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SAFETY ENFORCEMENT DIVISION
CALIFORNIA PUBLIC UTILITIES COMMISSION

CHAPTER SEVEN

PREPARED SUR-REPLY TESTIMONY

OF

MARGARET FELTS IN RESPONSE TO

REPLY TESTIMONY OF DAN NEVILLE

San Francisco, California
June 30, 2020

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I. INTRODUCTION

The purpose of the following prepared Sur-Reply testimony, submitted on behalf of the California Public Utilities Commission's ("Commission") Safety Enforcement Division ("SED"), is to reply to testimony of Dan Neville regarding violations 327, 328, 329 and 330. Mr. Neville restated these violations as follows: "SED alleges SoCalGas had "imprudent and unreasonable record keeping practices associated with" [footnote omitted] wells SS-25, SS-25A, and SS-25B, and that the failure to record continuous wellhead pressure constituted an imprudent and unreasonable well practice associated with well SS-25 (Violations 327, 328, 329, and 330)."[1] As listed in the Table of Violations of my opening testimony, these violations are:[2]

Violation Number	Summary of Violation
327	"Imprudent and unreasonable recordkeeping practices associated with well SS-25."
328	"Imprudent and unreasonable recordkeeping practices associated with well SS-25A."
329	"Imprudent and unreasonable recordkeeping practices associated with well SS-25B."
330	Imprudent and unreasonable recordkeeping practices associated with well SS-25: Failure to record continuous wellhead pressure.

After his introduction, Mr. Neville does not specifically refer to violations 327, 328, or 329 again in the discussion his testimony. His testimony only mentions violation 330 on page 14 when he asserts in heading C that "SoCalGas' Monitoring of Wellhead Pressures Was Appropriate."[3]

Mr. Neville added into his introduction that he has experience in Vertilog technology,[4] but does not address violations related to this issue in his testimony.

[1] Neville Testimony, p. 1, lines 8-11.

[2] Opening Testimony of Margaret Felts, pp. 3-6.

[3] Neville Opening Testimony, p. 13, line 25 to p. 14, line 1.

[4] Neville Testimony, p. 1, lines 16-17.

However, Mr. Carnahan's introduction (Chapter II) links SED's allegations that SoCalGas should have used Vertilog technology to check the casing on 13 wells with Violations 61 to 73.[5] Chapter II of my Sur-Reply testimony responds to Mr. Carnahan's testimony, noting that my Opening Testimony says that violations 61-72 are for failure to follow company's internal 1988 plan to check the casing of 12 wells for metal loss, and violation 73 is for failure to follow the company's internal 1988 plan to check the casing of well SS-25 for metal loss.[6] I incorporate by reference into this Chapter my sur-reply testimony in Chapter 2 regarding Violations 61 to 73.

II. SOCALGAS HAS PROVIDED NO EVIDENCE THAT ITS WELL RECORDS WERE ORGANIZED IN 2015.

A. Hard Copy Records

I appreciate the description by Mr. Neville of the well-organized well files as they look when he wrote his testimony in 2020.[7] When there was an opportunity in 2020 to view the hard copy well files, I did not do that. My reasoning for not viewing the 2020 well files was that SoCalGas had 5 years since the SS-25 incident to clean up and organize the files, so whatever I saw would not be useful in my testimony regarding the condition of the files in 2015. Instead, I choose to assume the condition of the files in late 2015 are best represented by records scanned by SoCalGas in 2015 and early 2016.

I have reviewed many of the well files produced by SoCalGas since my first viewing in 2019 of the initial file produced in January 2016 for well SS-25, which was the basis for my comments in my opening testimony.[8] My opinion of SoCalGas' recordkeeping prior to the SS-25 incident has not changed. Scanned well files produced by SoCalGas are generally a mess. I can either assume the files were scanned in the

[5] Carnahan Opening Testimony, p. 1, lines 7 to 9. "Specifically, SED alleges violations of Section 451 of the California Public Utilities Code because SoCalGas should have used the Vertilog technology to check the casing on 13 wells (Violations 61-73). . ."

[6] See my Opening Testimony, p. 3.

[7] Neville Testimony, p. 3, line 1 to p. 4 line 7.

[8] SED Opening Testimony, pp. 68-69.

condition that existed, or SoCalGas purposely scrambled the contents of the files and inserted numerous duplicate records sometimes doubling the size of a well file. I choose to believe the former.[9] None of the scanned well files are searchable, thus reviewing is tedious. Records are not organized by date or category.[10] To review a well file, every page must be looked at because, for instance, a 2014 Notice to Abandon the well might be found between 1982 redrilling documents and 2006 permit documents.[11]

File folders with labels were included in most well files that were scanned. However, the files that follow a folder do not necessarily belong in that folder. It is common to find two file folders with the same label in a well file, but the contents that follow the two folders are not the same. Assuming the scanned records for SS-25 actually represent the condition of the records in October 2015, even if SoCalGas personnel and Boots & Coots had access to the hard copy, it would not have been easy to find important information about the well.[12]

In apparent reference to SoCalGas' well files, Mr. Neville also says, "[i]n the early 2000s, SoCalGas also began to use a software application called WellView for purposes of maintaining these documents."[13] I was briefed about this new data base when I visited SoCalGas on February 6, 2020. At that time, I understood that a complete set of data had been moved into this database in 2019. I also learned that complete well files were not moved to WellView, a data base that contains important information about the design and construction of the well. In an Examination Under Oath in 2018, SED read into the record, and SoCalGas' Underground Storage Data Manager recognized the following excerpt related to WellView.

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[9] See also discussion of well files and SoCalGas explanation and admission discussed in my sur-Reply testimony to Hower & Stinson, Section IX.

[10] An average well file is 1600 pages. It takes about 6 hours to look at all of the pages of a well file this size.

[11] Example: MA-5A well files (image file).

[12] AC_CPUC_SED Kitson_0002207.SS25.WellHead1950s.p.1679.

[13] Neville Testimony, p. 3, lines 15-17. See also Neville Testimony, p. 3, lines 7-15.

"In the past 40 to 75 years some wells may have been modified and historical well work records are in paper format. In 2001 the company initiated using WellView as its main repository to capture and store well history data and well schematics. To date the company is primarily using paper well files and DOGGR records to track well data. The creation of a WellView database containing the desired well data will reduce the effort required to locate key well information and therefore improve data access, data quality, performance, analyzation, well integrity monitoring, and decision making.

At the start of the project, all well schematic paper documents were scanned into WellView as simple attachments. However, approximately 95 percent of the actual critical well data remains outside of the WellView database. The majority of the well files within the database are either entirely or partially incomplete. Therefore, the integrity of the well cannot be properly monitored. Nor can the well data be analyzed within the powerful WellView application. Well Lifecycle Resources, LLC (WLR) outlines the following phases as necessary to correct the well data within the company's WellView database bringing the data accuracy to as near 100 percent as possible using the available historical data." Do you see that passage I just read?

A Yes.[14]

Therefore, WellView could not have been available in either accurate or complete form at the time of the 2015 SS-25 incident. Regarding the lack of accurate and complete information in WellView and well files, SoCalGas' ~~had its~~ Underground Storage Data Manager, dating back to May, 2016, testify under oath as to what her role was. She stated, "I manage the governance of records and data and managing the technology piece databases. And I also have the compliance reporting piece."[15] This individual provided the following statements under oath with regards to WellView and SoCalGas' well files.

[14] Examination Under Oath (EUO.) Transcripts (Tr.), Razavi and Kitson, September 25, 2018, p. 67, line 22 to p. 68, line 28.

[15] Examination Under Oath (EUO.) Transcripts (Tr.), Razavi and Kitson, September 25, 2018, p. 11, lines 1-11.

- Between January 1, 2015 and October 22, 2015, someone had to check hard copy well files to confirm that well file data viewed in WellView was accurate and complete.[16]
- When asked whether the well file for SS-25 was missing information that was required to be present by SoCalGas's internal policies, procedures or other requirements as of October 23, 2015, she stated she was not aware of any.[17]
- SED asked, "When you say you don't know if there were missing files from 2014 to 2016, if there were missing files, would those have been documented?" Both of SoCalGas' witnesses answered, "I don't know."[18]
- SED clarified with SoCalGas' Underground Storage Data Manager under oath,

"Q: How would one know if data was missing from a well file?

A: We're speaking of hard copy records?

Q: Prior to October 23, 2015?

A: I don't know."[19]

B. Electronic Databases in Use During the Incident

According to Mr. Neville, to the extent this proceeding is focused on the SS-25 incident, this testimony describes the relevant electronic databases that were in full use as of October 23, 2015.[20] SoCalGas utilized PI Historian (PI) for collecting and maintaining operational data for the entire Aliso Canyon facility, including for the individual storage wells. It served as a single source for personnel to access operating data at the facility, including on/off times of storage wells, gathering line flowing pressures, weekly pressure readings on storage wells, daily reservoir pressures, gas inventory, expected flow by well,

[16] EUO. Tr. Razavi and Kitson, September 25, 2018, p. 73, line 15 to p. 74, line 19.

[17] EUO Tr. Razavi and Kitson, September 25, 2018, p. 57, lines 10-15.

[18] EUO Tr. Razavi and Kitson, September 25, 2018, p. 57, lines 16-25.

[19] EUO Tr. Razavi and Kitson, September 25, 2018, p. 58, lines 3-7.

[20] Neville Testimony, p. 4, lines 10-12.

choke type and size. PI provided users the opportunity to track or trend operating data over time.[21]

Also during my February 6, 2020 visit to SoCalGas, I was briefed on the various electronic databases. After hearing descriptions and viewing data with SoCalGas personnel at the time, and after viewing records provided in response to data requests, I came to the conclusion that the earliest data entries in these databases are from 2006. Other databases do not go back that far. Real-time data in the PI Historian, that Mr. Neville's testimony discusses, would only have been recorded beginning sometime after 2015 because there were no instruments transmitting real-time data at Aliso prior to that time.

For most operational purposes, this more recent data set may suffice. However, they do not adequately record the history of operation and maintenance of a well that was put into gas storage service in the 1970's. Apparently, there are no hard copy records of this information so one cannot recover historical information about the performance of wells unless it happens to be in the well file.[22]

C. SED's Review of Records

Mr. Neville asserts that it is his understanding that SED's testimony is not predicated on a complete review of SoCalGas' electronic databases or hard copy well files for SS-25.[23] Mr. Neville also repeats SoCalGas' witness, Mr. Healy, Chapter IX, saying "it appears that these and other records were provided by SED to its witness in a manner [footnote omitted] that does not reflect the organization and accessibility of the electronic or hard copy records maintained at SoCalGas."[24] The files that SED provided to me were the exact files provided to SED by SoCalGas.[25] Over time, I have

[21] Neville Testimony, p. 4, lines 10-18.

[22] Such information would only be in a well file if it was recorded in conjunction with an investigation or maintenance related to a problem with the well, such as a failed valve of casing leak.

[23] Neville Testimony, p. 5, lines 13-15.

[24] Neville Testimony, p. 5, lines 18-21.

[25] Downloaded from the CPUC main frame computer database where the files from SoCalGas were

(continued on next page)

accumulated into one folder, several different SS-25 well files that SoCalGas provided in response to data requests. These various versions contain some records that are the same, but the files are not alike.[26] Thus, in addition to being disorganized and containing a mix of records from 3 wells, SS-25, SS-25A and SS-25B, the initial SS-25 file I reviewed was also incomplete – estimated to be short by about 13,490 pages, although that number probably includes many duplicates. A quick look at the images of the Aliso Canyon Well cabinet, drawers and files provided by Mr. Neville[27] suggests there are no well files in the file cabinet that contain 14,000 pages, including the SS-25 file.

1. SoCalGas Complicated my Review of Documents by Providing Misleading Responses to SED Data Requests

SoCalGas stated in some data responses to SED that its well files contained certain types of records, which it did not disclose in other data responses regarding the general contents of well files.

In its first and several other data responses to SED related to the Aliso incident, SoCalGas represented to SED that, "The hard copy well file consists of the following: (1) histories, (2) logs, (3) surveys, and (4) invoices."[28]

However, in other data responses to SED, SoCalGas disclosed that its well files included types of records that were not disclosed in the statement shown immediately above. Examples of such SoCalGas' data responses included.

uploaded from media sent to SED.

[26] SS-25 Well File Records provided by SoCalGas: AC_CPUC_0000001-1587 initial file (1,587 pgs); AC_CPUC_0206158-0208846 (2,688 pgs) AC_CPUC_SED_DR_27_0004206-4430 (224 pgs); AC_CPUC_SED_DR_30_0000476-1176 (700 pgs); AC_CPUC_0001633-0006635 (5,002 pgs); AC_CPUC_0002779-3045 (266 pgs); AC_CPUC_0006636-11937(5,301 pgs) (pp.6636 to 6720 missing); AC_CPUC_0011938-12007 (69 pgs).

[27] Neville Testimony, p. 6, Figure 2—Aliso Canyon Well File Drawer (picture). Also see, Neville Testimony, p. 7, Figure 3, Aliso Canyon Well File Drawer.

[28] SoCalGas Supplemental Response to SED Data Request 1, Question 4, March 11, 2019; See also SoCalGas Response to SED Data Request 32, Questions 1, 2 and 3, November 7, 2018; See also SoCalGas Response to SED Data Request 30, Question 13, November 30, 2018.

- "SoCalGas previously provided the well files for SS-25, SS-25A, and SS-25B on February 5, 2016 and June 3, 2016. These well files include daily operations summaries for SS-25, SS-25A, and SS-25B."[29]

- "In general, SoCalGas documents well work electronically. Documentation of work performed on a well is also retained in well files, as appropriate."[30]

- "SoCalGas documents valve maintenance and inspection activities in Maximo and well work activities in WellView. Documentation of work performed on a well is also retained in well files, as appropriate."[31]

- "The documentation stored for work done at our storage fields is stored in digital format. Documentation of work performed on a well is also retained in well files, as appropriate."[32]

- "On October 23, 2015, SoCalGas' working definition of the 'well file' included records relating to well design, historical testing, workover, and other information pertinent to the operation of an underground storage well."[33]

- "SoCalGas' practice is to include the following types of documents in the "well history file": DOGGR Form OG-103 (Well History Report), DOGGR Form OG-100 (Well Summary), Notices of Intent (NOI), Permits to Drill/Rework, and Workover Programs. Operators are required to submit OG-103 and OG-100 to DOGGR within 60 days after the drilling completion, suspension, or abandonment of a well."[34]

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[29] SoCalGas Response to SED Data Request 10, Question 3, November 7, 2016.

[30] SoCalGas Response to SED Data Request 17, Question 34, April 27, 2018. (In response to SED Question: "How does SoCalGas document work at Aliso in general?").

[31] SoCalGas Response to SED Data Request 17, Question 35, April 27, 2018. (In response to SED Question: "Where does SoCalGas keep documentation about work done at Aliso Canyon?").

[32] SoCalGas Response to SED Data Request 17, Question 35, April 27, 2018. (In response to SED Question: "In what form does SoCalGas keep documentation about work done at Aliso Canyon?").

[33] SoCalGas Response to SED Data Request 17, Question 15, May 11, 2018. (In response to SED Question: Please provide SoCalGas's working definition of the term 'well file' used on October 23, 2015.").

[34] SoCalGas Response to SED Data Request 27, Question 38, October 5, 2018. (In response to SED Question: Please identify all records that must be kept in SoCalGas's job history and well history files as of October 23, 2015.).

- As of October 23, 2015, SoCalGas' well file had four components – (1) well history file, (2) log file, (3) survey file, and (4) invoice file. There was no "job history file." However, the "well history file" included DOGGR Form OG-103 (History of Oil and Gas) which details the rig work performed on a well during drilling, abandonment and workover operations."[35]

- "The testimony refers to 229 aging storage fields and some can exceed 13,000 feet in depth. The three storage field wells that exceed 13,000 feet in depth are the WEZU 13A, WEZU 23, and WEZU 25C wells at the Honor Rancho storage field. In November 2014, this information was contained in the well file."[36]

SoCalGas has also referred me to the Boots and Coots Daily Reports in many data responses for information about well kills that is in fact absent from those Daily Reports.

III. BETTER RECORDS MAY HAVE IMPROVED THE SS-25 WELL CONTROL EFFORTS

In response to my Opening Testimony statement that, "the failure and inability to immediately kill Well SS-25 was the most visible and alarming result of SoCalGas' inadequate record keeping, Mr. Neville States,

> SED's position is unsupported and belied by the well file for SS-25 and the statement of Boots & Coots, the third party who executed all but the first of the well control efforts. In response to questioning by SED, Boots & Coots stated that it had all the records that it required in order to plan and execute its well control efforts [Footnote omitted].[37]

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[35] SoCalGas Response to SED Data Request 27, Question 1, October 5, 2018. (In response to SED Question: Please provide SoCalGas's definition of job history and well history files as of October 23, 2015.).

[36] SoCalGas Response to SED Data Request 24, Question 4, September 14, 2018. (In response to SED Question: In A.14-11-006, Exh. SCG_06, p. 77 of 156 states, "Safety and/or integrity conditions that are presently unknown may exist within the high pressure (up to 3,600 psig) above ground pipe laterals and below ground facilities that comprise of 229 aging gas storage field wells that can exceed 13,000 feet in depth." 1. Please list the '229 aging storage field wells that can exceed 13,000 feet in depth', which were noted in that statement. 2. Please provide the document that was available in November 2014, the date shown on Exh. SCG-06 that shows these '229 aging storage field wells that can exceed 13,000 feet in depth.").

[37] Neville Testimony, p.9, lines 15-19.

I acknowledge that Boots & Coots personnel believed they had all of the records they required in order to plan and execute its well control efforts. But then, each of their well kill attempts failed. The question is whether the information Boots & Coots was provided was actually accurate and complete. Certainly, Blade was of the opinion that SoCalGas provided an Inflow Performance Relationship (IPR) flowing pressure[38] that was almost a 1000 psig too low, which could have led to faulty calculations as described by Blade.[39]

Although Mr. Neville states that the records required to kill SS-25 were in the well file at the time of the kill attempts, SoCalGas personnel were actually searching for data during the kill attempts.[40] Had the well files contained complete and accurate information, this information may have led to a successful well kill attempt. (For example, see paragraph immediately above.)

IV. SED'S CONCLUSIONS ARE NOT SPECULATIVE AND ARE SUPPORTED BY EVIDENCE

A. Well file Records Appear to be Missing

Neville claims,

> Although SED makes the blanket assertion that there were missing or lost records, [footnote omitted] SED does not provide any examples of what record(s) it believes may have been lost. SS-25 was originally constructed/drilled in 1954 and then modified (re-worked) in 1973, 1976, and 1979. The records associated with this work are in the well history file.[41]

After reviewing many well files, I stand by my comments that the well file for SS-25 appears to be missing, for example, Inter-Office memos. In other well files, an odd result on a survey or on field data would result in one or more SoCalGas Inter-Office

[38] Inflow Performance Relationship (IPR) is defined as the well flowing bottom-hole pressure (Pwf) as a function of production rate. It describes the flow in the reservoir.

[39] Blade Main Report, p. 131.

[40] AC_CPUC_SED Kitson_0002207.SS25.WellHead1950s.p.1679.

[41] Neville Testimony, p. 10, lines 18-21.

memos, or even short white papers, which are included in the well file. For example, a temperature survey that showed a shoe leak would garner some discussion about the result, if it should be investigated, repaired or if the value of the lost gas was less than the cost of repair.[42] There may be one Inter-office memo in the entire SS-25 well file. Given the number of anomalous temperature records, this seems extraordinarily unusual for SoCalGas.

Regarding ground water records, Blade sets out a good discussion of this issue and my testimony relies on Blade's RCA.[43] I also discussed this issue in Chapter 1, Section IV.

B. Leak Records in SS-25 Well Files

Mr. Neville's testimony claims, "SED states that data in the SS-25 well file reveals an ongoing detection of leaks at the bottom of the well. [footnote omitted]."[44] Mr. Neville then claims that SED's position is a "misinterpretation of the well file."[45] I addressed my position on the indications in well file records of well leaks in SS-25 in my Opening Testimony, my Reply Testimony to the OSC, and in Chapter 2 of my Sur-Reply testimony. Regarding my Opening Testimony, noting casing erosion measurements, SoCalGas subsequently explained that at some point erosion data was moved from well files to a separate data base and provided records. The January 21, 2016 Multifinger Imaging Caliper (24 MAC) log of the inside of SS-25 production casing showed up to 39% internal wall loss, suggesting more aggressive monitoring of inside erosion and corrosion should have occurred, because internal wall loss plus external wall loss from corrosion will lead to casing integrity failure, i.e. leaks. My opening testimony did not

[42] Footnote purposely left blank.

[43] Blade Main Report P. 87 Section 2.7 Groundwater.

[44] Neville Testimony, p. 12, lines 26-27.

[45] Neville Testimony, p. 12, lines 26-27.

include a violation related to erosion data. However, this makes the point that not all data is kept in the well file.[46]

C. SoCalGas Monitoring of Wellhead Pressures was Inadequate

Mr. Neville's Testimony characterizes SED's position as,

> SED makes the assertion that SoCalGas' recordkeeping practices associated with well SS-25 were imprudent and unreasonable because it failed to continuously record the wellhead pressure for SS-25 (Violation 330). [Footnote omitted] SED contends that because SoCalGas was not monitoring wellhead pressure continuously, or even daily, it did not have the bottomhole pressure, which was a key piece of data for the well kill attempts. [Footnote omitted.][47]

Mr. Neville then alleges this is incorrect.[48]

I addressed the issue of continuous pressure monitoring in Chapter I, Section VIII of my Sur-Reply testimony. Violation 330, in my Opening Testimony, is for failure to record continuous well head pressures on SS-25. Continuous pressure readings are typically recorded for a period of time so that an operator can see a record over time of how the pressure changes. The most recent documented well head pressure record for SS-25 prior to October 23, 2015 was on September 25, 2015, 27 days earlier.[49] While there may have been visual readings of pressure instruments between September 25 and October 23, 2015, no one wrote down those readings, so there is no way to confirm what the pressures in the SS-25 tubing, production casing or surface casings were during the week prior to the SS-25 well failure. It is possible that the pressures were stable. It is equally possible that there might have been an indication in the change in pressure at some point prior to the catastrophic casing failure that might have given someone at SoCalGas reason to take a look at the well before the failure.

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[46] For further discussion on this point, refer to Section II.D.

[47] Neville Testimony, p. 13, line 24 to p. 14, line 3.

[48] Neville Testimony, p. 14, line 3.

[49] AC_CPUC_0011618.well pressures.

Mr. Neville fails to justify the approach to monitoring wellhead pressure as a policy for safe operation of its Underground Storage (UGS) wells. Violation 330 should stand.