

Docket:	<u>I.19-06-016</u>
Exhibit Number	_____
Commissioner	<u>Rechtschaffen</u>
Admin. Law Judges	<u>Poirier/Kenney</u>
SED Project Mgr.	_____
SED Witness	<u>Margaret Felts</u>



SAFETY AND ENFORCEMENT DIVISION
California Public Utilities Commission

REPLY TESTIMONY

Order Instituting Investigation on the Commission's Own Motion into the Operations and Practices of Southern California Gas Company with Respect to the Aliso Canyon storage facility and the release of natural gas, and Order to Show Cause Why Southern California Gas Company Should Not Be Sanctioned for Allowing the Uncontrolled Release of Natural Gas from its Aliso Canyon Storage Facility

San Francisco, California
March 20, 2020

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1 **I. INTRODUCTION**

2 The Assigned Commissioner’s Scoping Memo and Ruling (Scoping Memo) of the
3 instant proceeding provides,

4 In accordance with the OII/OSC, SoCalGas is ordered to
5 show cause as to why the Commission should not find that
6 SoCalGas violated Pub. Util. Code § 451 for the uncontrolled
7 release of gas from Aliso Canyon over a 111-day period that
8 began on October 23, 2015. SoCalGas is also ordered to show
9 cause as to why it should not be sanctioned for this
10 uncontrolled release of gas. These orders to show cause do
11 not rely on any particular set of purported facts in the Blade
12 Report. Rather, these orders to show cause are based on the
13 undisputed fact that an uncontrolled release of gas occurred
14 over a 111-day period.¹

15 After reviewing Southern California Gas Company’s (SoCalGas) opening
16 testimony, I have identified 17 different reasons that show SoCalGas has failed to meet
17 its burden to show cause as to why the Commission should not find that SoCalGas
18 violated Public Utilities Code § 451. The first 14 Reasons I identify are in response to
19 Chapter 1 of SoCalGas’s Opening Testimony, prepared by Mr. Dan Neville.² Reasons 15
20 through 17 are in response to Chapter 2, prepared by Mr. Rodger Schweke.³ Finally, I
21 respond to Chapter 3, prepared by Ms. Amy Kitson.⁴ I do not add any Reasons in
22 response to Ms. Kitson’s testimony, as it is forward looking.

23 I am also confirming that I am the sponsor of the Opening Testimony served by
24 Safety and Enforcement Division (SED) on November 22, 2019. SED informed
25 SoCalGas and other parties that I was the sponsor of the Opening Testimony shortly after
26 it was served. Also, I have been instructed by SED that I am not offered as a legal
27 witness, and I am therefore not offered to answer SoCalGas’s questions that call for a
28 legal conclusion or that require legal analysis in this proceeding.

¹ I.19-06-016, Scoping Memo, mimeo at p. 6.

² See Section II.

³ See Section III.

⁴ See Section IV.

1 **II. RESPONSE TO OPENING TESTIMONY OF MR. DAN NEVILLE:**
2 **REASONS 1-14**

3 I have found 14 deficiencies in Mr. Neville’s testimony, and each of the 14
4 deficiencies is a separate reason why SoCalGas has not met its burden to show cause as
5 to why the Commission should not find that SoCalGas violated California Public Utilities
6 Code § 451 for the uncontrolled release of gas from Aliso Canyon over a 111-day period
7 that began on October 23, 2015 (Reasons).

8 Unlike Reasons 1 through 7, Reasons 8 through 14 are recordkeeping related.

9 **Reason 1: SoCalGas’s Identified “Tubing Packer” Completion**
10 **Was of No Use When Boots & Coots Attempted to Kill Well SS-**
11 **25**

12 Mr. Neville begins his testimony with the statement that “SoCalGas’ wells were
13 designed with a “tubing packer” completion. According to Mr. Neville, this means that
14 the well design included steel tubing inside the producing casing (rather than a
15 production casing alone).

16 The tubing packer completion provides two primary benefits:
17 1) a means to mechanically isolate the well from the storage
18 zone through the use of a wireline-set downhole plug, and
19 2) a means to hydraulically isolate the well from the storage
20 zone by providing a conduit for kill fluid. The tubing packer
21 completion also provides a means to inject or withdraw from
22 the reservoir through tubing alone, the annulus alone, or
23 through both the tubing and the casing annulus
24 simultaneously.⁵

25 Mr. Neville fails to note that the “tubing packer” completion design was of no use
26 when SoCalGas and Boots & Coots attempted to kill Well SS-25 in several ways. First,
27 according to SoCalGas, the well could not be mechanically isolated from the storage zone
28 because Well SS-25 did not have plugs set for mechanical isolation on or after October

⁵ SoCalGas Neville Testimony, Chapter 1 at p. 1.

1 23, 2015.⁶ Second, due to the nature of the leak, it was determined that mechanical
2 isolation was not appropriate.⁷

3 **Reason 2: SoCalGas Falsely Claims that It Isolated Well SS-25**
4 **from Exposure to Groundwater**

5 SoCalGas claims that Well SS-25 was isolated from exposure to shallow
6 groundwater, but this is false. Specifically, Mr. Neville misleadingly says that “Well SS-
7 25 had 11-3/4” surface casing cemented to a depth of 990 feet, which provided the barrier
8 between the fresh water sources and potential oil/gas zones at lower depths.”⁸ Mr.
9 Neville also says that “[Well] SS-25’s well construction consisted of surface casing run
10 to the depth of the base of fresh water, production casing run to the top of the gas storage
11 zone, and a tubing packer configuration that provided for various flow/injection modes.”⁹
12 Mr. Neville’s testimony that Well SS-25 had “casing run to the depth of the base of fresh
13 water” shows that SoCalGas knew that the casing was exposed to fresh water. However,
14 findings by Blade from the Root Cause Analysis (RCA) show the inaccuracy of
15 SoCalGas’s claim that it knew that the casing was exposed to fresh water. These records
16 show that the 11 3/4” surface casing of Well SS-25 was partially cemented and was found
17 to have at 50 holes at depths ranging from 152.1 to 195.4 ft caused by corrosion from
18 exposure to fresh ground water.¹⁰ The 7” production casing ran through the surface
19 casing to the bottom of the well, but was not cemented from 990 ft to 7000 ft depth,
20 leaving a long length of production casing exposed to ground water.¹¹ The production
21 casing was found to be severely corroded from depths 650 to below 1000 feet.¹²
22 SoCalGas failed to take the necessary steps during the life of Well SS-25 to prevent

⁶ SoCalGas response to SED DR 47 Q.11, Bates No. SED_RT_0001.

⁷ See FN.06 SoCalGas response to SED DR 47 Q.11.

⁸ SoCalGas Neville Testimony, Chapter 1 at p. 2.

⁹ SoCalGas Neville Testimony, Chapter 1 at p. 2.

¹⁰ Blade Main Report at pp. 218-121.

¹¹ Blade Main Report at p 95.

¹² Blade Main Report at pp. 203 See figure 88.

1 corrosion in the surface and production casings.¹³ SoCalGas exposed Well SS-25's
2 casing to groundwater, despite common knowledge in the industry that exposing well
3 pipe to water can lead to pipe corrosion.¹⁴

4 **Reason 3: SoCalGas Did Not Sufficiently Pressure Test Well SS-**
5 **25 to Operate it Safely**

6 The only significant pressure test SoCalGas ran on the Well SS-25 well casing
7 was when the well was converted for UGS purposes in 1973, which was insufficient for
8 future safe operations of the well. Mr. Neville's testimony describes this pressure test as
9 follows:

10 [d]uring the conversion workover, SoCalGas evaluated the
11 integrity of the casing cement by running a cement bond log
12 run across the cemented area of the well above the gas storage
13 zone from 8737 feet to 6950 feet. To evaluate the integrity of
14 the casing body and connections, SoCalGas performed a
15 pressure test to 3400 pounds per square inch (psi), above the
16 maximum operating pressure of 3150 psi.¹⁵

17 This statement refers to the 1973 conversion workover when SoCalGas converted
18 an acquired production well to a gas injection/removal well.¹⁶ Although pressure tests at
19 lower pressures occurred two additional times,¹⁷ the 1973 pressure test was the only time
20 when SoCalGas tested Well SS-25 to a pressure of 3400 psi. The 1973 test pressure was
21 slightly above the 3150 psi operating pressure of the underground storage field at the
22 time.¹⁸ However, the 1973 test pressure was also below the reservoir pressure of 3600, a

¹³ Blade Main Report at pp. 215-220.

¹⁴ SPE-1606-G-PA and NACE-SP0186-2007, Bates No. SED_RT_0020 and No. SED_RT_0029.

¹⁵ SoCalGas Opening Testimony, Neville at p. 3.

¹⁶ Well SS-25 Well File at p. AC_CPUC_0000025-0000028, Bates No. SED_RT_0057.

¹⁷ See FN.06, SoCalGas Response to DR 47, Q.1 "The referenced pressure test to 3400 psi occurred on May 29, 1973 during the workover performed to convert the well for gas storage operations. Additional instances of a pressure test occurred on September 9, 1976 and on February 19, 1979 during well workovers. The September 9, 1976 test was to a pressure of 2500 psi. The February 19, 1979 test was to a pressure of 1500 psi."

¹⁸ SoCalGas Opening Testimony, Neville at p. 4.

1 pressure to which the well could be exposed.¹⁹ The highest well kill fluid injection pump
2 pressure reached was 6500 psi during the Nov 6, 2015 kill attempt. ²⁰ In addition, prior to
3 the failure of Well SS-25, SoCalGas had ordered new compressors that would boost the
4 compression for injection gas to 3400 psi, essentially boosting the maximum operating
5 pressure to 3400 psi and rendering the original 1973 pressure test for the casing
6 inadequate²¹

7 **Reason 4: SoCalGas's Did Not Show That Its Integrity**
8 **Management Program Was Adequate Prior to the October 23,**
9 **2015 Well SS-25 Incident**

10 SoCalGas's integrity management program before October 23, 2015 was
11 inadequate, leading to the Well SS-25 failure. Many more well failures could have also
12 resulted had the Division of Oil & Gas (DOGGR) not required SoCalGas to produce
13 detailed well surveys and better integrity management after the Well SS-25 failure.²² Mr.
14 Neville states,

15 [a]s of October 22, 2015, active UGS wells at Aliso Canyon,
16 including [Well] SS-25, were subject to a systematic well
17 integrity monitoring and inspection program that included:
18 (1) daily site inspections; (2) weekly pressure readings;
19 (3) monthly well site inspections; (4) annual leakage surveys;
20 (5) annual temperature surveys and, if needed, noise and/or
21 tracer surveys.²³

22 Mr. Neville identifies all of this data collection as occurring the day before Well
23 SS-25 failure was discovered. While it is good that SoCalGas describes this data
24 collection effort beginning one day before the well failure was discovered, this entire
25 section of Mr. Neville's testimony fails to properly support his opening statement, where
26 he says:

¹⁹ AC_CPUC_SED_DR_27_000046.1989.DOGGR.Ltr. p.1, Bates No. SED_RT_0061.

²⁰ AC_CPUC_0165094 Boot & Coots Daily Reports, Bates No. SED_RT_0063.

²¹ Aliso_Final_EIR_Volume_II-Appendices at pp. 2-14, Section 2.2.1.1 (ePage 112) (Response to Blade DR Blade-Follow Up Request_82918_2, Q.10), Bates No. SED_RT_0064.

²² DOGGR_Final-Text-of-Regulations-UGS, Bates No. SED_RT_0065.

²³ SoCalGas Opening Testimony, Neville at p. 4.

1 The purpose of my testimony is to describe SoCalGas’
2 operations and maintenance practices at the Aliso Canyon
3 storage field (“Aliso Canyon”) with regard to the Standard
4 Sesnon 25 (“SS-25”) well for the time preceding October 23,
5 2015. As detailed below, SoCalGas’ well integrity monitoring
6 and inspection activities on [Well] SS-25 were reasonable and
7 consistent with applicable regulations. Through these
8 activities, SoCalGas’ monitoring, inspection, and testing
9 program successfully tested and monitored wells, identified
10 well conditions, and addressed and repaired casing leaks.
11 SoCalGas operated and maintained [Well] SS-25 consistent
12 with these practices and procedures, and there was no
13 indication of a leak at [Well] SS-25 prior to October 23,
14 2015.²⁴

15 **Reason 5: SoCalGas Stated It Installed a Remote Well Kill**
16 **System in Testimony, But Did Not Explain in Response to SED’s**
17 **Discovery Why It Did Not Use That Remote Well Kill System to**
18 **Kill Well SS-25**

19 At some time in the past, SoCalGas installed a remote well kill system, which has
20 only been used once since it was installed and was not used to kill Well SS-25 when it
21 failed.²⁵ Mr. Neville states that,

22 [a]s an additional safety measure, SoCalGas had in place a
23 remote well kill system so that SoCalGas could kill the well in
24 the event the well site was inaccessible. The system consisted
25 of valves and piping connected to the wellhead, separate from
26 the flow side of the wellhead, specifically to allow remote well
27 kill. The piping ran to a remote area from the wellhead so that
28 pumping equipment could be staged away from the immediate
29 wellhead area, if necessary. Additionally, each well was
30 connected to a kill network of piping so that an individual well
31 could be killed from a nearby well. Company procedures
32 dictated that the well kill valves on the wellhead remain in the
33 open position at all times during operations, thus maintaining
34 remote kill ability at all times.²⁶

²⁴ SoCalGas Opening Testimony, Neville at p. 1.

²⁵ See FN.6. SoCalGas Response to DR47 Q.10 and I1906016 CPUC SED DR 48 Q.2.e. The system was used to kill well Porter 44 in 1988, Bates No. SED_RT_0089.

²⁶ SoCalGas Opening Testimony, Neville at p. 7.

1 When asked if this system was used by SoCalGas to kill Well SS-25, SoCalGas
2 responded that the “well kill system was not utilized to remotely kill [Well] SS-25 for the
3 first well kill attempt performed by SoCalGas since there was direct access to the Well
4 SS-25 wellhead. Well kill attempts 2–7 were performed by Boots & Coots.”²⁷ In 1988,
5 the remote system was used when gas was blowing out of well P-44 and there was fear
6 that the gas would ignite from the operation of equipment and vehicles near the well.²⁸
7 There are many similarities between the two well failures and therefore SED fails to
8 understand why SoCalGas elected not to use the remote kill system that Mr. Neville
9 describes when SoCalGas initially attempted to kill Well SS-25. SED also does not fully
10 understand why Boots & Coots did not have access to the remote kill system, which
11 would seem to be a good option to use when a rig could not be safely moved over the
12 well due to the desire not to ignite the gas streaming from the well.²⁹ In addition, as the
13 condition of the well site degraded over time due to gas and liquids emitted from the
14 surrounding soils, access to the well site presented challenging safety issues.³⁰

15 **Reason 6: SoCalGas Stated It Could Remotely Shut-in Its Wells**
16 **to Prevent or Mitigate Leaks in the Wellhead or Surface Piping,**
17 **But Did Not Answer SED Discovery Asking Whether It Used**
18 **Such Practices on Well SS-25**

19 As another safety feature, Mr. Neville states that

20 “UGS wells were additionally equipped with safety systems
21 designed to shut-in wells in order to prevent or mitigate leaks
22 in the wellhead or surface piping. Remote shut down station –
23 allows for wells to be shut-in manually from a remote distance
24 from the wellhead.”³¹ When asked specifically whether these
25 systems were used on Well SS-25 SoCalGas responded that
26 “[Well] SS25 was equipped with the safety systems identified
27 . . .”- and that “[a]s a general practice, SoCalGas did not keep a

²⁷ See FN.6.SoCalGas Response to DR47 Q.10.

²⁸ Pages 564-565 from P-44 All, Bates No. SED_RT_0112.

²⁹ SoCalGas Opening Testimony, Schweke at pp. 8-10.

³⁰ Boots&Coots.DailyReports, Bates No. SED_RT_0114.

³¹ SoCalGas Opening Testimony, Neville at p. 8.

1 record of instances when surface safety systems shut-in a
2 well.”³²

3 SoCalGas avoided answering the request for records of when these safety systems
4 had been used to shut-in Well SS-25 by simply saying that it did not keep records,³³ a
5 failure in itself since such events have been indicative of leak events requiring some sort
6 of operating response by SoCalGas and documentation.

7 **Reason 7: SoCalGas’s Statement that It Used Effective Leak**
8 **Remediation Practices is Contradicted by Extensive Evidence**

9 In Section III of his testimony, Mr. Neville states that SoCalGas’s leak
10 remediation practices were effective.³⁴ Clearly, remediation practices were not effective
11 in preventing the Well SS-25 failure.³⁵ In addition, probably the most telling evidence
12 proving the abject failure of SoCalGas’s leak detection and repair program is the 2014
13 Storage Integrity Management Program (SIMP) Report on well FREW 2.³⁶ In this Model
14 SIMP (the first one SoCalGas performed on a well), contractor Baker Hughes ran an HR
15 (High Resolution) Vertilog Inspection Survey.³⁷ The casing inspection survey found
16 1,976 metal loss features in the well casing, 14 on the inside of the casing and 1,962 on
17 the outside of the casing.³⁸ Three of the metal loss features showed a casing wall loss of
18 greater than 80% thickness, with the maximum loss of 87%.³⁹ These three features had a
19 0 psi burst pressure rating and should be considered to have possible total or near total
20 body wall penetration.⁴⁰ In other words, the casing had essentially failed in multiple
21 places due to corrosion.- SED reviewed the FREW 2 well file, and found that the 2014

³² See FN.06.SocalGas Response to DR47 Q.14.b.

³³ See FN.06.SocalGas Response to DR47 Q.14.b.

³⁴ SoCalGas Opening Testimony, Neville at p. 6.

³⁵ As discussed in the text below.

³⁶ SoCalGas.Response.DR25.01.FREW.2.2014.Model.SIMP, Bates No. SED_RT_0161.

³⁷ See FN.36 Note: This was not the first use of this inspection technology. FREW 3 Well File shows similar Vertilog logs run in 2013 on that well.

³⁸See FN.36 FREW 2 2014 Model SIMP, Final Report Executive Summary.

³⁹ See FN.36 FREW 2 2014 Model SIMP, Final Report Executive Summary.

⁴⁰ See FN.36 FREW 2 2014 Model SIMP, Final Report Executive Summary at p. iii.

1 HR Vertilog was in the FREW 2 well file, but the SIMP study report with summary of
2 findings was not in the file.⁴¹ FREW 2 was not listed on the summary of casing leaks
3 provided by SoCalGas to SED, which shows 81 leaks detected in casings and repaired on
4 Aliso Canyon wells from 1973 to Jan 2016.⁴² SED notes that FREW 2 should have been
5 listed on this summary, since the holes in its casing were detected in 2014.⁴³ However,
6 apparently SoCalGas did not list FREW 2 because the well had not actually leaked gas,
7 even though the inspection showed locations where the wall had no strength and
8 therefore failure was imminent. FREW 2 was an operating well, but SoCalGas was not
9 aware of the deplorable condition of the FREW 2 well casing until it performed the 2014
10 SIMP survey because it did not detect these casing problems using temperature and noise
11 surveys, which only reveal leaks, not wall loss. On the SoCalGas Monthly Report
12 showing the SIMP status list of Aliso Canyon wells as of November 2016, filed under
13 Order No. 1109,⁴⁴ FREW 2 was taken out of operation (plugged & isolated) in June
14 2016.⁴⁵ Many other Aliso wells are shown in the same status on this report, having been
15 inspected since the Well SS-25 failure using SIMP survey tools.⁴⁶ In response to a Blade
16 data request, SoCalGas disclosed that it had found through-wall defects in 5 well casings
17 since the 2015 incident.⁴⁷ Taking into account all of this information, SED feels
18 confident that SoCalGas's long term integrity management program utilizing only
19 temperature and noise surveys was a failure and, in fact, an unsafe practice that violates
20 California Public Utilities Code Section 451. Despite Mr. Neville's claim to the contrary,
21 SoCalGas's leak remediation practices were NOT effective. SoCalGas was simply

⁴¹ Well File FREW 2 (not attached due to size of file).

⁴² DR11.01 SoCalGas Leak Well List Master, Bates No. SED_RT_0167.

⁴³ See FN.36 FREW 2 2014 Model SIMP, Final Report Executive Summary.

⁴⁴ AC_CPUC_0014708.SIMP.10.2016.Status, Bates No. SED_RT_0169.

⁴⁵ See FN.44.AC_CPUC_0014708-0014709.

⁴⁶ See FN.44.AC_CPUC_0014708-0014709.

⁴⁷ Blade-29 Amended 032219.Leaks, Bates No. SED_RT_0172.

1 identifying leaks when they happened, then reacted by patching the leaks in some
2 instances.⁴⁸

3 **Recordkeeping Related Reasons**

4 Keeping in mind that Well SS-25 was initially drilled in 1954,⁴⁹ making the well
5 casing 19 years old when SoCalGas acquired it and 61 years old when it failed in 2015,
6 future practices noted by Neville could not remedy the long history of neglect of the
7 Aliso Canyon wells. Recordkeeping for Well SS-25 is surprisingly thin, containing only
8 737 pages (through 2015).⁵⁰ For a well 61 years old, that comes to about 12 pages per
9 year of records. Of these records, about 50% are receipts for work performed. Despite the
10 numerous data responses from SoCalGas claiming that all answers to requests for
11 documents related to Well SS-25 were contained in the Well File,⁵¹ SoCalGas eventually
12 said that Well Files only contain well history (DOGGR reports), well logs, surveys and
13 contractor invoices.⁵² To make some sense of Neville’s statements regarding inspections
14 as it might apply to the period prior to the failure of Well SS-25, SED asked SoCalGas to
15 provide copies of all records showing all instances of each of the following for Well SS-
16 25 prior to October 23, 2015, including:

- 17 • **Daily site inspections**
- 18 • **Weekly surface pressure readings**
- 19 • **Monthly well site inspections**
- 20 • **Annual leakage surveys**
- 21 • **Annual temperature surveys, and Noise and Tracer**
- 22 **Surveys**

⁴⁸ Blade Main Report at p. 216.

⁴⁹ 1954.0528.SS25.Drill.Record.DOGGR.AC_CPUC_0000151.1954.Tidewater.

⁵⁰ Well SS-25 Well File – not included as an attachment due to length of file. Note: the Well File for Well SS-25 is the smallest file SED reviewed. Most of the Well Files have over 1500 pages, still not huge, but certainly more than Well SS-25.

⁵¹ SoCalGas.Response.to.DR01.01.is an example. SoCalgas followed up this response with 2 amendments that provided more detail; For additional examples see FN.6. Responses to DR47 Questions.

⁵² SoCalGas.Response.to.CPUC.SED.27.Q.37, Bates No. SED_RT_0174.

- 1 • **Casing integrity inspections**
- 2 • **Weekly pressure gauge**
- 3 • Additional unscheduled pressure readings
- 4 • Additional unscheduled temperature surveys
- 5 • Additional unscheduled noise surveys
- 6 • Additional unscheduled gas sampling
- 7 • Additional unscheduled other investigative work (explain
- 8 what this is for each item identified)⁵³

9 Of the topics listed above, SoCalGas’s data responses and/or testimony regarding
10 many of them showed a lack of records related to the safe operation and/or maintenance
11 of its Aliso Canyon natural gas storage facility. Therefore, SED identifies seven
12 additional recordkeeping related reasons that are based upon identified deficiencies with
13 the types of records shown in bold on this bulleted list.⁵⁴

14 **Reason 8: As a General Practice, SoCalGas Did Not Maintain**
15 **Records of Daily Site Inspections**

16 SoCalGas’ response regarding daily inspections is that “[a]s a general practice,
17 SoCalGas did not maintain records of daily site inspections. If the daily site inspection
18 generated a corrective work order, that record is maintained in Maximo.”⁵⁵ Maximo is
19 one of several databases used by SoCalGas to maintain UGS records.⁵⁶ In general, for
20 records kept in Maximo, the earliest date appears to be 2006.⁵⁷

⁵³ SED DR47 Q 2, Bates No. SED_RT_0191.

⁵⁴ Note: I do not concede that the unbolded sections have adequate records, but just did not receive adequate information to make a determination about their deficiencies.

⁵⁵ See FN.06 Response to DR 47 Q2.a.

⁵⁶ SED Site visit to SoCalGas Feb 6, 2020 in which SoCalGas personnel demonstrated the various data bases used by SoCalGas to store UGS data.

⁵⁷ See FN.06 Response to DR 47 Q.2.c, showing approximately 77 Work Orders from Maximo. *See also* pp. 1-4 from I1906016_SoCalGas_SED_DR_47_0000297.

1 **Reason 9: SoCalGas Used Lack of Anomalous Weekly Surface**
2 **Pressure Readings as a Justification to Conduct No Further**
3 **Related Investigations on Well SS-25**

4 Weekly pressure readings were not kept in any particular order or in one
5 location.⁵⁸ In response to SED’s data request, SoCalGas refers SED to a long list of bates
6 numbers for pages in the Well SS-25 Well File that reflect pressure readings taken for
7 various purposes.⁵⁹ When SED asked what further investigations occurred for Well SS-
8 25, SoCalGas responded “The weekly pressure records indicate that the surface pressure
9 readings of [Well] SS-25 were not anomalous and consequently there was no reason for
10 SoCalGas to conduct further investigations.”⁶⁰ SoCalGas’s response here is deficient
11 because it concludes a lack of anomalous readings provides no basis to investigate. But
12 SoCalGas’s failure to investigate meant it could not conduct analysis or identify trends
13 that could have helped SoCalGas evaluate the condition of Well SS-25.

14 **Reason 10: SoCalGas Provided Incomplete Monthly Well Site**
15 **Inspection Records from 2006 to October 23, 2015, and No**
16 **Monthly Well Site Inspections from 1973 to 2006**

17 SoCalGas provided 77 Monthly well site inspection work orders from 2006 to
18 2015 that only provide the date of the work order, and basic information about what
19 would be inspected. These work orders contain fields for details about the inspection,
20 which are left blank and results of the inspections are not reported.⁶¹ Since no Monthly
21 reports prior to 2006 were provided by SoCalGas, SED assumes none exist and that
22 monthly inspections were not performed from 1973 to 2006.

⁵⁸ SoCalGas was unable to provide a list or to identify a specific place in its data collection system where routine pressures are kept or can be called up in summary form, Bates No. SED_RT_0205.

⁵⁹ See FN.06 SoCalGas Response to DR 47 Q.2.b.

⁶⁰ See FN.06 SoCalGas Response to DR 47 Q 5.

⁶¹ See FN.06 SoCalGas Response to DR 47 Q.2.c and FN.58. I1906016_SoCalGas_SED_DR_47_0000297.

1 **Reason 11: SoCalGas Provided Incomplete Annual Leakage**
2 **Survey Work Orders from 2006 to October 23, 2015, and No**
3 **Annual Leakage Survey Records from 1973 to 2006.**

4 SoCalGas provided 9 Annual Leakage Survey work orders from 2006 to 2015.⁶²
5 These work orders contain fields for details about the inspection, which are left blank and
6 results of the inspections are not reported.⁶³ Since no Annual Leakage Survey work
7 orders prior to 2006 were provided by SoCalGas, SED assumes none exist and that
8 Annual Leakage Surveys were not performed from 1973 to 2006.

9 **Reason 12: SoCalGas Incorrectly Claimed that Annual**
10 **Temperature Surveys, and Noise Surveys Were Sufficient to**
11 **Monitor and Detect Leaks**

12 SoCalGas used temperature noise and tracer surveys as its method of monitoring
13 for leaks from 1980 to 2015.⁶⁴ SED finds that SoCalGas did not employ a strategy of
14 integrity monitoring in compliance with California Public Utilities Code Section 451.
15 Regarding temperature surveys, SoCalGas refers SED to Well SS-25 well file records,
16 and also states,

17 “SoCalGas identified certain temperature surveys run in the
18 1980’s as having a temperature anomaly. These anomalies
19 were investigated with noise surveys and a tracer survey in
20 1984 and were found not to be indicative of a well integrity
21 issue. Please see attached 1984 temperature surveys, noise
22 logs and RA tracer survey.⁶⁵ Subsequent noise logs were run
23 in 1991, 2006, and 2012 which also did not indicate any well
24 integrity issue.”⁶⁶

25 The 1984 Temperature/Noise survey clearly shows a leak.⁶⁷ Nevertheless,
26 SoCalGas apparently did not investigate the leak any further. Instead, it continued to run

⁶² See FN.06 SoCalGas Response to DR 47 Q.2.d.

⁶³ I1906016_SoCalGas_SED_DR_47_0000093 Pages 15-19.

⁶⁴ SoCalGas.Response.to.DR29.01.Q.1, Bates No. SED_RT_0489.

⁶⁵ Note: These records clearly show a leak at the well shoe, although the tracer survey provided does not include survey results. Bates No. SED_RT_0494.

⁶⁶ See FN.06.SoCalGas Response to DR 47 Q.3-4.

⁶⁷ Well SS-25 SoCalGas-7.Temp.Noise, p.149.

1 annual temperature surveys, and most of them continued to show the same leak.⁶⁸ A leak
2 is identified by 1991 Temperature and Noise surveys.⁶⁹ A temperature survey from 2000
3 shows the same shoe leak and also seems to indicate leakage in a range above 1000 ft.⁷⁰
4 The 2006 noise survey appears to show no leak, however, the quality of that one survey is
5 suspect because the lines show no noise in the entire well, and appear to overlap each
6 other at several points.⁷¹ Another temperature survey from 2007 shows the shoe leak and
7 a clear indication of a shallow leak above 900 ft.⁷² Still, there is no evidence that
8 SoCalGas followed up on this survey to determine if there was a shoe leak or a shallow
9 leak. The most recent temperature survey in the file is dated 2013, and it shows no
10 evidence of leaks, which is remarkable since SoCalGas apparently did nothing to the well
11 to repair leaks. There is no explanation for this ambiguity of data other than to say that
12 temperature surveys may not be the best way to determine the integrity of a well casing.

13 **Reason 13: SoCalGas Provided No Records of Pressure Gauge**
14 **Readings from Before the Incident at Aliso Canyon**

15 Mr. Neville's testimony states that:

16 "[o]nce each week, SoCalGas field operators connected a
17 pressure gauge to instrumentation tubing at the well site to
18 check the pressure in each tubular space within the well:
19 (1) the interior of the tubing (tubing pressure), (2) the annular
20 space between the tubing and the production casing (casing
21 pressure), and (3) the annular space between the production
22 casing and the surface casing (surface casing pressure). In a
23 well such as [Well] SS-25 that allows for casing flow, the
24 tubing and casing are exposed to the storage zone pressure

⁶⁸ See temperature surveys attached to SED's Opening Testimony and Public Advocates' Opening Testimony. Bates No. SED_RT_0499.

⁶⁹ AC_CPUC_0000492.1991.1107 and pp. 150-151 from Well SS-25 SoCalGas-6.1991 NoiseTemp.

⁷⁰ Well SS-25 SoCalGas-2. p. 259, Bates No. SED_RT_0500 and 501.

⁷¹ Well SS-25 SoCalGas-4.2006.p.433 Note: Noise surveys are run simultaneously for three to four sound frequencies, creating separate lines on a log chart that are spaced apart from one another. Overlapping frequency lines on a log suggest a problem with that log because the frequency lines should remain parallel, with space between them. For more information about noise logs see https://en.wikipedia.org/wiki/Spectral_noise_logging.

⁷² Well SS-25 SoCalGas-3.p.252, Bates No. SED_RT_0504.

1 and, as a result, the tubing, casing, and storage zone pressures
2 are nearly equal.”⁷³

3 SED asked SoCalGas to provide all pressure gauge reading records taken before
4 October 24, 2015 (including the day of the well failure) by field operators using a
5 pressure gauge connected to instrumentation tubing at the Well SS-25 well site to check
6 the pressure in each of the tubular spaces within the well as described in the paragraph
7 quoted immediately above.⁷⁴ SoCalGas responded with a spreadsheet that shows only
8 pressure readings for dates 10/23/2015-10/25/2015. Since SoCalGas provided no
9 evidence of earlier pressure readings using this approach, SED assumes SoCalGas never
10 took this type of pressure reading before the day of the Well SS-25 incident.⁷⁵

11 **Reason 14: SoCalGas Provided No Records Showing Casing**
12 **Integrity Inspections from 1973 to October 23, 2015**

13 Mr. Neville says that,

14 SoCalGas used the removal of the tubing during a workover
15 as an opportunity to perform certain kinds of integrity tests on
16 the well’s production casing that are not possible when the
17 tubing is in place, such as running an ultrasonic inspection
18 tool (“USIT”), which uses ultrasonic sound waves to
19 circumferentially measure the internal radius and thickness of
20 the casing as well as cement quality.⁷⁶

21 SED asked SoCalGas to provide all records (for Well SS-25) pre-October 23,
22 2015, that show removal of the tubing during a workover and performance of integrity
23 tests on the well’s production casing, including but not limited to ultrasonic inspection.⁷⁷
24 SoCalGas responded by citing the original 1973 workover when the well was converted
25 to gas service for UGS, and the two instances of remediating failed safety valves in 1976
26 and 1979.⁷⁸ Although SoCalGas did pull the tubing during these workovers, it did not run

⁷³ SoCalGas Opening Testimony, Neville at p. 4, Bates No. SED_RT_0505.

⁷⁴ See FN.06. SoCalGas Response to DR 47.4.

⁷⁵ See FN.06. SoCalGas Response to DR 47.4. and I1906016_SoCalGas_SED_DR_47_0000582.

⁷⁶ SoCalGas Opening Testimony, Neville at p. 6, Bates No. SED_RT_0506.

⁷⁷ See FN.06. SoCalGas Response to DR 47 Q.6.

⁷⁸ See FN.06. SoCalGas Response to DR 47 Q.6, which omits the use of USIT or any other integrity testing.

1 any integrity tests when it had those opportunities (Well SS-25 was almost 30 years old
2 in 1973).⁷⁹ Other well files show the use of tools to measure the wall thickness of casing
3 and findings of corrosion.⁸⁰

4 **III. SED RESPONSE TO OPENING TESTIMONY OF MR. RODGER**
5 **SCHWEKE: REASONS 15 THROUGH 18**

6 Despite SoCalGas’s testimony to the contrary, SoCalGas has not met its burden to
7 show in all instances that it acted as a reasonable and prudent manager or overseer of its
8 well kill efforts. Therefore, my response to the opening testimony of Mr. Schweke
9 identifies three additional Reasons. (Reasons 15 through 17).

10 In some instances, SoCalGas failed to implement reasonable and prudent incident
11 response measures. This failure to act as a reasonable and prudent manager results in
12 several violations. First, SoCalGas did not adequately show oversight of well kill
13 operations. Second, SoCalGas did not show that it timely performed certain health
14 related analyses of hydrocarbons emitted from Well SS-25. Third, SoCalGas did not
15 show that it withdrew gas from Aliso Canyon Storage Facility as soon as it could have to
16 reduce the reservoir pressure on Well SS-25 during the incident.

17 **Reason 15: Despite What SoCalGas Said, SoCalGas Did Not**
18 **Adequately Show Oversight of Well Kill Operations**

19 Mr. Schweke discusses the executive leadership and oversight of contractors,
20 including Boots & Coots.⁸¹ In his testimony, Mr. Schweke says

21 SoCalGas’ priority was to safely and quickly kill the leaking
22 well. To this end, SoCalGas engaged and oversaw Boots &
23 Coots and other on-site contractors with specialized and
24 technical expertise. SoCalGas’ management of the well kill
25 operation, based on what was known to it at the time, was
26 reasonable and prudent: SoCalGas maintained a safe site,
27 engaged contractors with demonstrated expertise, provided

⁷⁹ Well SS-25 well files show no evidence of integrity testing other than temperature and noise logs, as discussed previously.

⁸⁰ See Example: Aliso_Canyon_DOGGR_0001897.Caliper.Tool.FF-34. See also example: Aliso_Canyon_DOGGR_0001881.Corrosion1991.FF-34A, Bates No. SED_RT_0507 and No. SED_RT_0508.

⁸¹ Testimony of Schweke at p. 3.

1 necessary information, reviewed Boots & Coots' well kill
2 plans, and engaged with regulators on proposed facility and
3 well control activities.⁸²

4 Thus, Mr Schweke concludes that SoCalGas reasonably and prudently managed
5 its well kill expert and oversaw the well kills. However, SoCalGas consistently indicated
6 in responses to SED's data requests that once the well kill operations were turned over to
7 Boots & Coots, well control management was no longer part of SoCalGas's role.⁸³ Data
8 responses consistently refer SED to Boots & Coots' daily operations reports, which rarely
9 answered the question SED asked.⁸⁴ The Daily Reports provide the details of the
10 operation of the day and one broad statement each day regarding what operation is
11 planned for the next day.⁸⁵ No information about data used, well kill plans, findings,
12 results of logs, management discussions or directions from SoCalGas are included in
13 these reports other than an occasional statement that a well kill plan was given to
14 SoCalGas. SED is left with the impression that SoCalGas did indeed turn over complete
15 management of the well kill operations to Boots & Coots after the first well kill attempt,
16 which is contrary to Mr. Schweke's statement. In addition, Mr. Schweke's account of
17 SoCalGas' management and oversight of its well kill contractors omits discussion of
18 SoCalGas' failed first well kill attempt prior to bring on contractors. Mr. Bret Lane,
19 SoCalGas' Chief Operating Officer at the time of the kill attempts, confirmed this point
20 under oath, as follows:

21 Q All right. And on the SoCalGas side under this project
22 management team, list who was present there along with
23 you and Todd Van de Putte, and now we know Tom
24 Egbert. Were there any others who were part of that
25 process?

26 A The process being physically there on the kill attempt?
27

⁸² SoCalGas Opening Testimony, Schweke at p. 8.

⁸³ SoCalGas.Response.to.DR33.01, Bates No. SED_RT_0509.

⁸⁴ See FN.30.Boots&Coots.DailyReports.

⁸⁵ FN.30.Boots&Coots.DailyReports.

1 Q Yeah.

2 A I don't recall who from our side was there at the time. One
3 clarification, I'm not – I don't recall specifically, but
4 sometime in November, I mean, we had started the
5 planning for the relief well. And that's when I moved
6 Todd over to be responsible for the overall design of
7 implementation of starting the relief well. So Todd is
8 moved to that element as well. And I believe somewhere
9 in this time frame is when -- again, it may be three. It may
10 be four -- when I say three and four, kill attempts three
11 and four. Somewhere in this time frame, I have Rodger
12 Schwecke come in as my Deputy Operations Chief that's
13 helping me out.

14 Q Are you aware what he was doing in his role or title
15 before you called him, Rodger Schwecke?

16 A On the leak itself, Rodger was our VP of our Major
17 Markets Customer Group at the time. And, again, I don't
18 recall if it was week one or two or three. He responded
19 and was helping out the incident response, what I call
20 down below, in the -- by the plant area for a short period
21 of time. It may have been a week, two weeks or three.
22 And then that's when I had Rodger come up to help me
23 and was assigned into the operation side. And I don't
24 recall if Rodger was there for Kill Attempt 3, but it's
25 somewhere 3, 4, or 5 is when Rodger comes in.⁸⁶

26 In another section of his testimony, Mr. Schwecke says “SoCalGas consulted with
27 Boots & Coots and provided input in the development and review of well kill plans,
28 along with various agencies and other outside experts and consultants, including
29 additional well control specialists who were retained and the Department of Energy’s
30 National Laboratories.”⁸⁷ Again, SED finds these comments to contradict the answers
31 provided to SED during discovery.

32

⁸⁶ Examination Under Oath of Mr. Bret Lane at pp.1&101:3–102:16, Bates No. SED_RT_5270.

⁸⁷ SoCalGas Opening Testimony at p. 12.

1
2 **Reason 16: Despite Asserting that SoCalGas Worked with**
3 **County Health Officials During the Incident, SoCalGas Did Not**
4 **Show It Timely Performed Certain Health Related Analyses of**
5 **Hydrocarbons Emitted from Well SS-25**

6 Mr. Schweke states that, “SoCalGas later formed a Unified Command with Los
7 Angeles County Fire Department and Los Angeles County Department of Public Health
8 (DPH) to help manage the response to the incident.”^{88 89} In fact, DPH asked SCG to
9 perform an analysis of air emissions from the well that would include heavier
10 hydrocarbon components typical of crude oil, which would be beyond the typical BTEX
11 analysis.⁹⁰ In review of the emission data analyses that SCG provided,⁹¹ SED finds that
12 SCG failed to perform analyses for crude oil components as requested by DPH. By the
13 time DPH found out that the analyses had not been performed on the emissions, the well
14 had been killed and the opportunity to collect a sample for analysis had passed.⁹²

15 **Reason 17: SoCalGas Did Not Show That It Withdrew Gas from**
16 **Aliso Canyon Storage Facility as Soon as It Could Have to**
17 **Reduce the Reservoir Pressure on Well SS-25 During the**
18 **Incident**

19 The efforts SoCalGas took to reduce leak impacts failed to make much difference
20 in the impacts, but SED acknowledges that SoCalGas made the effort to explore various
21 options.⁹³ However, Mr. Schweke’s testimony states,

22 SoCalGas reduced the flow from the [Well] SS-25 leak
23 immediately following discovery of the leak by ceasing to
24 inject gas into the well, then ceased Aliso Canyon field

⁸⁸ SoCalGas Opening Testimony, Schweke at p. 4.

⁸⁹ SED cannot confirm that these agencies actually helped manage the response to the incident, but they may have participated in discussions with SoCalGas regarding the incident.

⁹⁰ 03-11-2019 LACDPH to SoCalGas, paragraph 2 note: (BTEX is Benzene, Toluene, Ethylbenzene and Xylene.) The analysis contains a range of chemicals representing lighter weight hydrocarbons found in crude oil and refined products and typically monitored in air emissions, but BTEX does not include heavier hydrocarbons found in crude oil. , Bates No. SED_RT_0530.

⁹¹ Aliso Canyon Air Monit Lab Reports (1049 confidential pages, not included in attachments).

⁹² See FN.91. 03-11-2019 LACDPH to SoCalGas.

⁹³ SoCalGas Opening Testimony of Schweke at p. 7.

1 injections altogether; and subsequently began to aggressively
2 withdraw gas from the facility on November 11, 2015 to draw
3 down the gas stored in the facility and decrease the pressure
4 in the field and the velocity of gas flowing through the [Well]
5 SS-25 leak.²⁴

6 SED questions why SoCalGas waited 19 days before it began withdrawals from
7 the Aliso Canyon storage facility to reduce the reservoir pressure to support well kill
8 efforts and to reduce the amount of gas released.²⁵ This delay seems especially
9 questionable given that SoCalGas initiated efforts to drill a relief well just 2 days after the
10 well leak was discovered.²⁶ In late October 2015, the reservoir capacity and pressure was
11 nearing the annual peak for the UGS facility. One of the first things SoCalGas should
12 have done in addition to preparing for a relief well was to begin drawing down gas to
13 relieve the pressure on the reservoir. SED also questions whether SoCalGas was making
14 operating decisions based on inaccurate reservoir pressure data, which could have led to
15 over pressuring the reservoir, had Well SS-25 not failed.

16 **IV. SED RESPONSE TO OPENING TESTIMONY OF MS. AMY**
17 **KITSON**

18 Ms. Kitson’s testimony is forward looking and therefore does not contribute to the
19 determination of whether or not SoCalGas acted reasonably and prudently in the
20 operation of the Aliso Canyon UGS prior to October 23, 2015. Also, because it is forward
21 looking, Ms. Kitson’s testimony has no bearing on whether the violations that SoCalGas
22 faces have merit. Still, SED notes that it is not clear that SoCalGas has completely turned
23 the page on its past failures.

24 Specifically, Ms. Kitson says that SoCalGas further plans to work with DOGGR
25 and industry experts to develop a corrosion control study that will utilize the findings
26 from ongoing assessments to trend and evaluate the contributing factors that may lead to
27 a higher potential for corrosion related wall loss. Both the Corrosion Control Manual and

²⁴ SoCalGas Opening Testimony, Schweke at p. 12, fn. 7.

²⁵ SoCalGas Opening Testimony, Schweke at p. 12.

²⁶ SoCalGas Opening Testimony, Schweke at p. 1.

1 corrosion control study will be used in concert to mitigate the potential for corrosion
2 related wall loss.²⁷ SED assumes that this is, as stated, a plan that has not yet occurred.
3 Two separate reasons are both, by themselves, sufficient to show that no weight should
4 be afforded this statement. First, it is merely a plan to correct something that SoCalGas
5 did not do prior to the well failure. Second, it is forward looking, and therefore out of
6 scope of the Order Instituting Investigation and Order to Show Cause.

7 Regarding future casing failure analyses, Ms. Kitson states on page 2, line 2, of
8 her testimony that, “This mitigation/solution has already been implemented.” She then
9 contradicts herself by explaining that SoCalGas cannot actually implement the solution.
10 According to Ms. Kitson’s testimony,

11 The Blade Report incorrectly asserts that SoCalGas did not
12 investigate the causes of previous casing failures. In order to
13 remediate a leak discovered in any gas storage well,
14 SoCalGas necessarily had to analyze and diagnose the issue
15 first, before repairing it. In describing Solution 6, the Blade
16 Report states that “casing failures need to be formally
17 investigated.”²⁸

18 Her testimony goes on to say that

19 The Blade Report fails to recognize, however, that a “formal
20 investigation” of the type Blade appears to envision would
21 likely entail a level of examination that would not be feasible
22 for an active well, nor necessary. While Blade was able to
23 cut, extract, and thoroughly examine the casing at [W]ell SS-
24 25 because there were plans to abandon the well, it is not
25 feasible for SoCalGas to perform the same level of failure
26 analysis on active gas storage wells. Further, although the
27 [Well] SS-25 failure occurred at a relatively shallow depth,
28 even Blade experienced difficulty cutting and extracting the
29 casing. For casing failures thousands of feet belowground,
30 operational issues may inhibit the cutting and extracting of
31 casing. Nevertheless, even though SoCalGas already had and
32 continues to have a process for conducting casing failure
33 analyses, SoCalGas continues to review its internal failure

²⁷ SoCalGas Opening Testimony, Kitson at p. 2.

²⁸ SoCalGas Opening Testimony, Kitson at p. 3.

1 investigation practices and is currently exploring methods to
2 enhance them.⁹⁹ (Emphasis in original.)

3 In the course of this investigation, Blade and SED asked SoCalGas whether it had
4 performed any failure investigations on wells in the past. The question was posed in a
5 number of ways. SoCalGas consistently said that investigation reports were in the Well
6 Files.¹⁰⁰ Blade and SED reviewed well files provided and found no failure analysis
7 investigations or reports. In response to DR45, SoCalGas was able to point to Well File
8 FF-34A as a well file containing records showing an investigation of a well failure.¹⁰¹
9 Even in the instance of the 2014 SIMP investigation, the well file only contained the
10 Vertilog log, not the report of the SIMP investigation. Blade actually asked SoCalGas if it
11 keeps its Failure Analysis records in a place other than the well files and the SoCalGas
12 response was that they are in the well files. To be clear, SED and Blade were looking for
13 analyses that determine the cause of a well casing failure, such as corrosion. Based on
14 Ms. Kitson's statements and the statements and records provided by SoCalGas, SED
15 concludes that SoCalGas has never performed a failure analysis on a well casing and
16 probably has no plans to do so in the future, choosing, instead, to continue to react to well
17 failures rather than to prevent them.

18 **V. CONCLUSION**

19 My reply testimony has provided 17 different reasons that show SoCalGas has not
20 met its burden to show cause as to why the Commission should not find that SoCalGas
21 violated Public Utilities Code § 451.

⁹⁹ SoCalGas Opening Testimony, Kitson at p. 3.

¹⁰⁰ Blade Main Report, p. 203, para.4.

¹⁰¹ I1906016 SoCalGas.Response.to.CPUC.DR.45, Q.8, Bates No. SED_RT_0532.