

FAS MISSED IGNITIONS AUDIT – PROJECT SUMMARY

FAS AUDIT BACKGROUND

PG&E's Electric Incident Data Management (EIDM) organization – part of the Electric Compliance organization – is responsible for tracking and investigating ignition incidents attributable or believed to be attributable to PG&E assets. Among other uses, PG&E reports this data to the California Public Utilities Commission (CPUC), per Decision 14-02-015, which requires utilities to report data related to facility attributable fire-ignition incidents known to the utility beginning in June, 2014.

In late 2020, the EIDM team performed a review of the Vegetation Incident Database with the goal of leveraging this data in EIDM's investigations. While reviewing the vegetation database, EIDM discovered ignition records that were not accounted for in EIDM's historical tracker.

The awareness of this gap prompted EIDM to investigate the root cause of this issue and found two contributing factors to the omission of these ignitions. The first was a system process gap with the Field Automation System (FAS)¹ that did not require troublemen to indicate in an existing "Yes/No" dropdown box if an electric incident resulted in an ignition. The second was insufficient training and guidance for troublemen regarding the requirement to identify ignition events and the type of incidents that qualify as an ignition event.

To better understand the magnitude of the issue, EIDM performed a sample audit of the records in the Vegetation Database. Of the 961 records reviewed in the sample audit, EIDM identified 53 ignition incidents that were attributable to PG&E assets that were not recorded in the ignition tracker. The PG&E attributable ignition events not identified through the established process detailed in the Company's Fire Incident Data Collection Plan (RISK-6306S/P)² are colloquially referred to as "missed ignitions." Of the 53 missed ignitions, 28 incidents met CPUC reportability criteria³.

Based on the number of utility-related ignitions found in the small sample size in the Vegetation Database audit, EIDM determined it was imperative to perform a comprehensive audit of FAS for additional missed ignitions. PG&E submitted a self-report notification⁴ to the CPUC's Safety and Enforcement Division (SED) regarding the omission of ignition data in the annual reports submitted pursuant to Decision 14-02-015⁵.

This audit scope includes a population of approximately 77,000 FAS records representing potential ignition incidents. We took the following steps to arrive at this population of records:

- EIDM derived FAS Field Order ID⁶ numbers from the 2018 – 2020 ignition trackers and came up with a list of "Completion Codes"⁷ that troublemen have used to indicate the type of work that was completed

¹ Field Application System (FAS) – the mobile system used by dispatchers to assign and field personnel to complete electric work orders. It is the primary source of information related to Electric Distribution ignition, outage, and asset failure events

² Attachment 01 – Fire Incident Data Collection Plan (RISK-6306S)

³ Per CPUC Decision 14-02-015 "Fire Incident Data Collection Plan," a reportable event is any event where utility facilities are associated with the following conditions: (a) A self-propagating fire of material other than electrical and/or communication facilities, and (b) the resulting fire traveled greater than one linear meter from the ignition point, and (c) the utility has knowledge that the fire occurred.

⁴ Attachment 02 – Notification - D.14-02-015 Annual Reports1.pdf

⁵ Attachment 03 – CPUC Decision 14-02-015 Fire Incident Data Collection Plan

⁶ The FAS "Field Order ID" field is the unique identifier assigned to each FAS record

⁷ Appendix 01 – FAS Completion Codes

- The FAS Application Support team identified all tags in FAS with a Completion Code matching the list and an incident date between January 1, 2014 and December 31, 2020 – the query returned approximately 77,000 FAS records

To refine the number of records requiring a review, the following parameters were used:

- EIDM applied the following parameters,⁸ which reduced the population of records from approximately 77,000 to 13,243:
 - Included all records that had one of the following keywords in the Field Remarks column: fire, ignition, burn, arced, arcing
 - Excluded all records that had certain keywords in the Primary Remarks field that indicate the fire is not attributable to PG&E assets
 - Excluded all records where the Field Order ID or OIS numbers matched those in the 2014-2020 ignition trackers, removing the incidents had already been reviewed for CPUC reportability

Several PG&E stakeholders had deadlines at the end of the first quarter – specifically related to public safety metrics, asset risk-rankings, and work prioritization – which required an accurate and complete ignitions record. To increase the data quality prior to these deadlines, we expedited completing the audit within one month.

The audit encompassed FAS records from June 2014 to March 2021 to allow correction, if appropriate, of past fire ignition reports to the CPUC under Decision 14-02-015.

⁸ Appendix 02 – Query Filters for the Phase 1 Population of Records

PHASE 1 SCOPE, METHODOLOGY, RESULTS & ACTIONS

Scope

Perform a preliminary review of 13,243 FAS records to examine the “Remarks” fields for potential ignition attributability to PG&E assets and flag those records as requiring further review. The original approximate population of 77,000 records were narrowed down to 13,243 by examining the “Remarks” fields and excluding records that indicated no PG&E attributability and by removing records that had been previously reviewed for CPUC reportability in the 2014 – 2020 ignition trackers.

Methodology

EIDM examined each record for any indication that the incident involved an ignition related to a PG&E electric asset. Specifically, the information in the “Primary Remarks,” “Dispatcher Remarks,” “OFC Remark,” “OFC Remark – 1,” “OFC Remark – 2,” “OFC Remark – 3,” and “EMR Remark” fields were evaluated for potential attributability to PG&E assets.

The “Requiring Further Investigation” field was marked “Yes” if there was indication the ignition was attributable to PG&E assets and “No” if there was no indication the ignition was attributable to PG&E assets. To assist the analysts with identifying attributability, the EIDM team was available to answer questions and the following table in the Phase 1 job aid⁹ provided specific common examples:

Y – PG&E Attributable or Unknown	N – Not Attributable to PG&E
<ul style="list-style-type: none"> • <i>Wire/ Conductor Down</i> • <i>Car / Vehicle Pole Accident</i> <i>(fire resulting from broken pole or wire down; not car catching fire)</i> • <i>Tree / Vegetation in lines</i> • <i>Equipment mentioned in fire, arcing, burned, etc.:</i> <ul style="list-style-type: none"> ○ <i>Capacitor Bank (CB)</i> ○ <i>Conductor</i> ○ <i>Crossarm</i> ○ <i>Insulator</i> ○ <i>Jumper</i> ○ <i>Line Recloser (LR)</i> ○ <i>Pole</i> ○ <i>Transformer (TX)</i> • <i>Evidence of arcing (marks, burns)</i> • <i>Vandalism / Tampering to PG&E equipment (not customer owned) that resulted in fire</i> 	<ul style="list-style-type: none"> • <i>PG&E Good / No Damage</i> • <i>Power / Service / Voltage OK</i> • <i>No Fire / No problem found</i> • <i>Non-company equipment</i> • <i>Abandoned</i> • <i>No fire</i> • <i>Fire after customer weather head:</i> <ul style="list-style-type: none"> ○ <i>behind meter</i> ○ <i>inside home</i> ○ <i>Customer panel / breaker, breaker-side</i> ○ <i>garage fire</i> ○ <i>attic fire</i> ○ <i>kitchen fire</i> ○ <i>dryer fire</i> ○ <i>outlet fire</i> • <i>Other objects on fire near PG&E assets:</i> <ul style="list-style-type: none"> ○ <i>dumpster fire</i> ○ <i>cigarette fire</i> ○ <i>grease fire</i> ○ <i>trash/garbage fire</i> ○ <i>car fire</i> ○ <i>grass fire</i> • <i>Wildfire</i> • <i>Arson</i> • <i>Fireworks</i> • <i>Customer Equipment</i> • <i>Other Utilities Wire Down (Phone, TV, etc.)</i> • <i>Disconnect Service / Remove Meter</i> • <i>Remove meter due to wildfire</i> • <i>Vandalism that did not result in fire</i> • <i>Tampering that did not result in fire</i>

⁹ Attachment 05 – FAS Audit Review Job Guide – Phase 1

Results

The Vegetation Management Quality Verification team performed the Phase 2 review. The team of 11 analysts began their review of 13,243 records – dating from June 1, 2014 to December 31, 2020 – on January 18, 2021. Each record was evaluated for any indication that the ignition incident was potentially attributable to PG&E assets. The first-pass review was completed on January 20, 2021.

On January 21, 2021, the analysts exchanged review files and performed a second-pass validation of the ignitions incidents that were initially identified as not attributable to PG&E assets to confirm if further investigation on those incidents was required. The following are the results of the Phase 1 preliminary review of 13,243 records as of the end of day, January 22, 2021:

- 9,533 records (71.9%) were found to be non-ignition events or ignition events not attributable to PG&E assets and did not require further review
- 3,075 records (23.2%) were potentially related to PG&E assets and were flagged for the Phase 2 in-depth evaluation
- 635 records (4.8%) did not have a discernable cause and were marked as “Unknown” – these tags were evaluated further as part of Phase 2

An additional 352 records¹⁰ were added to the Phase 2 population, which increased the initial population from 3,710 to 4,062 records. A final comparison with the historical ignition tracker found 50 records that had been previously reviewed, decreasing the Phase 2 population to 4,012¹¹ records.

Actions

The resulting 4,012 records were transferred to the Phase 2 tracker and an in-depth investigation was performed on each record.

¹⁰ **332** (dating from January 1, 2021 to March 7, 2021) + **20** (additional 2014-2020 missed ignitions related to an Asset Failure Analysis extent of condition study on fuse failures) = **352** records

¹¹ **3,710** (the total from the Phase 1 Audit) + **352** (2021 and additional 2014-2020 missed ignitions later added to the Phase 2 tracker) – **50** (from Phase 1 Audit having been previously investigated in the 2014 – 2020 ignition trackers) = **4,012** records

PHASE 2 SCOPE, METHODOLOGY, RESULTS & ACTIONS

Scope

Complete an in-depth Phase 2 investigations of 4,012 flagged incidents identified during the Phase 1 review to determine if the ignition incident meets CPUC reportability thresholds.

Methodology

The following outlines the methodology for performing the reviews, providing documentation to assist the reviewers, and methods of communicating the results to interested parties:

- **QC Review Tracker¹²** – EIDM created an Excel tracker where the QC was performed. The population of records was split nearly evenly among 7 analysts with each analyst dedicated to assigned PG&E divisions. The spreadsheet was posted on a Teams page which allowed for simultaneous updates to the file. The input form has an “Escalation” flag which the QC analysts used to request assistance from the EIDM support team regarding any issues or questions. The form also contained a section for recording details related to contacting front line workers and troublemen as well as a section for recording details related to 3rd party incident report requests. Lastly, the tracker contained fields to track EIDM certifications, where an EIDM analyst certified the details and findings for each record. If EIDM did not agree with the findings or the information was inaccurate or incomplete, notes were entered regarding the specific discrepancy and the record was returned to the analyst for further review.
- **QC Job Aid¹³** – EIDM created a thorough job aid to provide step-by-step instructions on how to access and fill out the QC form in the QC review tool, how to access the systems of record – including SAP, ILIS/OIS, Business Objects, and Google Earth – and how to contact troublemen or request 3rd party incident reports.
- **QC Dashboard and Status Updates¹⁴** – EIDM developed a dashboard to help track the progress of Phase 2 and included visualizations showing overall completion percentage, the number of tags under review by “Review Status” to identify potential bottlenecks, the output of each analyst, and listed outstanding requests for information from troublemen and third-party agencies. EIDM also sent out regular Phase 2 status updates.
- **Sourcing** – EIDM selected a contractor to perform the phase 2 in-depth reviews. Their selection was based on their immediate availability and previous experience performing similar audit and record review projects for PG&E.

Results

The Phase 2 audit began on March 1, 2021, and as of March 16, 2021, the audit was largely complete, having completed review of 99.7% of the 2014 – Q1-2021 FAS records. The final 0.3% of outstanding records had reviews still in progress, many of which having unknown attributability and were waiting for responses to information requests from fire agencies and troublemen¹⁵.

¹² Attachment 06 – Ignitions_Audit_Phase_2_Tracker_20210316

¹³ Attachment 07 – FAS Audit Job Guide - Phase 2_R9

¹⁴ Appendix 04 – Screenshot of the “FAS Missed Ignitions Audit Dashboard” as of March 16, 2021

¹⁵ Since March 16, 2021, 15 of the 30 outstanding records received responses from the suppressing agencies or troublemen and were completed using the additional incident information

The following are the results of the Phase 2 in-depth review of 4,012 records as of the end of day on March 16:

- 942 records (23.4%) were found to be PG&E attributable ignitions. After the completion of the audit, 29 records (including 21 that met CPUC reportability criteria) were removed from the totals due to having been previously investigated in the 2014 – 2020 ignition trackers¹⁶
- Of the 942 PG&E attributable ignitions, 190 (4.7%) were found to meet CPUC reportability criteria¹⁷
 - 177 of the CPUC reportable records occurred between 2014 – 2019
 - 12 of the records occurred in 2020 and were included in the 2020 PG&E Fire Incident Data Collection report sent to the CPUC on April 1, 2021
 - 1 record occurred in 2021 and was added to the 2021 ignitions tracker

Actions

The result from Phase 2 of the audit were incorporated into the historical ignition tracker, which contains all ignitions investigated in the 2014 – Present ignition trackers as well as ignitions found through audits. The updated historical ignition counts were populated in the Wildfire Mitigation Plan Amendment summary tables, which was filed in mid-March 2021.

The updated ignition totals were also communicated to the Risk Management & Analytics team, the Performance Management team, and other internal stakeholders.

¹⁶ These records were not removed initially from the population of FAS records due to a lookup error and were later removed after the Phase 2 audit was completed

¹⁷ CPUC designates an ignition as reportable if it is attributable to PG&E assets, burned material other than PG&E assets, and burned more than 1 linear meter of non-PG&E assets

POST AUDIT RISK MITIGATING ACTIONS

To reduce the risk of further missed ignitions, the EIDM team has performed or is in the process of performing the following actions:

- Continue to partner with IT to implement revisions to FAS to better self-guide the restoration team to identify ignition events – these enhancements were deployed in June 2021
- Continue to partner with Dispatch and Scheduling on upcoming communications to the field regarding the usage of FAS to capture ignition events
- Continue to partner with the Asset Failure Analysis team on the field data collection improvement pilot
- Work with the academy to implement an annual training requirement related to the use of the CPUC fire tab per our standards (RISK-6306S)
- Incorporate the review of all potential ignition related FAS tags into the scope of the Ignitions Investigations Team
- Revise the RISK 6306-01 standard to include lessons learned from this audit as well as processes related to the ongoing review of FAS for potential missed ignitions
- Explore missed ignition records in CAP, TOTL and Corrective notifications in SAP
- Work to build relationships with external fire departments to help expedite in data collection

CORRECTIVE ACTIONS SUMMARY

CA #	CA Description	Action Owner	Due Date
120204743 ¹⁸	<p>Issue Title: Missed Ignitions - Veg Incident Report</p> <p>Description: Please refer to the 'Fire Ignitions Potentially Not Reported' recommendation presented to the EO Compliance Self-Report Quorum on 12/16.</p> <p>The ignitions investigation team identified 37 CPUC reportable ignitions that were not reported in our annual submittal to the SED per the CPUC's Fire incident Data Collection Plan for the 2017 - 2019 calendar year. These ignitions were discovered by reviewing follow up investigations conducted by the veg management team. In every instance, the 'CPUC Fire' tab had not been filled in by PG&E first responders, per RISK-6305P, causing the ignitions to be missed by the compliance team.</p>	Anne Beech	1/15/2021
120418730 ¹⁹	<p>Issue Title: Miscategorized Ignitions in FAS</p> <p>Description: The Electric Incident Investigation (EII) team identified 37 veg contact ignitions that occurred within the 2016 - 2019 calendar years through an audit of Veg Incident Reports. These ignitions were previously unknown to EII, were not reported in the annual reports to the CPUC's SED division for their respective calendar years, and we self-reported as a rule 1 violation in December 2020 (please reference CAP #000120204743). At the time of this CAP's creation, we have yet to receive a response from our self-report to the CPUC.</p> <p>The awareness of this gap prompted EII to investigate the root cause of this issue which was found to be related to a miscategorization of ignition events within FAS. Had the responding troubleman properly identified these ignition events within FAS per the Company's Fire Incident Data Collection Plan Standard (RISK-6306S), these ignitions would have been identified, investigated, and included in the Company's risk mitigation models and the annual reports to the SED for the respective calendar years.</p> <p>The EII team suspects that there are a larger population of missed ignitions dating back to 2014 with a similar root cause.</p>	Kelly Ball	5/31/2021

¹⁸ Attachment 08 - CAP_120204743.pdf

¹⁹ Attachment 09 - CAP_120418730.pdf

ATTACHMENTS

Attachment 01 – Fire Incident Data Collection Plan (RISK-6306S).pdf

Attachment 02 - Notification - D.14-02-015 Annual Reports1.pdf

Attachment 03 - CPUC Decision 14-02-015 Fire Incident Data Collection Plan.pdf

Attachment 04 - FAS Ignition QC Phase 1.xlsx

Attachment 05 - FAS Audit Job Guide - Phase 1.docx

Attachment 06 - Ignitions_Audit_Phase_2_Tracker_20210316.xlsx

Attachment 07 - FAS Audit Job Guide - Phase 2_R9.docx

Attachment 08 - CAP_120204743.pdf

Attachment 09 - CAP_120418730.pdf

APPENDIX 01 – FAS COMPLETION CODES

COMP CD DESC
E Arcing Wires
E Broken Pole-Replace
E Change 3P SC Mtr
E Complete Out 3P-Comp Equip
E Disconnect Service 1P
E Dmg Dist Eq-Repair
E Dmg Dist Eq-Replace
E Fire-Other-No Prob Found
E Fire-Other-Repair
E Fire-Other-Replace
E Fire-Struc-Repair
E Fire-Struc-Replace
E Maintain CT/PT Equip
E Pole Fire-Repair
E Pole Fire-Replace
E Power OK-No Problem Found
E Tree or Obj On Wire
E Wire Down-Outage

APPENDIX 02 – QUERY FILTERS FOR THE PHASE 1 POPULATION OF RECORDS

Remarks Fields Contain	Remarks Fields Do Not Contain
arced	abandoned
arcing	all other units are not damaged and are in power
burn	arson
fire	attic fire
ignition	breaker side
	cancel
	car caught fire
	car fire
	cigarette fire
	cust equip
	cust owned
	cust panel caught fire
	cust panel fire
	cust problem
	cust wiring
	customer
	customer equip
	customer owned
	customer panel caught fire
	customer panel fire
	customer problem
	customer wiring
	did not impact pg&e
	did not impact pge
	dryer caught fire
	dryer caught on fire
	dryer fire
	due to structure fire
	dumpster fire
	duplicate
	electric not involved
	fire in garage
	fire in house
	firework
	garage fire
	garbage fire

	gas
	grease fire
	house fire
	kitchen fire
	no arcing
	no comp equip. damaged
	no damage to pge
	no fire
	no hazard
	no issues found
	no issues with pg&e
	no issues with pge
	no pg&e
	no pge
	no pole fire
	no problem found
	no problem with pg&e
	no problem with pge
	no structure fire
	non comp equip
	non company equip
	non pge
	not electric
	not pg&e
	not pge
	nothing here
	outlet fire
	pg&e facilities ok
	pg&e ok
	pge facilities ok
	pge ok
	power ok
	premise and meters destroyed by fire
	premise destroyed by fire
	premise/meter destroyed by fire
	pwr ok
	service ok
	standby
	temp disconnect service
	trash can fire
	trash fire
	voltage ok
	wildfire

APPENDIX 03 – SCREENSHOT OF PHASE 1 TRACKER

Index No	Requiring Further Review	Analyst - Prelim. Review	Completion Code Description	Primary Remark	Dispatcher Remark	OFC Remark	OFC Remark - 1	OFC Remark - 2	OFC Remark - 3	EMR Remark
1	No	Analyst 1	Pole Fire-Replace	DUMPTERS FIRE NEXT TO THE MULTI METER PANEL MELTED METERS HOUSE METER AND APT 104 METER		NONE XSTR-E CLINTON PWR-Y ALLEY FIRE LST NT NXT 2 MTR S NO MORE FIRE BUT MTRS MLTD				
2	No	Analyst 1	E Complete Out 1P-C	BURNT 220V PLUG. DISCONNECTED PLUG. RESET MAIN BREAKER OK		No Access or Safety Issues.COMPLETED OUT. METER SHOWS ON. DRYER OUTLET SPARKED AND BURNED OUT.				G FLA E POF.
3	No	Analyst 1	Pole Fire-Repair	GRASSFIRE UNDER WISHON COPPERMINE 70 KV LINE BETWEEN TOWER 14/101 AND 14/105. FOUND NO EVIDENCE OF BURN , ARC MARKS ON THE CONDUCTORS OR ON THE INSULATORS. CAL FIRE		AKS-OK XSTR-MILLERTONCOMMAND CTR LARGE VEG FIRE				CONT E PAST GAS STATION.1ST DRVWAY SS OF RD. CATTL
4	No	Analyst 1	Pole Fire-Repair	GRASS FIRE AROUND POLE LR 2803 FIRE SCARED THE POLE. NO IMMEDIATE HAZARD. FILLED OUT RPTS. CAR PULLED OVER MAY HAVE CAUSED THE FIRE		AKS-OK FD ETA 55952942009. VEG FIRE CAUSED.				
5	No	Analyst 1	E Remove 1P LA Mtr	Fire dept wanting meter removed		Removed due to structure fire, give to GIMD				WEST OF LAST
6	No	Analyst 1	E Change 1P LA Mtr	FOUND MELTED METER. BEHIND THE METER THE UPPER METER SOCKET CONNECTOR WAS BURNT. HELPED CUSTOMER REPLACE BURNT CONNECTOR.		Access/Safety: Dog(s): MELTED METER/Possible arcing behind meter, CROSS ST (SUNNYSIDE/SIERRA)				DOG (INSIDE DOG) GATE OPEN
7	No	Analyst 1	E Change 1P LA Mtr	meter was burnt internally. plastic cover was melted	LFT MSG FOR TMAN MEDEIROS REQUESTING ETA 15:42JXOY TMAN ETA 15 MIN 15:43JXOY	PER FRESNO FD- STRUCTURE FIRE- X ST PRINCETON AVE- PER FD ONSITE REQ. ETA 559-621-4333- POSSIBLE				251 2868 PC FRNT WNDWNTRD LEFT 68 DOGS WERE INSIDE 0909.

APPENDIX 04 – SCREENSHOT OF THE “FAS MISSED IGNITIONS AUDIT DASHBOARD” AS OF MARCH 16, 2021

