Land Surveyor James
24 DEGRAFF and CAL FIRE Transportation Survey Party Chief Jeff GAWRONSKI.
25 DEGRAFF and GAWRONSKI were there to survey the scene, they told me they would
26 need until approximately 12:00 PM the next day to complete their work.

27
28 At approximately 1:17 PM, I departed the scene.

29
30 On Sunday, October 15, at approximately 11:13 AM, I returned to the scene and met
31 with CAL FIRE Fire Captain Sean JERRY and Chief GILBERT. Captain JERRY was
LE80 (Rev. 7/2011)

1 present to assist with the chainsaw work necessary to collect portions of the downed
2 tree as evidence. Surveyors DEGRAFF and GAWRONSKI had finished surveying the
3 scene. I identified, to Captain JERRY, the portions of the downed tree I intended to
4 collect and he told me understood. Captain JERRY made the cuts as described and I
5 tagged and photographed the evidence items then secured them in my vehicle (E1, E1-
6 A, E1-B, E1-C, E1-D, E1-E). I saw scrape marks, burn marks, and areas which were
7 later described to me by electrical engineer Jim NOLT as arc tracking, evident on
8 portions of the tree (See photos IMG_0027.JPG through IMG_0033.JPG). At 1:17 PM, I
9 departed the scene enroute to the Middletown evidence storage. I secured all evidence
10 items in the Middletown evidence storage at 3:37 PM.

11
12 On Monday, October 16, I contacted P. COTURRI via telephone to conduct an interview
13 (See attachment 13). P. COTURRI told me he went to the location of the fire, on a four-
14 wheeler, on Monday morning, October 9 to see if he could extinguish it. P. COTURRI
15 said he could lead me to the location where he initially saw it. I met P. COTURRI at his
16 office located at 569 1st Street West, Sonoma at 2:15 PM. I followed P. COTURRI until
17 he accessed the property and stopped, at 2:37 PM, in the area where we had been
18 previously investigating. P. COTURRI told me the following in summary;

19
20 On Sunday night, October 8, 2017, a neighbor, Robert KAMEN, called to alert
21 him of the Norrbom 1 Fire. P. COTURRI looked toward the end of Norrbom
22 Road, saw the glow of a fire and also saw the emergency lights from fire engines.
23 P. COTURRI then went back to sleep. On the morning of Monday, October 9, P.
24 COTURRI received a text from HARMON at 7:52 AM, "can I get through
25 Kaymen's with a water tender to the fire location". P. COTURRI replied by text,
26 "yes it's at Pete's place". P. COTURRI told me, shortly after receiving the text,
27 he and his son Max COUTURRI traveled to this location of the Norrbom 2 Fire on
28 four-wheelers with a small water tank on a trailer. P. COTURRI told me the wind
29 was out of the north, pushing the fire towards the south east up the hill behind
30 the metal carport building. P. COTURRI told me the grass field below had
31 already burned down to the drainage but had not crossed it towards the vineyard.

1 They attempted to put water on the fire but realized they could not extinguish the
2 fire and they left.

3
4 I asked P. COTURRI if he was given an aerial image of the area, could he draw where
5 he described seeing the Norrbom 2 Fire. P. COTURRI told me he could. I provided P.
6 COTURRI with an aerial image, from Google Earth, showing the area where we were
7 currently located. I asked him if he recognized the area in the image and he told me he
8 did. P. COTURRI drew on the image to indicate the fire as he described it. He marked
9 an area as "not burning" and told me the area was unburned when he was present. I
10 asked P. COTURRI about the small field just to the north of our location which was
11 present on the image. He described the area as "prior burn", he did not see active
12 flames but saw smoke, he identified the area with the number 1 in a circle. P.
13 COTURRI drew on the image, the area where he described the fire as "actively
14 burning". I asked P. COTURRI to sign and date the image and he did (See attachment
15 13). P. COTURRI and I departed the scene at 3:36 PM.

16
17 P. COTURRI's description of the fire burning towards the south east up the hill behind
18 the metal carport building was supported by a V fire pattern indicator located in that
19 area (See aerial images IMG_0011.JPG, IMG_0013.JPG, IMG_0015.JPG and
20 IMG_0022.JPG)

21
22 On Tuesday, October 17, I was contacted by Chief ZIMMERMAKER. Chief
23 ZIMMERMAKER told me to contact CAL FIRE Battalion Chief Jake DELLAMONICA
24 regarding an individual he had contact with while assigned to the Norrbom Fire.
25 At 2:01 PM, I spoke to Chief DELLAMONICA via telephone and he told me the following
26 in summary;

27
28 While assigned to the Norrbom fire he spoke to a man, on at least two occasions,
29 who identified himself as Jeff HARMON. J. HARMON told him he thought the
30 Norrbom 2 Fire started at a water pump. Chief DELLAMONICA took J.

31 HARMON's contact information to pass on to investigators. During a later
LE80 (Rev. 7/2011)

1 interaction at the Norrbom Fire, J. HARMON told Chief DELLAMONICA he had
2 not been contacted by investigators. J. HARMON then told Chief
3 DELLAMONICA he had a business card from a CAL FIRE investigator but had
4 lost it. Chief DELLAMONICA asked him, if he had not spoken to a CAL FIRE
5 investigator how did he have possession of the business card. J. HARMON
6 replied he had spoken with an investigator who was supposed to call him back,
7 but had not, and he couldn't contact him due to losing the card. I told Chief
8 DELLAMONICA, both I and Chief BERGLAND had previously spoken with
9 HARMON and that he had not said anything about any pump. Chief
10 DELLAMONICA told me he thought it was odd that J. HARMON initially told him
11 he had not spoken to any investigators, but then said he had after being
12 questioned about the business card.

13
14 At 2:16 PM, I contacted Suzanne HARMON via telephone (See attachment 13). S.
15 HARMON told me the following in summary;

16
17 On Monday, October 9, 2017 at 7:15 AM, she was milking goats when she
18 looked out the window and saw smoke, down the canyon to the south west
19 (Norrbon 2 Fire). At 7:16 AM she texted her husband, "Norrbon fire". S.
20 HARMON described the smoke as a small white column. I could hear S.
21 HARMON talking to what sounded like a male voice in the background and I
22 asked her if it was her husband J. HARMON, she stated it was. I asked if I could
23 speak to him further and she said yes.

24 At 2:22 PM, a male got on the phone and identified himself to me as J. HARMON. I told
25 J. HARMON I wanted to touch base with him to confirm the information he had already
26 provided and to ask if he had thought of anything additional. J. HARMON told me the
27 following in summary;

28
29 I asked J. HARMON if he still believed the Norrbom 2 Fire started at the location
30 where he had directed Chief BERGLAND to and then spoken to me, J. HARMON
31 replied, yes it started there and burned up the canyon. J. HARMON told me he

1 had run into a CAL FIRE guy from Santa Cruz the night before. J. HARMON told
2 me he couldn't remember who was investigating the fire and thought he lost my
3 business card so he gave the CAL FIRE guy from Santa Cruz his information. J.
4 HARMON asked me if the guy from Santa Cruz had contacted me. I told J.
5 HARMON no, and asked him if the CAL FIRE guy from Santa Cruz had any
6 information on how the fire started. J. HARMON replied, no he wouldn't know
7 anything about how it started, he got to the fire days later. I asked J. HARMON if
8 he still believed the Norrbom 2 Fire started at the location where we spoke and
9 then burned towards his property. J. HARMON replied, yes it started there and
10 the fire made it to our lake house on the property by Wednesday, it burned our
11 foot bridge and a wood chipper. I asked J. HARMON if he could think of anything
12 else pertinent to how or where the fire started and he replied, no. I offered J.
13 HARMON my cellular telephone number to call me if he thought of anything
14 further. J. HARMON replied, he had my business card and had my cellular
15 telephone number from when we talked about me contacting his wife, so that she
16 would know it was me calling. I thanked J. HARMON and requested he call me if
17 had any further information regarding the fire.

18
19 During the conversation with J. HARMON, the information he provided was in-line with
20 the information he provided during our initial conversation and at no time did he mention
21 a water pump. I requested CAL FIRE Fire Captain Gary UBOLDI conduct a follow up
22 interview with J. HARMON based on his statements to Chief DELLAMONICA.

23
24 On Wednesday, October 18, at 10:04 AM, I met Captain UBOLDI and PG&E
25 employees, including Maria DELUCA, at the bottom of Norrbom Road. I advised the
26 PG&E foreman I needed to collect two sections of conductor line as evidence and
27 required their assistance in removing the lines. At 10:59 AM, we arrived at the scene. I
28 spoke with the security guard who was at the gate to the property, she was with two
29 individuals who identified themselves as engineers with the California Public Utility
30 Commission (CPUC), Wilson TSAI and Raymond CHO. After speaking with Chief
31 ZIMMERMAKER, TSAI and CHO were allowed to proceed to the scene to oversee

1 PG&E operations.

2
3 I identified the two conductor lines to the PG&E foreman. The foreman advised me they
4 could not get their bucket truck close enough to the lines to take just the sections I was
5 requesting and would have to climb the poles and remove the entire span. The PG&E
6 foreman told me they would identify the lines with colored tape prior to removal; the
7 north line (downhill) would be marked with white tape at each end, one wrap at the east
8 end and two wraps at the west end and the south line (uphill) would be marked with red
9 tape at each end, one wrap at the east end and two wraps at the west end. They would
10 also mark, with pen, the tape on top of the lines to show their orientation prior to being
11 removed.

12
13 A PG&E employee approached me and requested to show me something he had noted.
14 I followed him west of the Norrbom 1 Fire GOA where he pointed out a section of
15 communication/media lines. The wire lashing around the lines appeared broken. He
16 told me he believed the lashing could have contacted the conductor lines above it and
17 started the fire. Using a nearby ladder, I inspected the lashing and surrounding
18 communication/media lines and saw what appeared to be a mechanical break in the
19 lashing. I saw no indication of contact with energized conductor lines, such as arching,
20 charring or beading.

21
22 PG&E personnel marked the lines, removed them from the span and placed them on
23 the ground. Captain UBOLDI and I coiled the conductor lines and secured them with
24 zip ties. I tagged them as evidence items #2 and #3 and secured them in my vehicle.

25
26 At 12:27 PM, a white male adult approached from the driveway, followed by the security
27 guard. He identified himself to me as Peter NORRBOM, I later confirmed with his
28 driver's license. NORRBOM told me the following in summary (See attachment 13);

29
30 NORRBOM is the owner of [REDACTED] Road. He was alerted of the fire
31 early Monday morning by his employee Juan HERRERA. He also received a call
LE80 (Rev. 7/2011) 35 Officer Initials cf

1 from his friend Mike PERRY who had seen the fires on the news. NORRBOM
2 went outside onto his deck, saw all of the smoke in the area and evacuated to
3 the Best Western hotel in Sonoma. I asked NORRBOM about viewing footage
4 from security cameras I had seen on the property and NORRBOM told me the
5 cameras had not worked in over a year. He did not know how the fires started.
6

7 At 1:24 PM, NORRBOM returned with his employee Juan Pablo Raya HERRERA.
8 HERRERA told me the following in summary (See attachment 13);
9

10 HERRERA works for NORRBOM. Monday morning he received a telephone call
11 from his girlfriend alerting him of the fires in the area. At approximately 5:30 AM,
12 he went to NORRBOM's property to check on it. When he arrived, he saw fire
13 hoses on the ground and a small area which appeared burned (Norrbon 1 Fire).
14 HERRERA saw flames on a tree stump and attempted to extinguish them with
15 buckets of water. HERRERA saw wood and debris, between the parallel fences,
16 smoking but did not see flames. He then went to NORRBOM's house alerted
17 him of the fire and went home. Between 9:00 AM and 10:00 AM he returned to
18 NORRBOM's property. When he arrived, he saw the grass area which was
19 previously unburned, was burned and the fire had burned uphill around and
20 behind the metal carport (Norrbon 2 Fire).
21

22 I provided HERRERA with an aerial image, from Google Earth, showing the area where
23 we were currently located. I asked HERRERA if he was familiar with the location shown
24 in the image and he said yes, it was the location we were at. I asked HERRERA to
25 draw on the image where he saw the fire. HERRERA drew on the image where he saw
26 the fire at approximately 5:30 AM (Norrbon 1 Fire) and where he saw it when he
27 returned between 9:00 AM and 10:00 AM (Norrbon 2 Fire). I asked HERRERA to sign
28 and date the image and he did (See attachment 13).
29

30 On Wednesday, October 18, at approximately 1:54 PM, I released the security guard
31 and released the property back to the property owner. I departed the scene to secure
LE80 (Rev. 7/2011)

1 the evidence items in the Santa Rosa evidence storage. At 3:23 PM, I transferred
2 evidence items #2 and #3 into CAL FIRE Santa Rosa evidence storage.

3
4 On October 18, Captain UBOLDI met with J. HARMON and S. HARMON at their
5 residence. They told him the following in summary (See attachment 13);

6
7 J. HARMON saw the fire originate from the bottom of the canyon, southwest of
8 their residence (Norrbon 2 Fire). J. HARMON and S. HARMON watched the fire
9 spread southward, up the canyon and mid slope across the hillside. J. HARMON
10 had driven with another CAL FIRE Investigator to a small pond located at the
11 base of the canyon and told the Investigator he thought the fire started from a
12 water pump located there. Captain UBOLDI asked J. HARMON if he physically
13 saw the fire where it started. J. HARMON told him he did not see the fire until it
14 reached a fallow vineyard field approximately three hundred yards above the
15 ridgeline, southwest of his residence. Captain UBOLDI asked J. HARMON how
16 he knew the fire started at the pond from the water pump. J. HARMON told him
17 it was the only plausible explanation for him. S. HARMON stated J. HARMON
18 was only assuming and they did not see the fire start. J. HARMON agreed his
19 theory was only an assumption and not based on facts.

20
21 On Tuesday, October 24, 2017, at approximately 10:50 AM, I took a helicopter flight to
22 take aerial digital photographs of the Norrbom Fire.

23
24 On Friday, November 3, 2017, at 1:45 PM, I interviewed KAMEN via his cellular
25 telephone number. KAMEN told me the following in summary (See attachment 13);

26
27 On Sunday, October 8, 2017, he was returning from dinner at around 10:30 PM.
28 While driving on Norrbom Road he smelled smoke and saw what he believed to
29 be fire, in the area of Pete NORRBOM's property (Norrbon 1 Fire). When he got
30 home he went onto his porch and was able to see the fire. KAMEN called 911 to
31 report the fire, the fire department showed up and put the fire out. The next

1 morning KAMEN went onto his porch and "saw the fire had flared up" (Norrbon 2
2 Fire). KAMEN said the fire was in the same area as the night prior and described
3 it as low and not in the trees, he could not tell the size of the fire. I asked
4 KAMEN if he knew who owned and/or lived at [REDACTED] Road. KAMEN
5 told me Nat and Laura SIMONS own the property but were not home at the time
6 of the fire.

7
8 I made multiple unsuccessful attempts to make contact with a possible reporting party
9 found in the REDCOM Background Event Chronology, listed as Laura
10 BAXTERSIMONS, [REDACTED], [REDACTED]. On October 29, I traveled to
11 the address to attempt to make contact. There were no residents present, only
12 employees who were not comfortable providing me with additional contact information.
13 I left my contact information with a request to contact me. On December 6, I was
14 contacted by Kirsten WEISSER. WEISSER told me she received my contact
15 information which I left at [REDACTED] Road. WEISSER worked for Nathaniel and
16 Laura SIMON and managed their office in San Francisco. WEISSER told me both N.
17 SIMON and L. SIMON were currently out of the country and were out of town at the time
18 of the fire. I told her I was trying to conduct follow up on reporting parties to the fire.
19 WEISSER told me she would contact employees who worked at the property to see
20 who if anyone was present and she would have them contact me.

21
22 On Thursday, December 7, 2017, at 4:08 PM, I interviewed Laurence DICKINSON via
23 telephone. DICKINSON told me the following in summary (See attachment 13);

24 DICKINSON was requested to contact me by WEISSER. DICKINSON works for
25 Nat and Laura SIMONS as the General Manager of their properties located at
26 [REDACTED] Road in Sonoma. On Monday, October 9, 2017, at
27 5:09 AM, he received a telephone call alerting him of the fire from Joel
28 SANTOYA, the On-site Manager. DICKINSON went to the [REDACTED] property,
29 arriving between 9:30 and 10:00 AM. DICKINSON called 911 from his cellular
30 telephone while enroute. He did not see fire near the house. He then proceeded
31 to the [REDACTED] address around 11:39 AM. There was fire at the house (Norrbon 2

1 Fire) and he and other employees attempted to extinguish the fire with water
2 from hoses and turned on the irrigation system. DICKINSON did not see anyone
3 else in the area. DICKINSON did not see where the fire started but had been
4 told it started on Pete NORRBOM's property. He stated the electricity was on to
5 both properties until sometime Monday afternoon. I asked DICKINSON if he took
6 any photographs of the fire. DICKINSON told me he had taken some and he
7 emailed them to me.

8
9 On Thursday, December 7, 2017, I received four emails from DICKINSON which
10 included photographs. (See attachment 15).

11
12 I reviewed the report produced by PORTER titled "Evaluation of California Black Oak
13 Tree Failure" regarding the subject tree in the Norrbom 1 Fire (See attachment 14). The
14 report included the following;

15
16 [PORTER] was asked to assist Cal Fire Battalion Chief Vince Bergland to
17 investigate the cause of a California black oak tree failure.

18
19 [PORTER] observed a 17-inch diameter oak tree with a branch fracture. There is
20 wood decay at the point of failure. The branch failure is approximately 26-foot-
21 long with a column of decay approximately 11 inches in diameter. A sample was
22 sent to a wood decay lab. The lab warned the fire and heat may complicate
23 identification of decay using DNA analysis. The lab reports fungi are present.
24 The decay located at the fracture point (point of failure) indicate to [PORTER]
25 pre-existing defects were present on this oak tree prior to the incident.

26
27 During the course of the investigation I requested, through Chief ZIMMERAKER,
28 information from PG&E. The basis of the request was for any information PG&E had
29 regarding any electrical faults or issues with the electrical conductor lines associated
30 with the Norrbom 1 Fire. I was provided with multiple files containing a large number of
31 documents. I reviewed the documents associated with the Norrbom Fire, many of
LE80 (Rev. 7/2011)

1 which contained data which I was unable to discern. (See Chief ZIMMERMAKER LE-
2 71 and USB storage drive containing documentation)

3
4 I noted documents titled Pacific Gas & Electric Vegetation Management, which
5 appeared to be reports identifying vegetation inspections, listing the address of 16250
6 Norrbom Road, Sonoma (See attachment 16). These reports were dated 01/15/2014,
7 02/17/2015 and 02/13/2016. These documents had a latitude and longitude listed of:
8 38.329067, -122.443092.

9
10 I noted documents titled Pacific Gas & Electric Vegetation Management Work Request,
11 listing the address of 16250 Norrbom Road, Sonoma (See attachment 16). These
12 reports listed dates of inspection which corresponded with the dates from the above
13 listed reports. These documents had a latitude and longitude listed of: 38.329067,
14 -122.443092.

15
16 These reports appeared to identify trees in the area, of the listed latitude and longitude,
17 which had been inspected and were identified for work to be performed on them. Using
18 Google Earth, I identified the latitude and longitude in the above-mentioned PG&E
19 documents and the SOA of the Norrbom 1 Fire provided by Chief BERGLAND (See
20 attachment 16). The locations were in close proximity.

Opinions and Conclusions

Chief BERGLAND conducted the origin and cause investigation of the Norrbom 1 Fire. It was Chief BERGLAND's opinion the fire was caused by a tree, due to rot and in combination with wind, falling into electrical conductor lines owned by PG&E. Burning tree material or sparks fell to the ground litter below and ignited the fire (See attachment 9). The report from PORTER stated; The decay located at the fracture point (point of failure) indicate to [PORTER] pre-existing defects were present on this oak tree prior to the incident (See attachment 14). Documents provided by PG&E appear to identify a location in close proximity to the Norrbom 1 SOA, where inspections were performed and identified work to be performed in 2014, 2015 and 2016 (See attachment 16).

Based on my training, experience and the facts and evidence gathered during my origin and cause investigation of the Norrbom 2 Fire, it is my opinion, the Norrbom 1 Fire escaped through handline and continued to burn as the Norrbom Fire until it combined with, and became, the Nuns Fire.

*I reserve the right to amend or augment this opinion if new pertinent information is provided to me or is discovered by me at a later date.

 
Signature Date

W. Charlie Laird, Badge #2369

Fire Captain, CAL FIRE

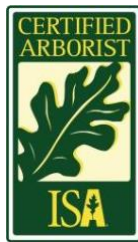
10 - ATTACHMENTS:

1. CAL FIRE Interagency Report of Incident and Dispatch Summary
2. REDCOM Background Event Chronology
3. Weather station information
4. Norrbom Fire Grid Maps and Parcel Information
5. LIDAR
6. Norrbom 2 Sketch
7. Digital Photographs
8. Aerial Digital Photographs
9. Chief BERGLAND Norrbom 1 Origin and Cause Investigation Report
10. Chief BERGLAND Supplemental Reports
11. Chief BERGLAND Digital Photographs
12. Chief BERGLAND Norrbom 1 Sketch
13. Supplemental Investigation Reports
14. Arborist Report
15. DICKINSON Emails
16. PG&E Vegetation Management Documents and Google Earth Image

ATTACHMENT B

CAL FIRE Arborist Report by Mark Porter

Mark Porter, Mark's Tree Service and Consulting
ISA Certified Arborist # WE465
markstree@iCloud.com



Evaluation of California Black Oak Tree Failure
Sonoma, CA

Prepared for Cal Fire Battalion Chief Vince Bergland

October 13, 2017

Table of Contents

Summary	3
Introduction.....	3
Background	3
Assignment	4
Limits of Assignment.....	4
Purpose and Use of Report	4
Observations	4
Species Information	5
Discussion	6
Conclusion	7
Appendix I Cal Fire Incident Information –	8
Appendix II Site Overview	9
Appendix III Photos	10
Appendix IV Lab Results.....	19
Glossary	20
Bibliography	22
Assumptions and Limiting Conditions	23
Certificate of Performance	24

Summary

On October 8, 2017, a wildfire occurred on Norrbom road approximately three miles north of the Sonoma Police station in Sonoma, California. Cal Fire refers to this fire as the Nuns/Adobe/ Norrbom /Pressley/Partrick fires/Oakmont (Central LNU Complex). The wind was associated with this fire.

I was asked to assist Cal Fire Battalion Chief Vince Bergland to investigate the cause of a California black oak tree failure. I took some photographs, notes and completed my site inspection October 18, 2017.

I observed a 17-inch diameter oak tree with a branch fracture. There is wood decay at the **point of failure**¹. The branch failure is approximately 26-foot-long with a column of decay approximately 11 inches in diameter. A sample was sent to a wood decay lab (see Appendix IV). The lab warned the fire and heat may complicate identification of decay using DNA analysis. The lab reports fungi are present.

I also observed abrasions on the bark of branches that appear to have been in contact with high voltage distribution wires. Photographs in the report illustrate the conditions described. The abrasion marks suggest to me that minimum clearance of the distribution lines was not maintained prior to the failure at this site.

Surrounding trees in the area close to the subject tree and surrounding properties survived the wind event. Many did not. The trees that survive the wind are visibly sound and solid, for the most part, many are defect-free, without visible decay, unlike the subject tree. A ride up Norrbom road shows multiple trees laying on the ground. Most of the fallen oaks have visible rot. Rotting fallen trees and tree parts are present throughout the town and surrounding counties devastated by the fire.

The decay located at the **fracture point** (point of failure) indicate to me pre-existing defects were present on this oak tree prior to the incident.

Introduction

Background

October 13, 2017, I met Cal Fire Investigation Officer Matt Gilbert at the Sonoma Police Department. Approximately 3.3 miles north of Sonoma Police Department along Norrbom Road, it is my understanding a wildfire occurred in the area on October 8, 2017. We met with Cal Fire Battalion Chief Vince Bergland at the site of the incident (see – Appendix II Site Overview). Initial reports report this fire as the Norrbom fire. As of February 9, 2018, Cal Fire Incident Report (see- Appendix 1), refers to this fire as the Nuns/Adobe/ Norrbom /Pressley/Partrick fires/Oakmont (Central LNU Complex).

¹ Unfamiliar words in **bold** can be found in the Glossary (with the exception of section headings in bold print).

It was brought to my attention a branch failure from a California black oak tree (*Quercus kelloggii*) occurred at the site (see – Photos 1, 2, & 3). While inspecting the subject tree, I observed a fractured branch and abrasion marks on the bark of branches that appear to have been in contact with high voltage distribution wires (see- Photos 4, 5, & 6). Wood decay is present in the subject tree at the point of failure.

Assignment

I was asked to:

1. Visit the site where the tree failed.
2. Provide my professional opinion of the circumstances or conditions that led to the failure of the oak tree on this site
3. Document my observations in a report.

Limits of Assignment

The cause of the fire, damage to any structures or surrounding property is not included in this report. This report focuses on the subject tree and the circumstances that lead to failure.

Purpose and Use of Report

To assist Cal Fire with the tree failure investigation.

Observations

The subject tree is a Black Oak (*Quercus kelloggii*). Trunk **DBH** is approximately 17 inches. A branch failure occurred about 18 1/2 feet from the ground. The tree has a cavity (see- Photo 1). The decay in the cavity is pre-existing. Photos 2 & 3 show the branch that failed and a pre-existing decay pocket. No **sporophores** or **saprophytes** are present.² The shell of wood surrounding the cavity at the fracture point is thin and jagged. Old pruning wounds at the location of failure appears to be large pruning wounds.

The branch failure (Photo 2) is approximately 26-foot-long and was connected to the trunk seen in Photo 1. Advanced decay is evident at this failure point. The decay pocket is approximately 11 inches in diameter. Samples from the subject tree were sent to UC Berkeley Forest Pathology and Mycology Laboratory for DNA analysis. The sample was negative for all target organisms but positive for fungal DNA control (decay by non-target fungi). See Appendix IV lab results.

² No **sporophores** or **saprophytes** are present. Possibly consumed by the fire; possibly not present due to the warm season.

Species Information

California black oak (*Quercus kelloggii*) grows from 30 to 80 feet tall and typically live 100- 200 years, occasionally to 500. A deciduous tree and native to California. The black oak produces vibrant displays of seasonal color. In winter the branches appear black during snowmelt, which led Dr. Albert Kellogg, a pioneer botanist to first name the species "California Black Oak." Black oak trees are found from Central Oregon to southern San Diego County in northern Baja California. Habitat includes slopes, valleys, and mixed evergreen and coniferous woodlands at 100 to 8000 feet.

California Tree Failure Database

The California Tree Failure Report Program (CTFRP) was established in 1987 to collect quantitative information on the mechanical failure of urban trees (trunk breaks, branch breaks, and uprootings). This information is used to develop "failure profiles" for genera and species to more accurately assess failure probability in standing trees and thereby reduce failure potential in urban forests (<http://ucanr.edu/sites/treefail/>)

Over 200 tree care professionals in California are cooperating in this effort by systematically inspecting fallen trees and reporting failure details for entry into the CTFRP database. To date (January 3, 2018) 6087 failure reports have been filed.

In 2011, the CTFRP database contained 1878 reports of branch failures. *Quercus* (all oak) species had 297 reports of branch failures. Sixty percent of reported branch failures occurred from May-October, and 40% of reported branch failure for all oak species (*Quercus* spp.) occurred from November to April.

Of 6087 reports thus far (Jan 2018) oak species failures are the most numerous at 23.4% followed by *Pinus* at 17% and *Eucalyptus* at 12.6%.

As of March 7, 2018, there are 135 tree failure reports of California black oak (*Q. kelloggii*) tree failures.³ Trunk 60, Branch 41 and Root 34. Mean age 112 years, mean Height 66 feet, and mean DBH 32 inches. Fifty-five (55) failed with no precipitation. The average temperature at the time of failure is 50 degrees F.

TRUNK: Mean height of failure is 9 feet above the ground. 11 failed at ground level (ht. of failure not reported in 6 cases.) No decay noted in only 5 cases. Lean is a factor in 31 cases.

BRANCH. Mean diameter at the point of failure 17 inches. 14 failed at the point of attachment. Mean point of failure away from attachment is 7 ft. No decay noted in only 7 cases. (decay unreported in 6 cases) Heavy lateral limbs are the most commonly reported other defect.

ROOT Decay reported in all but 6 cases. Lean is a factor in 13 cases.

³ http://ucanr.edu/sites/treefail/Post_a_Question/

Discussion

Sporophores are sometimes called conks, brackets, basidiocarps or mushrooms. Wood decay in trees is a concern for both tree health and safety (Hickman and Perry). Many times; decay can be easily seen just by inspecting the wood visually. Simple so with an open cavity.

ISA Best Management Practices for tree pruning instruct to define pruning objectives. The pruning type should be just enough to meet objectives (clear the conductors for reliable delivery of electricity). **Reduction cuts** are preferred to **heading cuts**. Reducing is defined as pruning to decrease heights or spread on entire tree or one section; also referred to as reduction or reduction pruning. The reduction cut (drop crotch, lateral cut) reduces the length of a branch or stem back to a live lateral branch large enough to assume the role of the branch being removed or reduced.

The branch failure occurred at an area where large cuts have been made in the past. Reduction and removal cuts larger than 4 inches in diameter are slow to callus over and close the pruning wound before decay spores can infect the wood. One large chain saw cut may seem efficient, it is likely to cause decay, therefore small reduction cuts are preferred.

Factors contributing to decay in oaks are variable with age, species, health, wounding, and environmental conditions. Older trees with large wounds are likely to have more decay than younger trees. Wood decay diminishes the cell wall materials reducing the load bearing capacity of the wood. Two primary types of decay are *white and brown rots*. White rot fungi destroy **cellulose, hemicellulose, and lignin**, producing a moist stinky, or spongy decay that becomes lighter in color than sound wood. Brown rot fungi consume cellulose and hemicellulose, leaving lignin mostly unaffected. Wood becomes brown, dry, and crumbly with both longitudinal and transverse cracks.

Following fire damage, it is not easy to visually identify what specific type of decay is involved. It is not difficult to see much of the wood material properties when consumed by a pathogen at the fracture points. When load exceeds material properties of wood, fracture occurs at times without any evidence of defect. Wood color can appear normal in fractures or different such as darkened suggesting decay is progressing. When the wood is missing, decay is at an advanced stage.

Two natural forces that exert loads on trees is gravity and wind (Smiley et al.). Gravity acts as a constant pull on the mass of a tree generating load from self-weight and the weight of water (condensation, rain, snow, or ice) on leaves and branches. Energy from winds adds dynamic forces. Bending forces result in stress and strain on tree parts. Decay adds to the problem by reducing the strength and flexibility of wood contributing to fiber rupture hence, branch failure.

Decay is a recognized structural defect that affects the likelihood of failure. Missing wood is a long-term process of wood degradation by microorganisms (Smiley et al.). Open cavities are positive indicators of decay as opposed to potential indicators (old wounds, swelling, ridges, cracks, seams, oozing, dead or loose bark, sunken areas or termites). Decay is a positive defect indicator frequently associated with tree failure.

Identification of decay is typically performed in a specific plant laboratory. Many decay fungi can be grown in pure culture and identified by a pathologist. Others can be seen under a very powerful microscope (e.g., 10,000 power). Optimally, a sample is kept cool and away from ambient temperature until it arrives at a lab. Following a fire, pathogens can be destroyed making it difficult if not possible to culture the traditional way.

University of California Cooperative Extension (UCCE) began offering a Wood Decay Diagnostic System service in 2014. The service is part of a research study, in which UCCE started evaluating the link between wood decay organisms and tree failure. The Wood Decay Diagnostic System is a DNA-based, multiplex PCR method that can detect and identify many important wood rot fungi.

This assay can identify decay agents in standing trees as well as from downed trees. It can also detect multiple decay fungi in individual trees. The researchers claim it is possible to assess the situation before trouble strikes.

The lab acknowledges that this is the first time burned wood from a wildfire has been tested using DNA. The results will most likely vary depending on condition of samples. Samples that have turned to charcoal are expected to be less reliable for identification. There are times when tree samples are so hot from a fire the wood turns to charcoal. A false negative can occur.

Decay can be so advanced that most of the wood is consumed and a mix of non-target fungi is all that is left (personal communication with Doug Smith UCCE). Identification of decay can be helpful, yet it is crucial to acknowledge fungi play a role in consuming wood, therefore, creating a reduction in tree strength and increasing risk.



Conclusion

Decay is often associated with oak tree failures including California black oak. Tree failure statistics, as well as observations at the site, help confirm:

1. decay is familiar to the black oak
2. decay is present in the subject tree as confirmed from lab results and visual assessment
3. small pruning wounds are preferred over large pruning wounds that promote entry of decay microorganisms
4. weakened area at fracture point is pre-existing
5. decay weakens wood and is a significant contributing factor to the failure
6. abrasion marks are present on the bark of branches of the subject tree
7. abrasion marks observed on the subject tree branches are consistent with branch contact with distribution lines

Appendix I Cal Fire Incident Information –

CA.gov | FAQs | Contact Us | Site Map | Translate

**CAL FIRE**

Search

This Site California

HOMEABOUT USPROGRAMSNEWSROOMCAREERSRESOURCES

Incident Information


Last modified on Feb 09, 2018

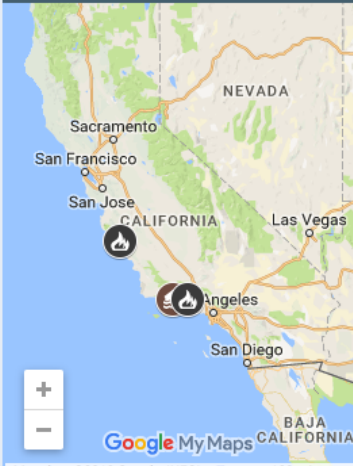
NUNS / ADOBE / NORRBOM/ PRESSLEY / PARTRICK FIRES / OAKMONT (CENTRAL LNU COMPLEX)

Nuns / Adobe / Norrbom/ Pressley / Partrick Fires / Oakmont (Central LNU Complex) Incident Information:

Last Updated:	February 9, 2018 9:30 am	FINAL
Date/Time Started:	October 8, 2017 10:00 pm	
Administrative Unit:	CAL FIRE Sonoma-Lake-Napa Unit	
County:	Napa County, Sonoma County	
Location:	Hwy 12, north of Glen Ellen	
Acres Burned - Containment:	56,556 acres - 100% contained	
Structures Destroyed:	1,355 destroyed / 172 damaged	
Evacuations:	See the latest Incident Update for more information on this fire.	
Long/Lat:	-122.5209/38.4041	
Conditions:	State's Post Fire Watershed Emergency Response Report See the latest Incident Update for more information on this fire. Central LNU Complex Evacuation Map Resources: <ul style="list-style-type: none">• Sonoma County Fire Information• Sonoma County Website• CAL FIRE Structure Status Map Please note that damage assessment is still on-going. If a structure point does not appear on the map it may still have been impacted by the fires.	
Phone Numbers	(707) 967-4207 (Fire Information Line)	

California Statewide Fire Map

2018 Stat... 



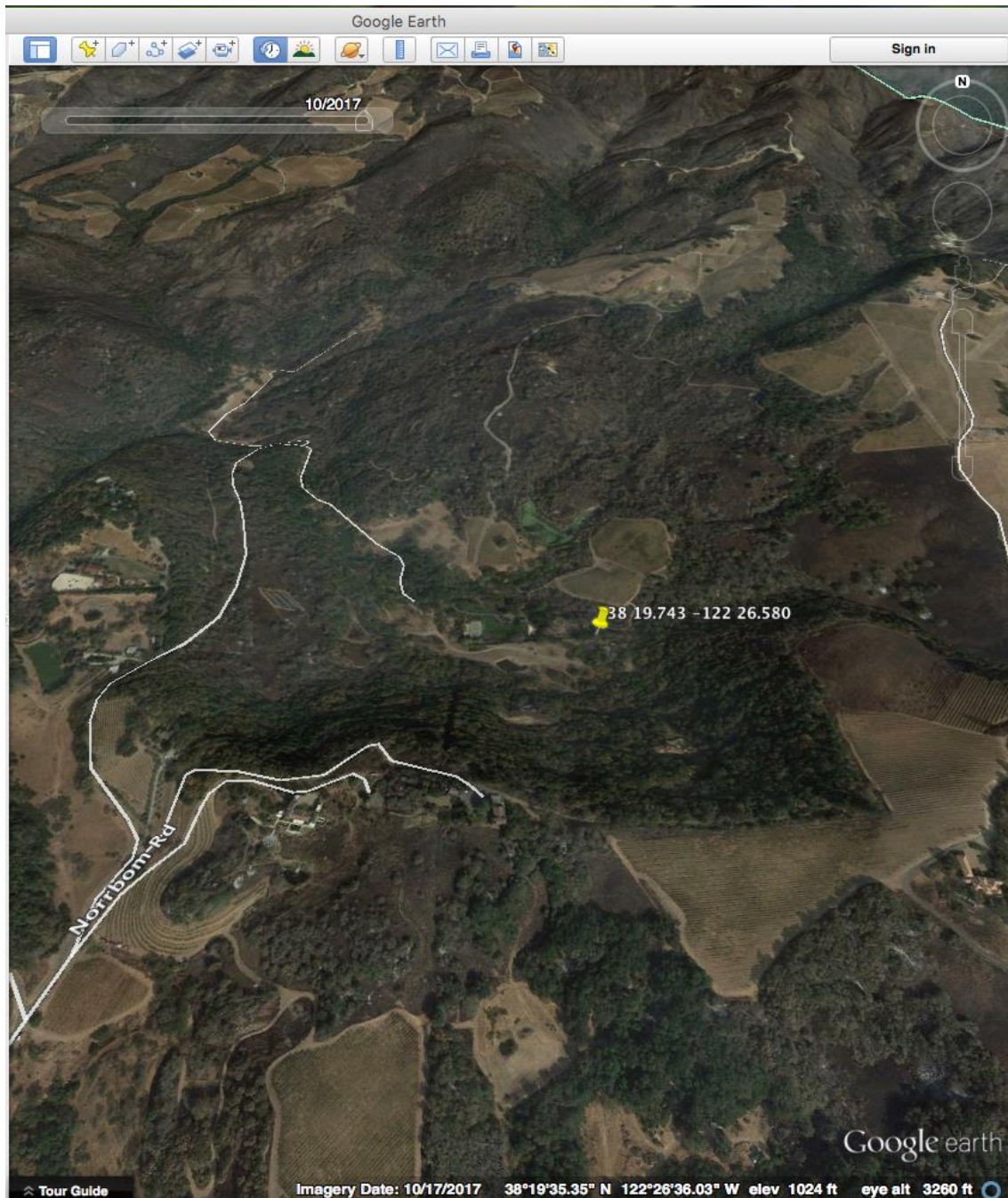
Map data ©2018 Google, INEGI Terms 100 mi

View California Fire Map in a larger map

NUNS / ADOBE / NORRBOM/ PRESSLEY / PARTRICK FIRES / OAKMONT (CENTRAL LNU COMPLEX) MORE INFO

- [Nuns / Adobe / Norrbom/ Pressley / Partrick Fires / Oakmont \(Central LNU Complex\) Information](#)
- [Incident Maps](#)
- [Photos](#)
- [News Releases](#)
- [Weather Information](#)
- [Telephone Numbers](#)
- [Special Notices](#)
- [Related Links](#)

Appendix II Site Overview



Appendix III Photos

Subject tree Photo 1

Pre-existing decay pocket is a positive indicator of decay (Smiley et al.). The branch failure in Photo 2 was connected here at the arrow prior to failure.



10-13-2017 Norrbom Fire
Sonoma County

Subject tree Photo 2

Fractured branch decay observed at failure point.



Subject tree Photo 3

Pre-existing decay pocket is a positive indicator of decay (Smiley et al.). Butt end of broken branch as seen in Photo 2.



10-13-2017 Norrbom Fire
Sonoma County

Subject tree Photo 4

Scrape marks believed to be caused by contact with distribution lines



10-13-2017 Norrbom Fire
Sonoma County

Subject tree Photo 5

Scrape marks believed to be caused by contact with distribution lines



10-13-2017 Norrbom Fire
Sonoma County

Subject Tree Photo 6

Scrape marks believed to be caused by contact with distribution lines



Neighboring tree Photo 7

Area of interest in close proximity to tree failure. Solid trees without visible evidence of decay fared much better in the area of this property and surrounding rural communities.



Photo 8

Subject Tree. Close up of the fracture point as seen in Photo 1.



Photo 9

Subject Tree. The opposite side of the failure point in Photo 8. The woundwood (smoother bark texture) suggests that a wound was made several years ago. A large cut creates an easier entry point for decay organisms. The tree responds with epicormic shoots (sprouts near the cut). The leaves from the smaller epicormic shoots near the wound create photosynthate (energy or food for the tree) to assist with woundwood formation.

When decay fungi can grow faster than woundwood the attachment becomes weaker than the load created by branch weight and wind loads. Another old pruning wound (circled area) attempting to close up and hide cavity. The weak area was pre-existing for several years.



Appendix IV Lab Results

Forest Pathology and Mycology Laboratory UC Berkeley Wood Decay Diagnostic Results

ID Code: Marks Tree 8
Submitted by: Mark Porter
Collection Date:
Received Date: 12/14/2018
Tree Species: *Quercus kelloggii*
Location:
Reason For Submission:

Targets	Results
1. Fungal DNA	x
2. <i>Armillaria</i> spp.	
3. <i>Fomitiporia</i> (<i>P. punctatus</i> , <i>P. robustus</i>)	
4. <i>Fuscoporia</i> (<i>P. contiguus</i> , <i>P. gilvus</i> , <i>P.</i>	
5. <i>Ganoderma</i> spp.	
6. <i>Ganoderma adspersum</i>	
7. <i>Ganoderma applanatum</i>	
8. <i>Ganoderma lucidum</i> (Eu)	
9. <i>Ganoderma resinaceum</i>	
10. <i>Hericius</i> spp.	
11. <i>Inocutis</i> (<i>I. dryophilus</i>)	
12. <i>Kretzschmaria deusta</i>	
13. <i>Inonotus dryadeus</i>	
14. <i>Inonotus</i> s.s. (<i>I. andersonii</i> , <i>I. hispidus</i>)	
15. <i>Inonotus/Phellinus</i> spp.	
16. <i>Laetiporus</i> spp.	
17. <i>Perenniporia fraxinea</i>	
18. <i>Phellinus</i> s.s. (<i>P. ignarius</i> , <i>P. lundellii</i> ,	
19. <i>Pleurotus</i> spp.	
20. <i>Schizophyllum</i> spp.	
21. <i>Stereum</i> spp.	
22. <i>Trametes</i> spp.	

Norrbom Fire
Sonoma, CA

Sample Negative for all targets but positive for fungal DNA control
(decay caused by non-target fungi.)
Notes:

Glossary

Advanced Assessment: an assessment performed to provide detailed information about specific tree parts, defects, targets, or site conditions. Specialized equipment, data collection, and analysis, and expertise are usually required.

Branch Failure: One of three failure modes. E.g. branch failure reasons - excessive end weight, cracks, cavities, poor taper, weak wood, excess load from wind, rain, snow, fruit, etc.

Cellulose: complex carbohydrate found in the cellular walls of the majority of plants, algae, and certain fungi.

DBH: trunk diameter at breast height (54 inches from ground level). The standard measurement of tree size in arboriculture.

Fracture: Referring to the breakage of a branch, trunk, or root.

Fracture point: The location where the branch, trunk, or root snapped, splinted, or simply broke. 1. A point of fracture or fracture location. 2. In this report, a point of failure or failure point.

Heading cut: pruning a currently growing or one-year-old shoot back to a bud; cutting an older stem back to a lateral branch too small to keep the cuts stem vital (typically less than 1/3 the diameter of the cut stem); cutting a stem to it in discriminate length. AKA topping cut.

Hemicellulose: any group of complex carbohydrates that, with other carbohydrates (e.g., pectins), surround the cellulose fibers of plant cells.

Lignin: an organic substance that impregnates certain cell walls to thicken and strengthen the cell to reduce susceptibility to the decay and pest damage.

Point of Failure: The same as fracture point.

Reducing: Reducing is defined as pruning to decrease heights or spread on entire tree or one section; also referred to as reduction or reduction pruning.

Reduction Cut: The reduction cut (drop-crotch, lateral cut) reduces the length of a branch or stem back to a live lateral branch large enough to assume the apical dominance (or role of branch being reduced) typically at least 1/3 the diameter of the cuts stem.

Sporophores: spore-bearing structure of a fungus

Saprophyte: a plant, fungus, or microorganism that lives on dead or decaying organic matter.

Topping: An inappropriate technique to reduce tree size that cuts through a stem more than two years old at an indiscriminate location: a type of pruning cut that serves to initiate discoloration and perhaps decay in the cut stem.

Trunk Failure: A tree failure that occurs somewhere along the trunk. Often associated with decay or poor structure. One of three failure modes.

Bibliography

“Oaks of California.” *Oaks of California* - CACHUMA PRESS,
www.cachumapress.com/catalog/ca-oaks.html.

Clark, James R., et al. *A Handbook of Hazard Tree Evaluation for Utility Arborists*. International Society of Arboriculture, 1993

Costello, Laurence Raleigh., et al. *Oaks in the Urban Landscape: Selection, Care, and Preservation*. University of California, Agriculture and Natural Resources, 2011.

Dunster, Julian A., et al. *Tree Risk Assessment Manual*. International Society of Arboriculture, 2013.

Hickman, Gary W. *Ten Common Wood Decay Fungi on California Landscape Trees: Identification Handbook*. Western Chapter, ISA, 1997.

Swiecki, Tedmund Julian., and Elizabeth A. Bernhardt. *A Field Guide to Insects and Diseases of California Oaks*. U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Research Station, 2006.

E. Thomas Smiley – Nelda Matheny - Sharon Lilly - International Society of Arboriculture – 2011 Tree Risk Assessment Best Management Practice.

University of California Agriculture and Natural Resources. “CTFRP Statistics.” *California Tree Failure Report Program*, ucanr.edu/sites/treefail/CTFRP_Statistics/.

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant/appraiser is assumed correct. Any titles and ownerships to any property are assumed good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
4. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
5. Loss or alteration of any part of this part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior express written or verbal consent of the consultant/appraiser.
7. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without my prior expressed written or verbal consent.
8. This report and any values expressed herein represent my objective and independent opinion. My fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs, or photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
10. Unless expressed otherwise: information contained in this report covers only those items that were examined and reflects the condition of those items at the time of photographic inspection.

Certificate of Performance

I certify that the statements made in this report to be true and correct to the best of my knowledge. The opinions expressed are my personal, unbiased professional opinions and conclusions, and I have no present or prospective interest in the vegetation that is the subject of this report. I have no personal interest or biases with respect to the parties involved and have based my assessment on the situation as I have seen it.

My compensation is not contingent on the reporting or a predetermined outcome or direction that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event.

My opinions and conclusions were developed, and this report prepared in conformity with standard arboricultural practices, my expertise, and experience. If further documentation or evidence is reviewed, these opinions could be changed, altered, or maybe strengthened.

I further certify that I made a personal inspection of the property, and no one provided any significant professional assistance to this report.

A handwritten signature in cursive script, appearing to read "Mark Porter".

Mark Porter, Consulting Arborist

ATTACHMENT C

CAL FIRE Origin and Cause Investigation Report



SUPPLEMENTARY INVESTIGATION REPORT

STATE OF CALIFORNIA
DEPARTMENT OF FORESTRY AND FIRE PROTECTION
LE 71 (REV. 7/2011)

INCIDENT NUMBER	
17CALNU010142	
CASE NAME	
NORRBOM	
UNIT	CASE NUMBER
LNU	

DAY	MONTH	DATE	YEAR	COUNTY	REGION	UNIT	CASE NUMBER
WED	OCT	11	2017	SONOMA	CNR	LNU	

1 Norrbom 1 Origin and Cause

2

3 Following my interview with Shell-Vista Fire Protection District, Assistant Chief Mike MULAS, on
4 Monday, October 11, 2017 at approximately 1:50 PM (see separate LE-71). I turned my attention to
5 the cause and origin of the quarter acre fire, which for clarity of this report will be referred to as
6 Norrbom 1. The Norrbom 1 fire was originally reported as a structure fire at approximately 10:37
7 P.M., Sunday, October 8, 2017. MULAS told me there was no structure fire but located a quarter
8 acre fire.

9

10 I walked the perimeter of the fire counter clockwise, starting at the fence line where the hand line
11 was tied in. I observed the fence to be two separate fences approximately four feet apart. I
12 observed the fences to be approximately five to six feet tall and constructed of hog wire fencing.
13 The area of fencing I walked through was partially cut, there was firefighting hose in the opening,
14 some of which was burned. I observed the area between the two fences to be burned connecting
15 both the Norrbom 1 and the Norrbom 2 (P-VB-035, 041). For clarity of this report the Norrbom 2 Fire
16 is the fire located by MULAS and FINN on Monday, October 9, 2017. I walked down the handline to
17 the north towards the gravel road. I observed there were a lot of foot prints and drag marks from fire
18 hose due to firefighting efforts (P-VB-038). I observed macro indicators of stem fall and scorch
19 marks on tree trunks. At the gravel road, I observed the handline appeared to be incomplete and
20 contained burned vegetation outside the handline. (P-VB-043). I reached a fence line and gate
21 along the gravel road. I walked up the fence line towards the south (P-VB-050). I observed macro
22 indicators, angle of char, depth of char, and scorch marks on three trunks and at the base of small
23 bushes. I noticed suspended electrical conductors in an east and west direction over the burned
24 area. I exited through an opening in the fence and completed my walk on the north and east edge of
25 the fire perimeter. I returned to the gravel road, I walked back and forth from the east and west
26 working from north to south. As I entered the brush area I started dropping colored flags at
27 observed fire spread indicators. This area became my general origin area (GOA) approximately 50
28 feet X 50 feet, (P-VB-051 thru 056). The flag colors indicate, blue for backing fire, yellow for lateral


1 spread and red for advancing fire. As I continued observing indicators and dropping flags, I started
2 locating rocks with smoke sooting and staining indicating fire spread (P-VB-059,115,116). I
3 observed advancing fire and flagged those observations (P-VB-054,055,107). I came to an area
4 where I found it difficult to locate spread indicators due to heavy foot traffic and firefighting efforts.
5 This area was approximately 15 foot by 20 foot (P-VB-054,055). I located a burned tree trunk and
6 observed it was resting on a telephone line (P-VB-061, P-VB-132 thru 136). Directly above the
7 phone line were electrical conductors (P-VB-057). I determined the burned tree trunk came from a
8 tree stump approximately six feet away. It appeared the trunk was that of the main tree and broke
9 off the tree stump approximately 18 feet 6 inches from ground level. I observed the tree stump did
10 not have any indications of burning at the point of failure (P-VB-068 thru 072, P-VB-119 thru 121). I
11 retrieved my flashlight to observe the branches of the fallen tree trunk. I observed several scrape
12 marks and four burn marks on the branches (P-VB-073 thru 105, P-VB-122 thru 131). I determined
13 the 15 foot by 20 foot, area to be my Specific Origin Area (SOA). I was unable to locate macro or
14 micro indicators in the SOA due to firefighting efforts.

15
16 It is my opinion the fire was caused by a tree falling into electrical conductors owned by the Pacific
17 Gas and Electric Company. Evidence located in the SOA indicated an oak tree trunk broke from an
18 oak tree stump due to rot and in combination with wind. I believe the tree trunk did not immediately
19 separate from the trunk. The upper branches of the tree truck became in contact with the downhill or
20 northern electrical conductor and slid for a bit. The branches came to rest on the electrical
21 conductor causing burn marks on the upper tree limbs. Burning tree material or sparks fell to the
22 ground litter below and ignited the fire. Due to additional wind or gusts, the tree branches became
23 dislodged from the electrical conductor and the tree truck became dislodged from the tree stump,
24 causing the tree truck to fall to the ground and the branches coming to rest on the telephone line.
25 Evidence of slide marks above and below the burn marks on the upper branches support my
26 opinion.

27
28
29
30
31 I was able to rule out the following as causes:

32
33 Equipment – I did not locate evidence of equipment use in or around the GOA.

1
2 Lightning – I was able to eliminate lightning as there was no lightning in the area.
3
4 Campfire – I was able to eliminate a campfire as a cause as there was no evidence of a campfire in
5 or around the GOA.
6
7 Smoking – I was able to eliminate smoking as a cause as there was no evidence of smoking or
8 smoking materials in the GOA.
9
10 Arson – I was able to eliminate arson as a cause as there was no evidence of any incendiary device
11 located in the GOA.
12
13 Debris burning – I was able to eliminate debris burning as a cause as there was no evidence of
14 debris burning in the GOA.
15
16 Vehicle – I was able to eliminate vehicle as a cause as there was no evidence to support a vehicle
17 caused this fire.
18
19 Railroad – I was able to eliminate railroad as a cause as there were no railroad equipment or tracks
20 in the GOA.
21
22 Playing with fire – I was able to eliminate playing with fire as a cause as there was no evidence
23 located to support this as a cause.
24
25 Other/Misc – I was able to eliminate other/misc as a cause due to evidence located in the GOA and
26 a witness statement.
27
28
29
30
31

PRINTED NAME	SIGNATURE	BADGE NUMBER	DATE
Vince Bergland		2157	10/11/2017

ATTACHMENT D

CAL FIRE Evidence List

5 - EVIDENCE:

Collected from Norrbom 1 Fire

Evidence Item #1

Base of branch. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:56AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-A

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-B

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-C

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

Evidence Item #1-D

Branch with scrape marks and charring. Excised from branch which fell from tree. Collected on October 15, 2017, at 11:45AM and secured in the CAL FIRE Middletown evidence storage at 3:37 PM.

1 Evidence Item #1-E

2 Branch with charring. Excised from branch which fell from tree. Collected on
3 October 15, 2017, at 12:00 PM and secured in the CAL FIRE Middletown
4 evidence storage at 3:37 PM.
5

6 Evidence Item #2

7 Conductor line from downhill side of pole, marked with white tape. Collected on
8 October 18, 2018, at 12:44 PM and secured in the CAL FIRE Santa Rosa
9 evidence storage at 3:23 PM.
10

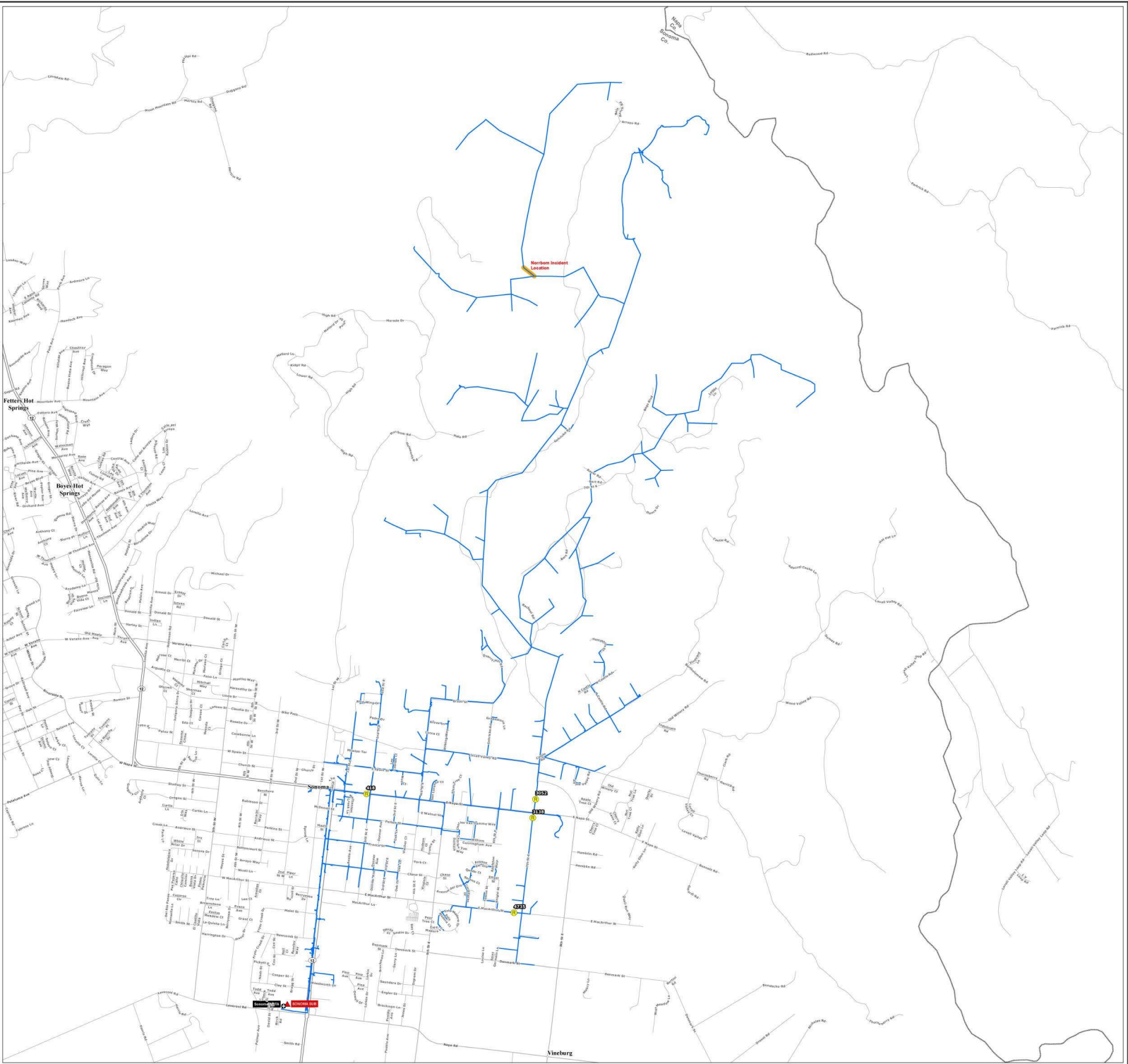
11 Evidence Item #3

12 Conductor line from uphill side of pole, marked with red tape. Collected on
13 October 18, 2018, at 1:12 PM and secured in the CAL FIRE Santa Rosa
14 evidence storage at 3:23 PM.
15
16

17 At the times of evidence collection, I was not aware if an incident number had been
18 assigned to the Norrbom Fire. Once the incident number was obtained, it was added to
19 the evidence tags.
20
21
22
23
24
25
26
27
28
29
30
31

ATTACHMENT E

PG&E Sonoma 1103 Circuit Map



**MAP 15**
SONOMA 1103
Norrbom

 Incident Location  Substation  Incident Distribution Circuit
 Weather Station  Recloser


0 0.5


While every effort has been made to provide accurate maps, it is possible that errors may exist. Users are advised to verify the accuracy of the information presented on this map by consulting the official records of the Sonoma County Planning Department or other official sources.

ATTACHMENT F

CPUC Site Visit Observation Report

ESRB Site Visit Observation Report

Date: October 18, 2017

Time: 1100 hours

Incident ID: N/A

Utility Involved: PG&E

Investigator: Wilson Tsai

Date and Time of Incident: October 8, 2017, 0000 hours

Location of Incident: 16200 Norrbom Road, Sonoma, 95476, Sonoma County

Summary of Initial Report:

On Wednesday, October 18, 2017, near 16200 Norrbomm Road in the City of Sonoma in Sonoma County, CalFire took possession of a span of primary conductors. No damage to PG&E equipment was readily apparent. This information is preliminary and PG&E is fully cooperating with Cal Fire.

Reason for Reporting: The incident was reported under the Property Damage criterion.

Field Findings:

On Wednesday, October 19, 2017, I met Gary Uboldi and Charlie Laird from CalFire and Jay Singh from PG&E at 16200 Norrbom Road in the city of Sonoma. CalFire identified the incident span between two properties passing through a vineyard. A fire had occurred in the area but PG&E facilities weren't affected.

The first pole, located uphill, had multiple two phase primary spans running across it and a small transformer (Figure 1). The incident span was on the highest primary level. Based off Figure 1, the leftmost phase is the field phase while the other is the road phase. The pole also had fuses that did not trip during the incident. Both phases on the incident span had splices on them. A communications cable ran below the incident span. At mid-span, the comm. cable had a lashing wire dangling from it (Figure 2).

Surveying the area under the span, there was a burnt tree stump six feet from the field phase. Another burnt tree stump was found 10-15 feet from the road phase (Figure 3). The hill dips down into the vineyard which runs along the next hill over. The surrounding area had a significant amount of trees and brush.

CalFire took both primary phases in as evidence. Towards the end of the site visit, one of the vineyard employees provided a witness statement for the fire. The employee claims that the fire started on the opposite hill where the vineyard was located and made its way towards PG&E's lines where the fire was put out.

Witnesses/Person(s) Involved:

Name	Title	Phone Number	Email
Wilson Tsai	Utilities Engineer	(415) 703-1359	wt1@cpuc.ca.gov
Raymond Cho	Sr. Utilities Engineer	(415) 703-2236	rc7@cpuc.ca.gov
Jay Singh	PG&E Compliance	(415) 990-1530	j112@pge.com
	PG&E Vegetation Management Supervisor		
Charlie Laird	CalFire Investigator	(707) 889-4232	Charlie.Laird@fire.ca.gov
Gary Uboldi	CalFire Investigator	(707) 486-8572	Gary.Uboldi@fire.ca.gov

Drawing/Photos:

Figure 1: The incident pole located uphill. The incident span is at the highest crossarm running to the left.



Figure 2: Photo of CIP cable mid-span with lashing wire



Figure 3: One of the burnt trees identified near the incident span.