L-406 Crimea St Fire Road Incident Investigation Report

CPUC - SAFETY AND ENFORCEMENT DIVISION GAS SAFETY AND RELIABILITY BRANCH

Event Date: March 24, 2024 DOT No. 1394795 CPUC SED No. G20240324-3678 SoCalGas No. 240323-15720

CPUC Report Date:	April 4, 2025, Final
Investigators:	Randy Holter
Date incident reported to CPUC	March 24, 2024
Utility:	Southern California Gas Company (SoCalGas)
Date and Time of the Incident:	3/24/2024, 0300 Hours
Location of the Incident:	Ventura, Ventura County, CA



California Public Utilities Commission

Table of Contents

Executive Summary Summary of Incident	4
Incident Investigation	5
Summary of Incident and Investigation	5
Fatalities / Iniuries	5
Property Damage	5
Utility Facilities Involved	6
Investigators	6
Documents Reviewed	6
SED Investigation Process	6
Reporting Requirements	6
SED Investigation	6
Incident Description	7
Chronology of Incident Investigation Activities	10
March 24, 2024	10
March 25, 2024	10
March 26, 2024	10
March 29, 2024	10
May 1, 2024	10
May 7, 2024	11
May 23, 2024	11
June 3, 2024	11
July 30, 2024	11
August 22, 2024	11
August 28, 2024	12
September 23, 2024	12
October 14-15, 17-18, 2024	12
October 14-15, 17-18, 2024	12
November 15, 2024	14
December 16, 2024	14
Findings and Corrective Actions	14
SED's Code Evaluation for SoCalGas Procedures:	14
SED'S FINAINGS	13
Finding INO. 7	15
SED's Recommendations	10
ScCalGas's Corrective Actions	10
SoCalGas's Mitigative Actions	17
Conclusion	19
Appendices	20
Appendix A: Glossary of terms	20
,	

Appendix B: Documents Reviewed	21
Appendix C: Reference Materials and Internet Sites	21

Executive Summary

Summary of Incident

On March 24, 2024, at approximately 0300 hours, Southern California Gas Company (SoCalGas) Transmission West Region, Coastal Area, Oxnard (Oxnard) District control room (Gas Control) detected a low-pressure warning and responded to a natural gas leak on a 22-inch steel transmission pipeline (L-406). A soil mudslide-earthen terrain washout (mudslide) occurred in one side of the L-406 exposed-pipeline crossing (span) at Kalorama dry wash (arroyo) between canyon slopes in the area near Crimea Street Fire Road, outside the city of San Buenaventura (Ventura), Ventura County, California (CA).

The leak position was located visually at a distance by SoCalGas personnel and found to be inaccessible by vehicle or foot due to soil and terrain conditions. The leak on L-406 was assessed through video by SoCalGas utilizing an ariel drone to fly remotely over the affected section of L-406 span and over the mudslide area around the span ground support.

There were no service interruptions, no injuries or fatalities reported as a result of this incident. The incident was reported to both the Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) National Response Center (National Response Center Incident Reports #1394627 and update #1394795) and California Public Utilities Commission (CPUC) due to gas release and potential cost of repairs exceeding \$139,700.

The Safety and Enforcement Division's (SED)'s investigation found that the incident was caused by a mudslide occurring on one side of a L-406 span crossing an arroyo during heavy rains. Therefore, SED did not find any General Order (GO) 112-F, Reference Title 49 Code of Federal Regulations (CFR), Parts 191 & 192 violations by SoCalGas.

Incident Investigation

Summary of Incident and Investigation

In February 2024, Ventura County, California foothills and mountains experienced heavy rain, severe flooding, mudslides and soil washouts. According to NASA Earth Observatory (Appendix C.1 [C.1]), Scripps Institution of Oceanography [C.2] records and media weather reports, the heavy rain events were due to subtropical moisture conditions created by a Pacific coastal atmospheric river. The precipitation measurement near the incident, in the local Ventura foothills on February 4-6 alone reached more than 13 inches [C3], almost 400% more monthly precipitation than normal. Subsequent rains in February and March of 2024 exceeded 100% of area average annual rainfall [C.3], further saturating area foothill soils. The mudslides and washouts affected various terrains, arroyos, roads and highways, including the canyon area near Crimea Street Fire Road, less than a mile north of the city of San Buenaventura (Ventura), Ventura County.

On March 24, 2024, at approximately 0300 hours, SoCalGas' Oxnard District Gas Control received an alarm signaling a pressure decrease on a 22-inch steel transmission pipeline (L-406) and notified SoCalGas' Field operations base in Oxnard to investigate. The L-406 pipeline is a 22-inch od x 0.28thick steel high pressure-transmission pipeline with normal operating pressures set for Maximum Allowable Operating Pressure (MAOP) = 797 psig and Maximum Operating Pressure (MOP) = 780 psig.

There were no service interruptions, no injuries or fatalities reported as the result of this incident. This incident was reported to both the DOT and the CPUC due to the gas release and potential costs exceeding \$139,700.

On March 24, 2024, at approximately 0315 hours, SoCalGas Pipeline Technician personnel (Tech) from the Oxnard Field Operation Base was dispatched to investigate. The Tech was not able to access the site due to terrain and slope instability from recent rainstorms and the mudslide at the incident site. SoCalGas' Tech identified the damaged section of L-406 visually and notified Gas Control. Gas Control abated the pressure event at the leaking section by remotely closing downstream valve station at MP0.00 and upstream station valve at MP5.53, approximately 5.5 miles apart.

SED's investigation found that the incident caused by earth movement (natural force) between sloped elevations of adjacent residential properties after heavy rainfall in the area. Therefore, SED did not find any General Order (GO) 112-F, Reference Title 49 Code of Federal Regulations (CFR), Parts 191 and 192 violations by SoCalGas.

Fatalities / Injuries

No fatalities or injuries reported as the result of this incident.

Property Damage

The Estimated Total Cost for SoCalGas due to this incident was \$5,473,828

The estimated cost of public and non-Operator private property damage at the time of this report was \$7300,000. The estimated cost of SoCalGas' property damage and repairs was \$2,800,000. The estimated cost of SoCalGas' emergency response was \$600,000. The estimated other costs to SoCalGas for engineering design, threats and risk management were estimated at \$700,000. The property damage subtotal (sum of above) was \$4,830,000.

The cost of gas released (per thousand standard cubic feet (mcf)) was \$643,486. Estimated cost of gas released during intentional and controlled blowdown was \$342 for a total estimated cost of gas released at \$643,828.

Utility Facilities Involved

SoCalGas Transmission West Region, Coastal Area, Oxnard District, 22-inch od x 0.28-thick steel high pressure-transmission pipeline with operating pressures of MAOP = 797 psig and MOP = 780 psig.

Investigators

	Name	Title
1.	Randy Holter	SED, Senior Utilities Engineer-Specialist (SUE-Spc)

Documents Reviewed

See Appendix B.

SED Investigation Process

Reporting Requirements

General Order (G.O.) 112-F, Reference Title 49 Code of Federal Regulations (CFR), Part 191, Section 191.5 requires that each operator give notice in accordance with paragraph (b) of this section of each incident as defined in §191.3. However, Part 191, Section 191.3 defines an *"incident"* as "An event that involves a release of gas from a pipeline (emphasis added), gas from an underground natural gas storage facility (UNGSF), liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences: ...". Since this incident involved the release of gas and the estimated costs for repairs exceeding \$139,700, SoCalGas classified the March 24, 2024, incident as DOT reportable. This incident meets the DOT Reportable Incident requirement for reporting.

SED Investigation

On March 25, 2024, the Gas Safety and Reliability Branch (GSRB) of the California Public Utility Commission Safety Enforcement Division (SED) began the investigation of this pipeline incident and assigned a SUE-Spc as lead SED investigator. The same day, SED contacted the SoCalGas incident

SOCALGAS INCIDENT CRIMEA STREET FIRE RD, VENTURA INVESTIGATION REPORT

Pipeline Safety and Compliance Specialist (PSCS) personnel by email and phone to conduct an initial inquiry into the incident. After gathering initial information from SoCalGas on March 25th, SED sent an incident notice (NRC#1394627. CalPUC-G20240324-3678. SoCalGas - Ventura, CA - Natural Gas Release) to PHMSA by email. SED also prepared and submitted initial data requests to SoCalGas on March 25th.

SED's investigation of this incident involved data request, inquiring remediation with SoCalGas' relevant personnel including SoCalGas' Control Center. SED reviewed operations documents and pertinent SoCalGas employee training records, SoCalGas' Operator Qualification records, and related operation and maintenance Gas Standards and Procedures.

From the time of the incident to until August 16, 2024, the incident site and access roads were not accessible to SED and non-SoCalGas personnel due to safety reasons (saturated terrain, large mud holes and slope instability). During this time, trained SoCalGas and second party earthmoving crews mobilized and prepared the site for safe working parameter, and SoCalGas engineering staff put together a plan for remediation.

The purpose of this investigation was to determine whether there were probable violations of G.O. 112-F Reference Title 49 Code of Federal Regulations (CFR) Part 192, that may have caused or contributed to the incident. Furthermore, SED was interested in determining if SoCalGas was implementing corrective actions to prevent similar incidents in the future.

Incident Description

On March 24, 2024, at approximately 0300 hours, SoCalGas' Transmission Gas Control received an alarm signaling a pressure decrease on a 22-inch steel transmission pipeline (L-406) and notified SoCalGas' Field operations base in Oxnard to investigate. The L-406 pipeline is a 22-inch od x 0.28-thick steel high pressure-transmission pipeline with normal operating pressures set for MAOP = 797 psig and MOP = 780 psig.

On March 24, 2024, at approximately 0315 Hours, SoCalGas' field Tech from the Oxnard Field Operations Base was dispatched to investigate. According to SoCalGas records, a mudslide had occurred on the east side of L-406, "MP-1.30 7-15-20 LF" span at an arroyo in the area near Crimea Street Fire Road, outside the city of Ventura, Ventura County, CA. The Tech was not able to access the site due to terrain and slope instability from recent rainstorms and a mudslide at the incident site. SoCalGas' field Tech identified the damaged location of L-406 visually, from a distance and notified Gas Control. Gas Control abated the pressure event at the leaking section by remotely closing L-406 downstream valve station at MP0.00 and upstream station valve at MP5.53, approximately 5-1/2 miles apart.

There were no service interruptions, no injuries or fatalities reported as a result of this incident. The class location of the L-406 incident occurred in a Class 1 Location, in a non-high consequence area and is not under a special inspection program. The incident was reported to both the Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) National

Response Center (National Response Center Incident Reports #1394627 and update #1394795) and California Public Utilities Commission (CPUC) due to gas release and potential cost of repairs exceeding \$139,700.

According to SoCalGas records, a leak was assessed by SoCalGas on L-406 through instrument notifications, remote visual observation and by drone. L-406 was visually assessed to be horizontally separated at the arroyo span mudslide area. SoCalGas-provided data responses on May 1, 2024, showing ariel drone photos of the affected site. A photo of the 22-inch L-406 shows the pipeline resting in a washed-out, dried mud hole and separated horizontally at an existing coated girth-weld.

2024 02 22 16:00:00 0000000 07	00 500 0010510
2024-03-23 10:00:00.0000000 -07	500.9918518
2024-03-23 17:00:00.0000000 -07:	00 507.278656
2024-03-23 18:00:00.0000000 -07	00 514.1148071
2024-03-23 19:00:00.0000000 -07	00 509.231842
2024-03-23 20:00:00.0000000 -07	00 494.7050476
2024-03-23 21:00:00.0000000 -07:	00 479.3237
2024-03-23 22:00:00.0000000 -07	00 466.4448853
2024-03-23 23:00:00.0000000 -07	00 440.5346985
2024-03-24 00:00:00.0000000 -07	00 435.1023865
2024-03-24 01:00:00.0000000 -07	00 434.9803162
2024-03-24 02:00:00.0000000 -07	00 443.5255127
2024-03-24 03:00:00.0000000 -07:	00 445.5702515
2024-03-24 04:00:00.0000000 -07	00 437.9406128
2024-03-24 05:00:00.0000000 -07	00 430.0363159
2024-03-24 06:00:00.0000000 -07	00 37.62932205
2024-03-24 07:00:00.0000000 -07	00 0.915555298
2024-03-24 08:00:00.0000000 -07	00 0.885036767
2024-03-24 09:00:00.0000000 -07	00 0.885036767
2024-03-24 10:00:00.0000000 -07	00 0.854518294
2024-03-24 11:00:00.0000000 -07:	00 0.793481231
2024-03-24 12:00:00.0000000 -07	00 0.762962759
2024-03-24 13:00:00.0000000 -07	00 0.793481231
2024-03-24 14:00:00.0000000 -07	00 0.793481231

Figure 1. SoCalGas' Transmission Gas Control L-406 Pressure Loss Event



Figure 2. L-406 arroyo span mudslide incident site



Figure 3. L-406 mudslide incident site – pipe separation viewed from ariel drone

The affected L-406 arroyo-spanned incident site and the 5.5-mile section of 22-inch pipe between valve station MP0.00 and MP5.53 remained out of service while the SoCalGas engineering and operations made plans for repairs and logistics to access site.

Chronology of Incident Investigation Activities

This section provides a chronology of SoCalGas record history of the L-406 incident occurrence on March 24, 2024, and highlights the SED investigative log of activities undertaken after the incident occurred and reported to CPUC.

March 24, 2024

SoCalGas' Oxnard District Gas Control receives an alarm signaling a pressure decrease on a 22-inch steel transmission pipeline (L-406) and notifies SoCalGas' Field operations base in Oxnard to investigate. The reportable incident summary states the incident occurred on March 24, 2024, at approximately 0300 hours. The L-406 pipeline is a 22-inch od x 0.28-thick steel high pressure-transmission pipeline with normal operating pressures set for MAOP = 797 psig and MOP = 780 psig. SoCalGas sends reportable Gas Incident Notice, Southern California Gas Company Incident No: 240324-15724 to the CPUC SED.

SoCalGas Gas Control abates the pressure event at the leaking section at approximately 0500 hours by remotely closing L-406 downstream valve station at MP0.00 and upstream station valve at MP5.53, approximately 5.5 miles apart. SoCalGas Oxnard Transmission Operations Tech reports he is not able to access the site due to terrain and slope instability from recent rainstorms and a mudslide occurring at the incident site. SoCalGas' field Tech identifies the damaged location of L-406 visually, from a distance and notified Gas Control.

March 25, 2024

GSRB opens its investigation of this SoCalGas incident and assigns a SUE-Spc as lead SED investigator. SED contacts SoCalGas incident PSCS personnel by email and phone to conduct an initial inquiry into the incident. SED gathers initial information from SoCalGas and sends incident notice (NRC#1394627. CalPUC-G20240324-3678. SoCalGas - Ventura, CA - Natural Gas Release) to PHMSA by email. SED also prepares and submits initial data requests to SoCalGas.

March 26, 2024

SoCalGas sends out initial CPUC 420 Report, "03-24-2024 CPUC 420 Initial - Crimea Street Fire Rd, Ventura", to CPUC SED. SoCalGas files PHMSA National Response Center Incident Report #1394795 and follows with an update. SED updates the initial incident data request to SoCalGas and submits it by email to SoCalGas.

March 29, 2024

SoCalGas provides selected responses to SED initial data requests DR02 and DR02.1. SoCalGas reports that the site is still an open incident site and SoCalGas personnel are not able to safely approach the incident location.

May 1, 2024

SoCalGas reports to SED that pipeline has been inspected and that the situation for repairs and plan of action is being assessed by SoCalGas engineering and SoCalGas construction contractors. SoCalGas provides responses to SED data request DR02.1.

May 7, 2024

SoCalGas states in a Transmission Audit meeting that L-406 continues to be inaccessible by foot and is being monitored at a distance and with survey drones. No work has been done at the incident location where the L406 Kalorama arroyo span is exposed at the east slope of the arroyo. Currently, SoCalGas engineering and operations are in the planning stages for remediation. SoCalGas will notify SED when the incident site is accessible for SED observation.

May 23, 2024

No work has been done on the incident location. SoCalGas is laying out an incident staging site and access along existing Ventura County fire roads. The N Crimea St fire Road slope is deemed by SoCalGas engineers and contractors as unsafe and unpassable due to soil saturation levels. Currently, SoCalGas engineering and operations are in the planning stages for the L406 remediation and service operation restoration. SoCalGas will notify SED when the incident site is accessible for SED observation.

June 3, 2024

SED's reviews SoCalGas leak survey records (wo#8329541-VENT547), produced prior to the incident and finds that a semi-annual compliance Ariel Leakage Survey was performed on the affected L-406 pipeline on August 24-25, 2023, comprehensively. No leak indications were recorded during this leak inspection. On March 12, 2024, records show SoCalGas performed a semi-annual compliance Ariel Leakage Survey (wo# 8491172-VENT547) and also show that a semi-annual compliance Ariel Leakage Survey was performed on the affected L-406 pipeline. Records show no leak indications were recorded during this leak inspection. The most recent L-406 In-Line Inspection (ILI) inspection was performed on September 2-3, 2023, by SoCalGas vendor, Entegra. Records of this ILI do not show any indications of metal loss, dents, gouges, wrinkles, or bends that affected the integrity of the pipeline. SED review of L-406 Cathodic Protection (CP) records for the past five years do not find any deficiencies with the CP readings.

July 30, 2024

SoCalGas provides L-406 incident site status check stating that engineering and operations are in the planning stages for remediation. SoCalGas provides updated PHMSA supplemental report which fulfills CPUC 420 Final incident reporting requirement. SoCalGas states that the Company will notify SED when the incident site is accessible for SED observation.

August 22, 2024

SoCalGas notifies SED that the incident site is accessible for SED observation. Engineering evaluations are currently in progress. The site is being mobilized for assessment and remediation construction activities. Access road grading and slope excavation are in progress by second party contractors.

SoCalGas provides responses to SED data request DR03 show that L-406 affected area is not in a high consequence zone and is not under a special inspection program. Provided records state an ILI was performed on the affected L406 section of line on September 2-3, 2021. A semi-annual L406 (MP 0.00-44.59) compliance aerial leak survey/patrol was performed on August 24-25 (WO 8329541), 2023 and March 12, 2024 (WO8491172).

August 28, 2024

SED conducts a field investigation and meets with SoCalGas' representative at the incident site staging yard. SoCalGas' Project Manager states that, on August 24, 2024, SoCalGas had cut out the section of damaged (separated) pipe, removed it from the L406 pipeline and staged it at the lay-down construction (staging) yard, SED takes photos of the damaged section of pipe sections that had been separated at the joint weld. SED takes incident site pictures of pipelines in the mudslide area and takes field measurements of the arroyo pipeline span connected to the incident site east slope pipeline. SoCalGas states that it is planning to have the damaged section tested and to undergo material metallurgical lab analysis.

September 23, 2024

SED submits data responses updates for DR03 to SoCalGas to CPUC. SoCalGas provides responses to SED data request DR03. SoCalGas states it continues to assess the cause of the gas leak. SoCalGas lab and engineering model evaluations are currently in progress. The site is being mobilized for further assessment and remediation construction activities. Access road grading and slope excavation are in progress by second party contractors.

October 14-15, 17-18, 2024

SED personnel visit the incident site to investigate and to observe site remediation and construction activities. SED reviews operator qualified task activities and takes photographs (damaged section of L-406, new construction of L-406, and the incident site).

October 14-15, 17-18, 2024

SoCalGas updates and clarifies subparts in 240323-15720 DOT Supplemental Final Report - Crimea Street Fire Rd. SoCalGas updated responses that were satisfied during the SED field visit in prior week. SED notifies SoCalGas this report will state that SoCalGas' has an ongoing investigation into the findings of the direct cause and root cause of the incident.



Figure 4. Partially excavated L-406 at arroyo span mudslide location and separated 22-inch pipe



Figure 5. Extracted L-406 22-inch pipe segments at weld separation



Figure 6. Support scaffolding at L-406 arroyo span and east slope repair segment

November 15, 2024

SoCalGas provides SED on its remediation status of L-406. SoCalGas' contractor, welder crews continue to repair L-406 pipeline. SoCalGas provides responses to SED data request DR03. Op-qual records request fulfilled SoCalGas continues to assess the cause of the gas leak. Engineering evaluations are currently underway to determine the root cause of the failure.

December 16, 2024

SoCalGas provides SED with an update on its remediation status. Welder crews continued to repair L-406. In addition, SoCalGas installed a new station's safety valve equipment. Furthermore, SoCalGas employed new technology to monitor the slop stress and to address any land movement in the vicinity of L-406. SoCalGas provides responses to SED data request DR03. SoCalGas' Engineering is still evaluating the root cause of the weld separation (pipeline failure).

Findings and Corrective Actions

SED's Code Evaluation for SoCalGas Procedures:

Pertaining to SoCalGas, General Order 112-F (GO 112-F), Reference Title 49 Code of Federal Regulation, Part 192 (49 CFR, Part 192), §192.605(a) states:

"General. Each operator shall prepare and follow for each pipeline <u>for each pipeline, a manual of written</u> <u>procedures</u> for conducting operations and maintenance activities and for emergency response. For transmission lines, the manual must also include procedures for handling abnormal operations. This manual must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year. This manual must be prepared before operations of a pipeline system commence. Appropriate parts of the manual must be kept at locations where operations and maintenance activities are conducted."



Figure 7. Kalorama Wash, California Department of Conservation, Historical Landslides [C4]

SED's Findings

Finding No. 1

February 2024 precipitation reached more than 13 inches [C3], almost 400% more monthly precipitation than normal. Subsequent rains in February and March of 2024 exceeded 100% of area average annual rainfall [C.3], further saturating Ventura area foothill soils. A mudslides and washouts occurred and affected SoCalGas transmission pipeline span L406 crossing Kalorama Wash, an arroyo near Crimea Street Fire Road, near Ventura, Ventura County California.

Based on SED investigation, the failure of L-406 was the result of soil movement (natural force) which caused excessive axial loading leading to the failure at the girth weld. Area topography, soil type and large amounts of rain (atmospheric river) over the preceding months saturated and vertically eroded the soil on the side of the hill above the pipeline. In addition, Based on California Department of Conservation, California Landslides Database, the area where the landslide occurred, did not experience any landslide events in the past five (5) years (unknown geohazard site). Therefore, SED did not find any GO 112-F, Reference 49 CFR, Parts 191 & 192 violations by SoCalGas.

SED's Recommendations

SoCalGas should conduct a post-incident investigation including sending the failed section of L-406 to a laboratory for testing and examination to determine the causes and contributing factor(s) of the failure, minimize the possibility of a recurrence, and share the post-incident investigation result with SED.

SoCalGas should perform a root-cause analysis and report that includes the minimum information:

SoCalGas' damage assessment report.

- a. SoCalGas' investigation and findings into the direct cause and root cause of the incident
- b. Identify the location where the incident occurred as landslide-susceptible areas?
- c. Did SoCalGas perform a landslide assessment analysis prior to construction of the pipelines to determine if the areas are prone to landslide hazards?
- d. Did SoCalGas consider any necessary technology to mitigate abnormal conditions due to potential landslides in planning and prior to constructing the pipelines?

SED's Observations

This section details observations SED made over the course of the investigation. SED will follow-up and monitor the progress of SoCalGas' remedial actions and root cause analysis of the weld separation.

Observation 1:

On August 28, 2024, SED conducted a field investigation and met with SoCalGas' representative at the site. On August 24, 2024, SoCalGas had cut out the section of pipe removed it and staged it at a lay-down construction yard and SED took photos of the damaged section of pipe that had been separated at the weld. SED took incident site pictures of pipeline the landslide area and took field measurements of the arroyo pipeline span adjacent to the incident site. SoCalGas stated that it is planning to have the damaged section and welds tested with lab analysis of material involved in incident. As of the date of this report, the sections of failed pipes and failed weld have not been analyzed.

Observation 2:

On October 14-15, 17-18, 2024, SED personnel visited the incident site to observe incident site remediation construction activities, inquire into the nature and specifications of repairs and review operator qualified task activities and take photographs.

SoCalGas's Corrective Actions

SoCalGas is not in violation of General Order (GO) 112-F, Reference Title 49 Code of Federal Regulations (CFR), Parts 191 & 192 and therefore no corrective actions are required as a result of this incident.

SoCalGas's Mitigative Actions

SoCalGas' contractor Geosyntec installed stainless steel strain sensors devices on L-406 to monitor the scouring or movement of the soil surrounding the pipeline or movement of the pipeline and to take prompt remedial action to ensure the safe operation of L-406. Furthermore, SoCalGas will follow 49 CFR 192 § 192.613 – Continuing surveillance to conduct compliance inspection of its facilities following an extreme weather event or natural disaster that has the likelihood of damaging to SoCalGas' pipeline facilities and to mitigate the unsafe conditions in the pipeline right-of-way.



Figure 8. Kalorama Wash, California - steel strain sensors devices installed

These sensing devices monitor longitudinal strain on the pipeline which is in the pathway of potentially high natural forces. These sensors are soldered to pipe joints and connected with communication cables.



Figure 8. Kalorama Wash, California - steel strain sensors device soldering and testing

The circuit is terminated at a communication box with satellite/WiFi/teleport capabilities to send signals to the SoCalGas transmission district control room. The system is intended to provide SoCalGas early warning notification that the pipe is incurring strain-to-failure forces and safety measures may be taken in the control room to isolate the threatened area of the pipeline.

Conclusion

Based on the investigation, SED's investigation found that the incident caused by earth movement (natural force) between sloped elevations of adjacent residential properties after unusually heavy rainfall in the area. Therefore, SED did not find any GO 112-F, Reference 49 CFR, Parts 191 & 192 violations by SoCalGas.

As of the date of this report, the sections of failed pipes and failed weld have not been analyzed by SoCalGas. SED is monitoring the progress as SoCalGas stated that it is planning to have the damaged section tested/lab analysis. SED has requested the root cause analysis report of findings upon completion by SoCalGas engineering and vendor testing facilities. If the lab results are significantly different from the initial report findings, SED will reopen the investigation to reevaluate the new evidence and to ensure SED conclusions are based on the most complete and accurate data available.

Appendices

Appendix A: Glossary of terms

ACRONYM/ABBREVIATION	DEFINITION
AOC	Abnormal Operating Conditions
CFR	Code of Federal Regulation
DFM	Distribution Feeder Main
GO	General Order
GSRB	Gas Safety and Reliability Branch
HPDSM	High Pressure Distribution Steel Gas Main
MP	Mile Point
OQ	Operator Qualification
SoCalGas	Southern California Gas Company
PHMSA	Pipeline & Hazardous Materials Safety Administration
Patriot	Patriot Pipeline Inc.
SED	Safety and Enforcement Division
DOT	Department of Transportation
PSCA	Pipeline Safety and Compliance Advisor

SOCALGAS INCIDENT CRIMEA STREET FIRE RD, VENTURA INVESTIGATION REPORT

Appendix B: Documents Reviewed

1.	SoCalGas USRB Gas Incident Report to SED, GSRB 03/23/2024
2.	SoCalGas CPUC RGLI-420 Final Filing, [see item 3]
3.	SoCalGas PHMSA 7100.02 Filing Form, 3/24/2024
4.	SED Site Area Pictures, 8/28/2024, and 10/14,15,17,18, 2024
5.	SED Data request DR01, DR02.1 and SoCalGas response on file
6.	SED Data request DR03 and SoCalGas response on file
7.	SoCalGas's Response to SED's Data Request 09/19/2024
8.	SoCalGas PHMSA 7100.02 Supplement Filing Form, 3/26/2024
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Appendix C: Reference Materials and Internet Sites

1.	Potent Storm Drenches California; NASA
2.	<u>https://cw3e.ucsd.edu/wp-</u> <u>content/uploads/2024/02/27Feb2024_Summary/27Feb2024_Summary.pdf;</u> Scripps Institution of Oceanography
3.	VCPWA Flood Warning System - Rain Season Totals and Percent of Normal Report; 066e - Ventura - City Hall,
4.	Reported California Landslides
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SOCALGAS INCIDENT CRIMEA STREET FIRE RD, VENTURA INVESTIGATION REPORT

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