



**Annual Report Number 4**  
**Work of the Safety Ombudsman**  
**July 2022 – June 2023**

**Report Date: July 31, 2023**

**Stephen F. Nowaczewski**  
**Safety Ombudsman**



## Table of Contents

<b>Annual Report Number 4 .....</b>	<b>1</b>
<b>Overview .....</b>	<b>3</b>
<i>I. WSOC Meeting Participation .....</i>	<i>5</i>
<i>II. Safety Ombudsman Virtual Public Meeting – October 5, 2022 .....</i>	<i>6</i>
<i>III. Safety Ombudsman Data Requests .....</i>	<i>7</i>
<b>Data Request #14.....</b>	<b>7</b>
<b>Data Requests #15, #15A .....</b>	<b>8</b>
<b>Data Requests #16, #16A .....</b>	<b>9</b>
<b>Data Request #17.....</b>	<b>10</b>
<b>Data Requests #18, #18A .....</b>	<b>11</b>
<i>IV. California Public Utility Commission (CPUC) and California Department of Conservation Geologic Energy Management Division (CalGEM) Audit Reports .....</i>	<i>13</i>
<i>V. Safety Ombudsman Review and Evaluation of Incidents Involving Methane Emissions Above Threshold Levels .....</i>	<i>14</i>
<i>VI. Review and Advise on the WSOC’s Efforts, Findings, and Recommendations for Improvements .....</i>	<i>14</i>
<i>VII. Safety-related Concerns Reported by the Public .....</i>	<i>15</i>



## Overview

---

SoCalGas (Defendant) and the State Attorney General, City Attorney for the City of Los Angeles, County Counsel for the County of Los Angeles, and the County of Los Angeles (collectively referred to as Government Plaintiffs) entered a Consent Decree to resolve claims raised by the Government Plaintiffs associated with the natural gas leak that occurred at the Aliso Canyon natural gas storage Facility (Facility) in October 2015. The terms and conditions of the Consent Decree required SoCalGas to, among other things, form an internal safety committee, and select and retain a third-party subsurface gas storage industry expert (Safety Ombudsman) who shall act as a safety advocate for the Facility. A copy of the Consent Decree may be accessed via this link: [Click Here](#)

Section 4.2 of the Consent Decree outlines the requirements for SoCalGas to establish a Well and Storage Operations Safety Committee (WSOC). The duties of the WSOC include but are not limited to the following:

- Meet quarterly to review safety issues at the Facility;
- Review operational safety issues and promote safe operations at the Facility consistent with applicable laws, rules, regulations, and orders;
- Review Facility-related information, materials, or work product to assess safety at the Facility;
- Make recommendations to SoCalGas for repairs, improvements, policies, and/or upgrades to the Facility or infrastructure therein;
- Facilitate the role of, and work in cooperation with, the Safety Ombudsman;
- In coordination with the Safety Ombudsman, conduct periodic safety audits or safety-related Strengths, Weaknesses, Opportunities, Threats (“SWOT”) analyses of the Facility; and
- Review California Public Utility Commission (CPUC) and California Department of Conservation Geologic Energy Management Division (CalGEM) audit reports of the Facility.

Section 4.3 of the Consent Decree outlines the requirements for SoCalGas to select and retain a Safety Ombudsman and the duties associated with that role. The duties of the Safety Ombudsman include the following:

- Participate in all Well and Storage Operations Safety Committee (WSOC) meetings;
- Have access to all non-privileged materials, information, records, and work product in SoCalGas’ possession, custody, and control necessary to accomplish the tasks required of the Safety Ombudsman;
- Review CPUC and CalGEM audit reports of the Facility;
- Review and evaluate all incidents reported to the public and State and local agencies pursuant to Section 4.1 of the Consent Decree;
- Review and advise on the WSOC’s efforts, findings, and recommendations for improvements;
- Serve as a non-exclusive repository for safety-related concerns reported by the public with respect to the Facility;
- Serve as a point of contact to receive safety complaints or concerns relating to the Facility from anyone who wishes to remain anonymous, and provide any anonymous reports of safety concerns to SoCalGas;

---

*This unredacted draft report is not for release to the public and may contain information which is confidential, security sensitive, or trade secrets of a party.*



- Maintain the privacy of the person or member of the public confidentially making safety complaints or concerns relating to the Facility;
- Generate annual reports (Annual Reports) that detail the following:
  - The work of the Safety Ombudsman;
  - The work of the WSOC; and
  - Recommendations, if any, for improvements related to safety and prevention of leaks at the Facility.
- Provide the Annual Reports to the Attorney General, the City Attorney, County Counsel, the CPUC and CalGEM. The Annual Reports shall also be made public via the Aliso Canyon Website and the local community shall be provided with an opportunity to comment on the Annual Reports. The Safety Ombudsman shall schedule at least one public meeting each year to explain and respond to questions regarding the Annual Reports.

This report has been prepared in accordance with the requirements outlined in Section 4.3, (b), (ix), (2) of the Consent Decree, and summarizes the work of the Safety Ombudsman during the period of July 2022 – June 2023. It is the fourth such annual report.



## I. WSOC Meeting Participation

Four (4) WSOC meetings were held during the July 2022 – June 2023 period, as noted below:

- September 21, 2022 (in person);
- December 15, 2022 (virtual);
- March 23, 2023 (in person); and
- June 9, 2023 (virtual).

The Safety Ombudsman participated in all meetings, including in person at the September and March meetings. The quarterly meeting agenda includes:

1. Review and approval of the prior meeting minutes;
2. Update from the Safety Ombudsman concerning public inquiries and other relevant topics;
3. Update from WSOC members concerning safety-related matters associated with the Aliso Canyon Facility;
4. CalGEM audit status; and
5. Joint discussion of other relevant matters related to the Aliso Canyon Facility.

The meetings provide a forum for discussions between the WSOC members and the Safety Ombudsman on safety-related matters at the Facility. Topics vary from meeting to meeting depending upon current issues, maintenance and construction work activity at the Facility, and safety concerns. Members of the WSOC provide updates of construction and/or maintenance work at the Facility with the emphasis on safety, the status of ongoing discussions with CalGEM staff concerning SoCalGas' Risk Management Plan for the Facility, and the status of periodic audits of the Facility by CPUC and CalGEM staff. The WSOC meetings provide an opportunity for the Safety Ombudsman to probe any safety concerns, establish a dialog directly with the appropriate subject matter experts, and give feedback to the WSOC concerning committee work or other safety-related initiatives at the Facility.

During the period of July 2022 – June 2023, discussion topics included but were not limited to:

- Inclusion of a general safety theme at the start of each meeting, including incidents from the natural gas pipeline and gas storage industry.
- The development of additional and enhancement of existing Gas Standards relevant to the safety of underground natural gas storage facilities;
- Status of Data Requests from the Safety Ombudsman and subsequent SoCalGas responses;
- Preparation of the Safety Ombudsman Annual Reports and public interactions, including any concerns, issues, or complaints submitted to the Safety Ombudsman by members of the public;
- Recommendations of the WSOC and/or the Safety Ombudsman and the status of SoCalGas plans in response to the recommendations;
- Audits performed by the WSOC examining adherence to SoCalGas' Gas Standards, and reviews and updates of SIMP (Storage Integrity Management Program) standards;
- Status of the CalGEM/PHMSA audits through the July 2022 – June 2023 period; and



- Status of the Aliso Canyon Risk Management Plan (RMP), well integrity assessments, and individual well reassessment period adjustments granted by CalGEM.

Individual links to the minutes of the WSOC meetings are included immediately below. Names of individuals have been redacted from the meeting minutes.

- September 2022 meeting minutes link: [Click Here](#)
- December 2022 meeting minutes link: [Click Here](#)
- March 2023 meeting minutes link: [Click Here](#)
- June 2023 meeting minutes link: [Click Here](#)

In accordance with the WSOC Charter, a change in membership occurred for the 2022 – 2024 period. New members and members filling officer roles were introduced at the December 2022 meeting.

## II. Safety Ombudsman Virtual Public Meeting – October 5, 2022

The terms of the Consent Decree require that the Safety Ombudsman provide three Annual Reports to the Attorney General, the City Attorney, County Counsel, the CPUC, and CalGEM. The Safety Ombudsman is required to make available to the public for review and comment a copy of each of the three Annual Reports and schedule at least one public meeting each year wherein the Safety Ombudsman shall explain and respond to questions regarding the Annual Reports. The three reports provide an overview of the following:

1. The work of the Safety Ombudsman;
2. The work of the WSOC; and
3. Recommendations for improvements related to safety and prevention of leaks at the Facility.

Previous Annual Reports covering the April 2019 - June 2020 period, the July 2020 – June 2021 period, and the July 2021 – June 2022 period were posted to the Safety Ombudsman website prior to the annual public meetings.

The July 2021 – June 2022 period Annual Reports were posted on September 14, 2022 and notice was provided on the same day via email to approximately two dozen representatives from the CPUC, CalGEM, and the city and county of Los Angeles; to other state agents as applicable; and to approximately three dozen groups/parties whose contact information was supplied by SoCalGas' Public Affairs Group. The individuals/groups who received the meeting notice included those in SoCalGas' public outreach initiative associated with the Aliso Canyon incident. The email notice included information concerning a virtual public meeting to be hosted by the Safety Ombudsman on October 5, 2022, at 6:00 pm. The purpose of the meeting was to provide an overview of the work performed by the Safety Ombudsman during the July 2021 – June 2022 period, as detailed in three Annual Reports.

The annual public meeting was held on October 5, 2022, and was well attended, with much public feedback given. The meeting lasted 1.5 hours, including a one-hour question-answer period following the Safety Ombudsman's summary presentation covering the Ombudsman's professional experience, the role of the Ombudsman, and a review of the three annual reports. The presentation was recorded and posted to the Ombudsman website. Meeting participants were invited to raise questions or concerns at any time regarding the Annual Reports, or any other relevant issue, and to post their questions directly to the Safety Ombudsman website.

---

*This unredacted draft report is not for release to the public and may contain information which is confidential, security sensitive, or trade secrets of a party.*



The Safety Ombudsman received feedback at the October 5, 2022 public meeting on topics grouped into several categories. Concerns were expressed over:

1. The adequacy, effectiveness, and transparency around the fence-line methane monitoring system;
2. Seismic event and fire event risk, how such hazards could relate to well failure and cascading events to the public, and how SoCalGas has evaluated and plans to manage such risk – and within this topic area, several meeting participants brought up the issue of use/lack of use of subsurface safety valves; and
3. Emergency response planning, coordination with local civil emergency responders, and transparency to the public on emergency response plans and emergency notification.

Some meeting participants provided feedback on the history of the issues that, in their opinion, stemmed from the original Aliso Canyon incident, and some participants expressed a level of uncertainty over information they received and a general sense of distrust of SoCalGas. The Safety Ombudsman agrees that SoCalGas' management of Aliso Canyon gas storage risk should evaluate rational and knowable aspects of risk, including physical and human and organizational risk, and that the Company's risk decisions could best be made in recognition of risk tolerance and risk perception of Company, regulatory, and community stakeholders. The meeting participants gave the Safety Ombudsman a sense of their relative levels of risk tolerance and risk perception.

The public meeting materials and recording were posted to the Ombudsman website and can be found at the following link: [Click Here](#)

Following the public meeting, the Safety Ombudsman took up the issues of concern through research on the topics and subsequent data requests to SoCalGas, working with and through the WSOC.

The Ombudsman will host a virtual meeting in Q4 of 2023 covering the Annual Reports posted for the period July 2022 – June 2023.

### **III. Safety Ombudsman Data Requests**

The Consent Decree stipulates that the Safety Ombudsman shall have access to all non-privileged materials, information, records, and work product in SoCalGas' possession, custody, or control necessary to accomplish the Ombudsman's tasks. SoCalGas is prohibited from unreasonably denying the Ombudsman access to such information or withholding information based on a privilege not supported by applicable law.

The Safety Ombudsman made data requests #14, #15-#15A, #16-#16A, #17, and #18-#18A during the July 2022 – June 2023 period. Prior data requests and response were reviewed in the previous three annual reports and will not be covered in this report.

#### **Data Request #14**

The Ombudsman requested a copy of what SoCalGas uses as a well handover process (as in ISO 16530) during the September 21, 2022 WSOC meeting. SoCalGas responded on October 13, 2022 (dated October 11, 2022), attaching STOR-002 O&M Request Work Instructions. The SoCalGas response and the work instruction STOR-002 can be found at these links: [Click Here](#); [Click Here](#)



*Summary opinion of the Ombudsman following DR#14 responses:*

The Ombudsman identified opportunities for improvement in STOR-002, which can be found in Annual Report Number 4 – Recommendations for Improvements Related to Safety and Leak Prevention: [Click Here](#)

### **Data Requests #15, #15A**

Data Request #15 on October 21, 2022 delivered questions regarding the adequacy, effectiveness, reliability and availability, and transparency of the fence-line methane monitoring system (FLMM). SoCalGas responded on November 11, 2022. The data provided by SoCalGas indicated that the FLMM system reliability is relatively high – information was available on the webpage ~99.7% of the time – but SoCalGas reviews the system operation and its components for possible improvements. The DR#15 questions and responses, with a spreadsheet provided by SoCalGas, can be found at this link: [Click Here](#); [Click Here](#)

Data Request #15A, asking for additional clarification on system fault modes and occurrences and detail on system reliability calculations and statistics, was delivered on November 16, 2022 and SoCalGas responded on December 8, 2022. The DR#15A questions and responses, with a spreadsheet provided by SoCalGas, can be found at this link: [Click Here](#); [Click Here](#)

In addition to the data requests and responses, SoCalGas provided a summary presentation of the FLMM system at the December 2022 WSOC meeting. The presentation can be found at this link: [Click Here](#)

*Summary opinion of the Ombudsman following DR#15 and #15A responses:*

The current FLMM system at Aliso Canyon has high reliability, and SoCalGas demonstrated that it reviews the system for performance and potential improvements.

However, pursuant to these data requests and responses, the Ombudsman made recommendations which are summarized below and are contained within Annual Report Number 4 – Recommendations for Improvements Related to Safety and Leak Prevention, which can be found at this link: [Click Here](#)

The Ombudsman recommends tracking the reliability of safety systems:

1. The fence-line methane monitoring system daily percent availability and reliability should be tracked (where “reliability” and “availability” are defined as in SoCalGas response to DR #15 Q1). Tracking should include for those instances of non-availability or non-reliability the causal factor, including from among possible causal factors 1) maintenance, 2) repair, 3) humidity, 4) beam block, 5) other issue as identified, 6) unknown.
2. SoCalGas should verify tracking of the percentage of time a monitoring station was considered to be “on and reporting” with the information available via the weblink, the percentage of time a monitoring station was off for routine planned/scheduled repair and/or maintenance, the percentage of time a monitoring station was off for non-routine or corrective (unplanned) repair and/or maintenance, and the percentage of time a monitoring station was off and/or not reporting and awaiting investigation as to the cause of the status.
3. The concept of reliability tracking can be extended to other safety systems, such as well safety valve reliability, including failed closures on demand or on test, failures in control systems, and





false closures. Well pressure and flow and annulus pressure monitoring equipment accuracy and reliability also could be tracked.

**Data Requests #16, #16A**

Data Request #16 on November 30, 2022 delivered questions regarding emergency response procedures, planning, coordination with local civil emergency responders, drills, and transparency to the public on emergency response plans and emergency notification. SoCalGas provided responses on January 12, 2023 with information sufficient, or better, to answer the Ombudsman’s immediate questions in DR#16. The DR#16 questions and SoCalGas responses can be found at this link: [Click Here](#)

The attachments referenced by SoCalGas in their responses to DR #16 are listed below:

File	Link
Q01-AC_SO_DR16_01_224.121	<a href="#">Click Here</a>
Q01-AC_SO_DR16_Q01_224.121 Phase II Questions and Answers_10-18-2021	<a href="#">Click Here</a>
Q01-AC_SO_DR16_Q01_Aliso Cyn Personnel Transcript for GS 224.112_Redacted	<a href="#">Click Here</a>
Q02-224.112	<a href="#">Click Here</a>
Q02-AC_SO_DR16_Q02_224.112 Phase II Questions and Answers_07-07-2021	<a href="#">Click Here</a>
Q02-AC_SO_DR16_Q02_Aliso Cyn Personnel Transcript for GS 224.112_Redacted	<a href="#">Click Here</a>
Q03-AC_SO_DR16_Q03_1726.3_SoCalGas Project Specific RMP_Aliso Canyon_2022.04.01	<a href="#">Click Here</a>
Q04-AC_SO_DR16_Q04_Aliso Cyn Personnel Transcript for GS ER-1_Redacted	<a href="#">Click Here</a>
Q04-AC_SO_DR16_Q04_Aliso Cyn Personnel Transcript for ICS_Redacted	<a href="#">Click Here</a>
Q05-2019 Drill_Redacted	<a href="#">Click Here</a>
Q05-2020 Drill_Redacted	<a href="#">Click Here</a>
Q05-2021 Drill_Redacted	<a href="#">Click Here</a>
Q05-2022 Drill_Redacted	<a href="#">Click Here</a>
Q08-2019 Drill Overview_Redacted	<a href="#">Click Here</a>
Q09-2022 Drill Overview_Redacted	<a href="#">Click Here</a>
Q10-SoCalGas 2022 Storage Drill Series Ground Truth - Aliso Canyon_Redacted	<a href="#">Click Here</a>

*This unredacted draft report is not for release to the public and may contain information which is confidential, security sensitive, or trade secrets of a party.*



File	Link
Q11-SIMP.15 Emergency Response Plan - Aliso Canyon Storage Field (1_2)_Redacted	<a href="#">Click Here</a>
Q11-SIMP.15 Emergency Response Plan - Aliso Canyon Storage Field (2_2)_Redacted	<a href="#">Click Here</a>
Q12-AC_SO_DR16_Q12_224.107	<a href="#">Click Here</a>
Q12-AC_SO_DR16_Q12_ER-1	<a href="#">Click Here</a>
Q13-LAC OEM Coordinator Program_2019_Redacted	<a href="#">Click Here</a>
Q13-LAC OEM Coordinator Program_2020_Redacted	<a href="#">Click Here</a>
Q13-LACOFD_Aliso Canyon Tours_April 2022_Redacted	<a href="#">Click Here</a>

The Ombudsman developed follow-up DR#16A, which was delivered on January 30, 2023 with questions on well flow potential estimation, heat content estimation, emergency area/isolation area determination and planning, and actions taken by the company to internally recommended improvements after drills and reviews. The DR#16A questions and SoCalGas responses and attachments can be found at this link: [Click Here](#); [Click Here](#)

*Summary opinion of the Ombudsman following DR#16 and #16A responses:*

SoCalGas provided documentation that the organization follows its emergency planning and response procedures, creates realistic drills involving geohazards and gas storage wells, and communicates with local civil emergency planning coordinators.

There are opportunities for improvement in the detail of gas storage emergency response and planning. Pursuant to the Ombudsman's review of SoCalGas responses to DR#16 and DR#16A, additional discussion will be on the agenda for future WSOC meetings regarding how SoCalGas could identify flow capability of each well and implement improvements in emergency action plans for gas storage well incidents using heat flow, noise, pollutant flow, and precautionary distancing measures. Refer to Annual Report Number 4 – Recommendations for Improvements Related to Safety and Leak Prevention: [Click Here](#)

**Data Request #17**

The Ombudsman reviewed the DRAFT Aliso Canyon Geologic, Seismologic, and Geomechanical Studies performed pursuant to requirements made by California DOGGR, now CalGEM, and submitted in draft by March 20, 2019 (overview, summary, reports 1-10 inclusive, as well as winter gas supply and reliability studies). The reports are posted on the California Department of Conservation website at <https://www.conservation.ca.gov/calgem/Pages/AlisoCanyon.aspx>

The Ombudsman prepared DR#17, asking what risk management plans or actions SoCalGas had completed pursuant to the landslide and seismic-induced earth movement risk identified in the reports in general and at specific locations. The Ombudsman's questions focused on areas of general geo-hazard interest presented by the public during the October 2022 annual meeting.

---

*This unredacted draft report is not for release to the public and may contain information which is confidential, security sensitive, or trade secrets of a party.*



SoCalGas provided a response on February 17, 2023, answering only one question and deferring on the others due to legal/regulatory issues impeding the completion of the draft reports. The DR#17 questions and SoCalGas responses can be found at this link: [Click Here](#); [Click Here](#)

*Summary opinion of the Ombudsman following DR#17 responses:*

As SoCalGas responded to only one question in DR#17 and the Ombudsman followed with similar questions in DR#18 and DR#18A, please see DR#18-18A below.

### **Data Requests #18, #18A**

The Ombudsman delivered DR#18 on March 6, 2023, with questions following those in DR#17, as well as new questions about annulus gas monitoring as a follow-up to 2019-20 email inquiries by the Ombudsman. SoCalGas provided responses on May 15, 2023. The DR#18 questions and SoCalGas responses and attachments can be found at this link: [Click Here](#); [Click Here](#); [Click Here](#)

The Ombudsman sent follow-up questions in DR#18A on May 22, 2023, seeking additional information and clarification pursuant to DR#18 questions and responses. SoCalGas provided responses on July 21, 2023. The DR#18A questions and SoCalGas responses can be found at this link: [Click Here](#)

*Summary opinion of the Ombudsman following DR#18 and DR#18A responses:*

DR#17, #18, and #18A relate to understanding the advance of SoCalGas' risk management efforts in Aliso Canyon – specifically the knowledge gained through ongoing monitoring, the preventive and mitigation efforts employed or planned, and the perceived efficacy and effectiveness of those P&M measures.

Further, the geohazard analyses commissioned by CalGEM and resulting in DRAFT reports in early 2019 (see reference under Data Request #17) provided significant information regarding the geohazard risks, which SoCalGas could use to evaluate their current risk management treatments for those hazards at specific well locations or at the Aliso Canyon facility in general. However, it appears to the Ombudsman that SoCalGas is waiting for reports to be finalized and has followed up on the information only in regard to the one report that was approved as final.

However, beyond the issue of the pace of action on the part of SoCalGas, the Ombudsman intends that the answers to the questions provide the public with some understanding of the risk reduction achieved by SoCalGas since 2016-2018 and the improving risk-informed discipline of the Company visible in its management of active hazards and threats.

The Ombudsman recognizes that risk of storage gas loss of containment and its consequential effects has been reduced at the Aliso Canyon facility in the past five to seven years. Reduction in risk at the Aliso Canyon facility falls into three broad categories:

- Reduction in footprint (number of active wells and well sites)
  - General reduction in environmental and safety impact potential
  - Reduced reservoir pressure and volume (reduced consequence potential)
- Increased mechanical integrity and resilience of wells
  - Design/materials improvements (liners, other tubulars, cement, wellhead)
  - Two passive physical/technical barriers (tubulars)



- Additional wellhead barriers
- Treatment for prevention/mitigation of other hazards; plugged well integrity
- Increased human and organizational awareness and discipline
  - High-quality procedural and engineering/material standards
  - Remote/electronic/continuous monitoring, with alarm/warning management
  - Additional downhole and wellhead testing, inspection, analysis
  - WSOC and other aspects related to safety management
  - SIMP organizational acumen

At the Aliso Canyon facility:

Wells have been plugged in accordance with CalGEM and PHMSA rules, essentially filling all voids with cement to provide zonal isolation. The active injection/withdrawal well count has been reduced to 60 injection/withdrawal (I/W) wells, as fifty-four (54) wells have been permanently plugged since late 2016. The plugging of wells represents a reduction of 47% of the open conduits available for potential leakage over the late 2016 to mid-2023 period.

Forty-one (41) out of sixty (60) I/W wells have had complete new inner casing strings installed since 2016, and by the end of 2023 the plan is that forty-four (44) wells, 73% of the I/W wells, will have new inner casing strings. Based on detailed information SoCalGas provided confidentially in response to DR #18A, the average increase in collapse resistance of the well casing is 40%, ranging from nil to 170%, while the average increase in the internal yield strength of the casing is 16%, ranging from nil to 110%. In most wells worked on the past 6-7 years, the original production casing strings also had additional cement placed around the casing. The double passive barriers in the forty-one (41) wells re-worked to date resulted in an increase in overall resistance to earth movements, with verified mechanical properties and baseline integrity assessments, since these wells retain the residual mechanical strength of the original production casing and add to that the mechanical strength of the new inner casing strings, which in most cases have substantially greater collapse resistance and internal yield strength than the original production casing.

All wells have had 2<sup>nd</sup>-round assessments, which includes casing inspection logs; thirty-two (32) wells have had 3<sup>rd</sup>-round reassessments with an additional three (3) in progress; and two (2) wells have had 4<sup>th</sup>-round reassessments with one (1) in progress.

In calendar year 2022, seventeen (17) wells had integrity reassessments. As of the June 2023 WSOC meeting, the 2023 year-to-date work on Aliso Canyon wells included three (3) integrity reassessments completed and five (5) in progress; two (2) well plug and abandonments completed; and two (2) new inner casing strings installed with one (1) in progress.

The Ombudsman notes that each well with a new inner string is more resistant to, and resilient against, the potential impact of earth mass movements due to seismic activity and/or landslides. The new well tubulars have greater mechanical strength than the original production casing, including greater collapse resistance, greater internal yield, and increased joint strength at the threaded connections. When the geohazard and well geomechanical reports are completed, the Ombudsman recommends that the increased resistance and resilience of the dual-casing-string wells be modeled to show the difference between before- and after-state of risk at the facility wells in regard to failure due to mass earth movement.

---

*This unredacted draft report is not for release to the public and may contain information which is confidential, security sensitive, or trade secrets of a party.*



#### **IV. California Public Utility Commission (CPUC) and California Department of Conservation Geologic Energy Management Division (CalGEM) Audit Reports**

SoCalGas is subject to regulation by the CPUC, CalGEM, and PHMSA. The CPUC has safety jurisdiction over the operation of the surface equipment at the Aliso Canyon Facility. PHMSA at the federal level, and CalGEM at the state level, have safety jurisdiction over underground natural gas storage facilities including the wells and storage reservoir. CalGEM regulations for construction, operation and maintenance, monitoring, and safety requirements for the storage wells and storage reservoirs must meet the federal safety regulations that were implemented by the Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) in the interim rule of December 2016 and final rule of March 2021. Indeed, many CalGEM regulations exceed the federal minimum standards.

PHMSA, while retaining enforcement authority, permits CalGEM to act as PHMSA's agent for safety inspections of the Facility. PHMSA reviews CalGEM audit findings and recommendations prior to issuance of inspection reports to SoCalGas.

PHMSA/CalGEM conducted an audit in May 2022, focusing on integrity in well design and construction with site visits and procedures review. Written preliminary findings for 2022 audit received from CalGEM on August 10, 2022 and identified one item unrelated to Aliso Canyon.

PHMSA/CalGEM conducted an audit in February 2023, with one potential finding again unrelated to the Aliso Canyon Facility. The first part of the audit involved field inspections from February 6<sup>th</sup> to 9<sup>th</sup>, followed by the second part of the audit done by virtual review of records and documents from February 13<sup>th</sup> to 17<sup>th</sup>.

SoCalGas submitted its RMP update to CalGEM on April 1, 2022, as required. SoCalGas demonstrated compliance with CalGEM requirements by referring to the various SIMP chapters in the RMP. SoCalGas maintains a standing monthly meeting with CalGEM and uses the meetings for a detailed look at quantitative risk analysis, communication of details of learnings and developments to CalGEM, and fostering question and answer sessions. Part of the process of continual improvement of the RMP is review of the procedures referred to in the SIMP chapters. Some documents require reviews every year, and others are reviewed every three (3) years.

The ongoing accumulation of well integrity findings from the surface monitoring and downhole inspections create additional learning opportunities. The findings of the reassessments suggest to SoCalGas that the reassessment inspection period can be lengthened, and the Company has submitted individual requests to CalGEM for such reassessment extensions for forty-six (46) wells at the Aliso Canyon facility. As of the June 9, 2023 WSOC meeting, SoCalGas had received permission from CalGEM to extend the reassessment interval from twenty-four (24) months to 50-60 months on twenty-nine (29) wells, all of which have had new inner strings of casing installed and cemented in place since the initial baseline inspections. CalGEM's decision is pending on an additional eleven (11) wells, while CalGEM has denied extension of reassessment intervals for six (6) wells.



## V. Safety Ombudsman Review and Evaluation of Incidents Involving Methane Emissions Above Threshold Levels

The Safety Ombudsman is charged with review and evaluation of all incidents reported to the public and State and local agencies pursuant to Section 4.1 of the Consent Decree. Section 4.1 addresses methane emissions detected by a fence-line methane monitoring system installed at the Facility to detect and monitor methane emissions that may be associated with the leakage of stored natural gas from the Facility.

The monitoring system detects and records methane concentrations in real time. If methane concentrations exceed 25 parts per million (ppm) averaged over a 30-minute period SoCalGas is required to provide public notice on the Aliso Canyon Website, including a general explanation as to the cause of the detection and the responsive actions taken, if any. They are also required to notify the Government Plaintiffs of the detection(s), their responsive actions, and that they have posted the same information on the Aliso Canyon Website. Lastly, SoCalGas is required to submit quarterly reports to the Government Plaintiffs outlining each time during the quarter that the fence-line monitoring system detects methane concentrations in excess of 10 ppm averaged over any 30-minute period. The same reporting obligations exist for this level of exceedance as noted above, i.e., identification of the cause of the detection and responsive action(s). Normal background methane level is approximately 2 ppm.

During the period of July 2022 – June 2023 there were no known fence-line monitoring methane concentration exceedance events.

The fence-line methane monitoring system is comprised of eight (8) monitoring areas offering 24/7 surveillance and that are maintained with monthly checks, quarterly calibrations, and component replacement as necessary. There is also a public-facing website, and updates to this webpage are performed at least twice monthly, which continues to make the system more reliable and helps avoid outages.

There are two (2) system alarm criteria: “Reportable Detection,” which is a 10 ppm or greater 30-minute average, and “Notification Detection,” which is a 25 ppm or greater 30-minute average.

The system has four (4) modes identifying non-functionality: Weather Hold, Beam Block, Maintenance, and Communication Loss.

The Ombudsman inquired as to the reliability of the fence-line methane monitoring system in response to concerns made at the October 5, 2022 public meeting. Data requests #15 and #15A were discussed in [Section III](#) above. At the December 2022 WSOC meeting, SoCalGas provided a summary presentation of the fence-line methane monitoring system, which can be found at the link in Section III, page 8 of this report.

## VI. Review and Advise on the WSOC’s Efforts, Findings, and Recommendations for Improvements

The Safety Ombudsman duties include reviewing and advising the WSOC on their efforts, findings, and recommendations for improvements at the Aliso Canyon Facility. The specifics of this obligation are outlined in separate reports, Annual Report Number 4 – Work of the Aliso Canyon Well and Storage Operations Safety Committee, Section III, and Annual Report Number 4 – Recommendations for Improvements Related to Safety and Leak Prevention, Section II, and will not be repeated here.



The Safety Ombudsman maintains a compendium of all recommendation topics by the WSOC and/or the Ombudsman over the past four years, the period over which the Consent Decree has been active. The summary of past and current recommendations and the progress of SoCalGas in response to the recommendations is contained in a Microsoft Excel file which can be found at the following link: [Click Here](#)

The Safety Ombudsman developed several specific safety recommendations for consideration by the WSOC/SoCalGas. These recommendations are contained in Annual Report Number 4 – Recommendations for Improvements Related to Safety and Leak Prevention, Section II, available at the following link: [Click Here](#)

## **VII. Safety-related Concerns Reported by the Public**

The Safety Ombudsman functions as a non-exclusive, confidential repository for safety-related concerns related to the Facility and which are reported by the public, including employees of SoCalGas. The Safety Ombudsman maintains strict confidentiality of anyone who submits a safety concern or complaint regarding the Facility. Anyone who submits a concern or complaint has the option of providing their contact information or remaining completely anonymous. For those who elect to provide contact information, their identity and contact information is known only to the Safety Ombudsman and is never revealed. Providing contact information affords the opportunity for the Safety Ombudsman to contact the individual who submitted the complaint and clarify the issue, as necessary. This, in turn, helps facilitate the review/investigation process and response to the issue.

No concerns from the public were submitted to the Safety Ombudsman during the July 2022-June 2023 period other than those voiced at the October 5, 2022 public meeting, previously addressed in this report.