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June 29, 2018

Edward Randolph
Director, Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102-3298

Dear Mr. Randolph,

Thank you for your June 18th inquiry regarding the status of our Lines 3000 East and 235 West projects. As described below, SoCalGas' activities with respect to these pipelines reflect SoCalGas' unwavering commitment to the safety and reliability of our system. With safety as our paramount objective and the foundation of everything we do, SoCalGas develops, coordinates, and executes pipeline integrity projects as expeditiously and efficiently as possible, while safeguarding our employees and contractors. This safety-first focus guides all projects at SoCalGas, including the projects to evaluate the integrity of Lines 3000 East and 235 West and our actions and investments to maintain the safety and reliability of these pipelines going forward.

To understand why these two portions of transmission pipelines have been out of service for integrity assessment and remediation work that will extend the useful lives of these pipelines for the benefit of our customers, it is important to consider these activities within the context of how prudent pipeline operators assess, monitor and manage the ongoing integrity of transmission pipelines consistent with federal regulations and industry guidelines. Therefore, in the first section below, I provide an overview of our integrity management program, which forms the foundation for all our integrity management and enhancement activities. Then, I will describe the specific timeline of activities undertaken to assess the integrity of Lines 3000 East and 235 West and our activities to enhance the integrity of those pipelines.¹ I hope the information below addresses any concerns the Commission may have regarding the prudence and pace of our activities.²

¹ Energy Division's letter asked how Lines 3000 East and 235 West "have been accounted for in both revenue requirement and rate base during this period." The short answer is both lines remain in rate base.

² Any general comparisons to other operator timelines for addressing pipeline outages is not an appropriate comparison, as each pipeline issue is unique and specific to that pipeline.

SoCalGas Prudently Manages the Integrity of the Transmission Pipeline System Through Implementation of a Comprehensive Transmission Integrity Management Program

As noted above, it is important to consider our activities with respect to Lines 3000 East and 235 West within the context of how SoCalGas assesses, monitors and manages the ongoing integrity of its transmission pipelines consistent with federal regulations and industry guidelines. SoCalGas honors our commitment to provide safe and reliable service to customers under section 451 of the Public Utilities Code through implementation of continuous monitoring and maintenance activities and programs. For transmission pipelines, federal regulations, codified in 49 CFR Part 192, Subpart O, establish Transmission Integrity Management Program (TIMP) requirements. TIMP is an ongoing programmatic effort designed to sustain a safe and reliable natural gas supply and delivery system by maintaining the gas system integrity through safe operating practices. The objectives of TIMP are accomplished through continual monitoring and periodic assessments of transmission pipelines.

Historically, pipeline integrity was primarily monitored through above-ground surveys to detect leaks, indications of third party construction activity near the pipeline, and monitoring of cathodic protection read points. These assessment methods collectively enabled pipeline operators to evaluate the pipeline in a manner very similar to a physical exam a person may obtain from a family physician.

Within the last 15 years, there have been dramatic engineering and technological advances in the pipeline industry, specifically the development of in-line-inspection technology (ILI), which now allows pipeline operators to assess the integrity of pipelines from the inside, changing the way underground pipeline health can be assessed. This can be somewhat compared to the difference between a person going to get a physical exam from a family physician to obtaining a full body Magnetic Resonance Imaging (MRI) scan. The richness and volume of information obtained from in-line inspections requires an existing pipeline to be retrofitted to accommodate the in-line inspection tool, careful planning and deployment of the advanced in-line tool technology, people trained to interpret the results, time to confirm results are analyzed adequately, and usually requires further assessments or actions, since like an MRI, even the most advanced in-line inspection technology has limitations. Recognizing the technology has limitations, the information provided is further validated so that a pipeline operator can make informed decisions to ensure safety and prolong operation of the pipeline.

Once data are gathered by ILI technology, and carefully reviewed and interpreted by trained experts, a report is prepared and submitted to the pipeline operator. The pipeline operator must then review the report and prepare a “Validation Plan” to validate the accuracy of the information (reported values) obtained by the ILI technology.³ The Validation Plan identifies sites along the pipeline to excavate, exposing portions of the pipeline to enable direct evaluation of the pipeline conditions identified by the ILI tool(s) to determine the characterization of the reported anomalies using nondestructive examination methods (*e.g.*, laser profilometry, pit

³ API 1163 “*In-line Inspection Systems Qualification Standard.*”.

gauges, ultrasonic testing measurements).⁴ Validation Plans are required to target a wide range and size of anomalies, so those sites can serve as an accurate representative sample to evaluate the results obtained by the ILI tool, and therefore, the overall performance of the tool. For this reason, it is imperative the Validation Plan is thoughtfully prepared and executed.

Understanding the ILI tool's performance, which can include over-indicating, under-indicating or mischaracterizing anomalies, is critical to understanding how the rest of the anomalies on the pipeline should be evaluated. This process, once completed, is used to determine if additional remediation is required to achieve an appropriate margin of safety and reassessment interval. This process is depicted in the ILI workflow map provided as Appendix A.

Because meticulous completion of the validation process takes time, the Federal Code identifies conditions that require immediate attention prior to the completion of the validation process. These conditions are referred to as "immediate" or "safety related" conditions.⁵ Immediate and safety-related conditions are deemed severe enough to require a temporary reduction in operating pressure or shutdown of the pipeline until such time that the condition can be addressed. Reducing the pressure of a pipeline is a significant factor in mitigating the risk of a catastrophic pipeline failure.

When outages or pressure reductions occur, SoCalGas works expeditiously to safely bring lines back into service or return pipelines to historical operating pressures. Our crews work in parallel on multiple different sections of a line(s) and additional resources are added to expedite this process, when it can be accomplished in a safe and efficient manner. While completion timelines are prepared based upon our experience, sound construction practices and the safety of both our employees and contractors, they are often influenced by factors outside SoCalGas' control (such as permitting delays, construction delays, or to address unanticipated conditions encountered during excavation and repair operations).

Delays due to lengthy permitting timelines are especially challenging to mitigate. SoCalGas' transmission system spans numerous city, county, state and federal jurisdictions, and each responsible agency has different permitting requirements. Permit requirements range from state and federal limitations on potential impacts to protected species and waterways to conditions imposed by local jurisdictions to mitigate dust during construction.

⁴ In cases where anomalies of complex corrosion are present, a prudent pipeline operator conducts laser profilometry to maximize the effectiveness of the excavations. The importance of this process and accounting for tool tolerance has been highlighted by the National Safety Transportation Board and is outlined in API 1163 *"In-line Inspection Systems Qualification Standard."*

⁵ The classification of "immediate" versus "safety-related" is based on the location of the identified pipeline condition. Immediate condition is a term specific to those located in high consequence areas, whereas safety-related conditions have no dependency to location.

When SoCalGas Identifies Conditions that May Impact the Integrity of a Pipeline, SoCalGas Acts Prudently and Expeditiously to Evaluate and Remediate Those Conditions

As described above, SoCalGas implements a comprehensive program to continually monitor and evaluate the integrity of the transmission pipelines in its natural gas pipeline transmission system. Through that process, SoCalGas identifies conditions for further analysis and potential action to maintain the ongoing integrity of pipelines. This process of evaluating the integrity of pipelines and the tools to perform the evaluations have improved greatly over the years and, as a result, pipeline operators have access to greater and greater volumes of data regarding pipeline conditions that require further analysis and potential action. SoCalGas acts prudently and expeditiously to complete this process, however this process takes time. It would be imprudent to hasten the process because properly analyzing this data informs our integrity management decisions and the remediation SoCalGas ultimately needs to perform on the pipelines to ensure their continued safe operation.

The Line 3000 East Project is an Expansive and Complex Pipeline Integrity Project that Includes 246 Individual Job Sites Across 125 Miles of Challenging Terrain

Line 3000 East was installed in 1957 and extends approximately 125 miles from South Needles to the Newberry Springs compressor station, approximately 20 miles east of Barstow.

SoCalGas first inspected Line 3000 East using Axial Magnetic Flux Leakage (AMFL) ILI technology in 2010. In this first inspection using advanced technology, SoCalGas identified several instances of external corrosion and determined several sections of the pipeline should be replaced to enhance the integrity of the pipeline. In total, SoCalGas replaced approximately four miles of pipe to address the identified conditions and the pipeline was removed from service for about one year while SoCalGas completed this remediation work.

SoCalGas performed a second assessment of Line 3000 East using AMFL ILI technology in 2016. This assessment was completed in two phases. Phase 1 spanned approximately eight miles from the Colorado River to the South Needles Station and Phase 2 spanned approximately 117 miles from South Needles Station to the Newberry Springs Compressor Station.

Given the history of the pipeline, including the conditions identified and addressed in 2010, in addition to performing the inspection with AMFL technology, as part of Phase 2, SoCalGas completed an additional assessment using ultrasonic testing (UT) inspection technology for the approximately 62-mile portion of Line 3000 East that runs from South Needles to Kelbaker Road. UT technology enables the operator to obtain information regarding the sizing and characteristics of complex external corrosion anomalies on a pipeline. SoCalGas completed this UT assessment on portions of Line 3000 East to obtain even more detailed information regarding complex external corrosion on the pipeline than can be provided by AMFL technology alone.

As described above, each time an operator performs an assessment using advanced technology and identifies potential anomalies, the pipeline operator is required to prepare a Validation Plan to excavate a representative sampling of identified anomalies to validate the performance of the technology and investigate those conditions further. As a result of the 2016 assessments,

SoCalGas immediately focused on remediating 14 safety-related conditions identified through the ILI assessments. During the excavation and remediation of these safety-related conditions, SoCalGas also completed laser profilometry to expedite the pending validation process. Thus, SoCalGas completed many complex pipeline integrity activities on Line 3000 East in parallel to expedite the process.

Despite SoCalGas' diligent efforts to expedite the assessment and remediation process, execution of an enormous and complex pipeline integrity project takes time. **Upon completion of the full project scope, SoCalGas will have replaced more than 10 miles of pipe, completed coating remediation, and installed Cathodic Protection insulators at more than 246 job sites that span 125 miles, traversing challenging terrain and overcoming significant environmental challenges.** Examples of some of the typical construction challenges include: (1) dirt roads that must be reinforced to allow for mobility of construction equipment before construction can be completed; (2) narrow one lane rights-of-way requiring traffic control, which delays travel to and from the work sites; and (3) speed limits of 10 mph to address road conditions and environmental concerns and tortoise (state and federally-listed endangered species) safety further extends the ingress and egress time for the construction crews. These logistical challenges effectually reduce the available safe work hours each day.

Additionally, the significant elevation changes ranging from 1,500 feet to 3,000 feet of this pipeline increased the complexity of mobilizing large heavy equipment and material and the desert location of the pipeline presents severe weather conditions in the summer and winter where rain and/or wind can affect remediation or impede efforts. SoCalGas minimizes the impact of these challenges through careful planning (for example, SoCalGas initiated construction at job sites that did not require permits from the California Department of Fish and Wildlife (DFW), while working collaborative with the agency to expedite permitting for the numerous job sites that did require DFW permits). Also, thoughtful contingency planning to address adverse conditions are instituted: for example, having tents and wind blocks available to combat the strong winds and cool zones and air conditioned "emergency shelters" during periods of high summer temperatures, along with on-site paramedic personnel to address heat stroke, insect and reptile bites/stings and extreme fatigue.

SoCalGas Completed Phase 1, the Eight-Mile Portion of Line 3000 East that Runs from the Colorado River to South Needles, in Six Months.

For Phase 1, the AMFL assessment was conducted in June 2016. Through the ILI assessment of an eight-mile portion of Line 3000 East in Phase 1, SoCalGas' ILI vendor collected nearly 20GB of data that had to be analyzed. Following careful expert evaluation of that data, SoCalGas received the final ILI report from the vendor in August 2016. The vendor identified 1,382 potential anomalies that required further validation; including one safety-related condition. SoCalGas reduced the pressure of the pipeline that same month, in August 2016, and prepared a validation plan, completed the validation process for the 1,382 identified anomalies, developed a remediation plan and fully executed the remediation plan from August to December 2016.

Completion of Phase 2, the 117-Mile Portion of Line 3000 East that Runs from South Needles Station to the Newberry Springs Compressor Station, is Anticipated in September 2018 and is Driven by the Enormity and Complexity of the Project Scope and Conditions Beyond SoCalGas' Control.

For Phase 2, the AMFL assessment was conducted in June 2016 and the UT assessment was conducted in July 2016. Through the ILI assessment of a 117-mile portion of Line 3000 East and the UT assessment of a 62-mile portion of Line 3000 East, SoCalGas' ILI vendor collected nearly 300GB of data that had to be analyzed. Following initial expert evaluation of the data, a preliminary ILI Report identifying 13 safety-related conditions was received in September 2016. SoCalGas took immediate action and reduced pressure on this portion of Line 3000 East in September 2016 while the vendor continued to carefully evaluate the extensive data collected to prepare a final ILI report. From September 2016 to January 2017, SoCalGas prepared and began working on a validation plan based on the preliminary report, which was ultimately confirmed with the final report. The final report identified 22,291 potential anomalies for further validation was received from the vendor in January 2017. As discussed above, SoCalGas promptly began executing remediation activities for the 13 safety-related conditions in November 2016 and has continuously implemented remediation and validation activities since that time.

SoCalGas anticipates fully completing all remediation plan activities in September 2018. This duration is driven by the enormity and complexity of the project scope, and the challenging conditions, some of which are described above, that are beyond SoCalGas' control.

SoCalGas is Working Expeditiously to Complete Integrity Assessment and Remediation Activities on Phase 1 of Line 235 West

The portions of Line 235 being addressed in Phase 1 of the Line 235 West project were installed in 1957 and extend approximately 46 miles from the Newberry Compressor Station to mainline valve number 17 in Victorville.

In 2014, SoCalGas completed an ILI assessment of Phase 1 of Line 235 West, which resulted in the identification of 51,140 potential anomalies, including 11 safety-related conditions. To remediate the identified safety-related conditions, SoCalGas replaced approximately 0.8 miles of pipe across 61 individual job sites, primarily to address external corrosion. The pipeline was removed from service for about seven months while this remediation work was performed.

On October 1, 2017 in a remote/unpopulated area near Newberry Springs, Line 235 West experienced a leakage failure that led to rupture and ignition. Since the rupture, SoCalGas has worked expeditiously and diligently to determine the underlying cause of the rupture and evaluate the serviceability of the entire pipeline (not only the section where the rupture occurred). SoCalGas promptly retained outside experts, DNV-GL, to perform a Metallurgical Analysis and Root Cause Analysis (RCA) of the incident. Within five days, on October 6, DNV-GL visited the site and completed an initial evidence collection. DNV-GL completed an additional evidence collection November 17. Two weeks later, on November 30, DNV-GL completed the Metallurgical Report, which determined the underlying cause of the failure to be external corrosion.

DNV-GL conducted an extensive and diligent investigation, including review of historical records and interviews, over the course of several months. The RCA and recommendations for next steps were completed by DNV-GL on April 27, 2018. The recommendations include suggested enhancements in the areas of in-line inspection data analysis and cathodic protection data integration practices which will take time to implement. Implementation of recommended in-line inspection data analysis improvements will assist SoCalGas in developing better-informed maintenance and repair plans. The recommended cathodic protection practice enhancements will promote better corrosion evaluation and prevention into the future.

In parallel to the work being done by DNV-GL, on February 24, 2018 SoCalGas retained C-FER Technologies to complete a quantitative reliability analysis of Phase 1 of Line 235 West delivered in May 2018. SoCalGas commissioned this analysis to support development of a comprehensive Phase 1 of Line 235 West remediation plan based on known information and the risks identified.

SoCalGas prepared an initial remediation plan based on the Metallurgical Report, RCA analysis and recommendations, and the quantitative reliability analysis. This initial remediation plan requires the permitting of six job sites to replace approximately 3.4 miles of pipe over the next nine months, under a best-case scenario. Once SoCalGas completes the initial remediation plan, SoCalGas expects to return Phase 1 of Line 235 West to service at a reduced operating pressure until all RCA recommendations can be fully implemented. SoCalGas will continue to look for opportunities to expedite this process and safely compress the schedule.

While SoCalGas is taking steps to address the salient recommendations in the areas of in-line inspection data analysis and cathodic protection data integration practices, that is not impacting the progress on either Line 3000 East or Phase 1 of Line 235 West. Implementation of these recommendations will require SoCalGas to continue to partner with DNV-GL to update applicable ILI and Cathodic Protection gas standards to ensure these improvements are applied programmatically, in addition to developing a cathodic protection evaluation specific to Phase 1 of Line 235 West.

As described above, SoCalGas has worked expeditiously to assess the integrity of two pipelines that have been in operation for over 60 years and have identified numerous complex external corrosion conditions across more than 200 miles of challenging terrain that must be carefully evaluated and remediated before those pipelines can be safely returned to full service. The replacement and repair activities underway are expected to extend the useful life of these pipelines for the benefit of customers and enable SoCalGas to continue to fulfill its obligation to provide safe and reliable service to customers at just and reasonable rates.

I hope the information provided in this letter addresses any concerns the Commission may have had regarding the pace and prudence of our activities and hope the Commission will continue to support our efforts to place safety and prudent operation paramount to speed. In addition, SoCalGas will continue to communicate our plans and efforts with respect to Line 3000 East and Line 235 West to the CPUC's Safety Enforcement Division, as well as during our weekly updates to the CPUC's Energy Division.

Should you require any further information please let me know.

Sincerely,

A handwritten signature in blue ink that reads "Rodger R. Schwecke". The signature is written in a cursive style with a large initial 'R'.

Rodger R. Schwecke
Senior Vice President
Gas Transmission, Storage & Engineering

Enclosure: Appendix A

cc: Alice Stebbins, Executive Director - CPUC
Arocles Aguilar, General Counsel - CPUC
Mitchell Shapson, Legal Division - CPUC
Jean Spencer, Energy Division - CPUC
Brian Prusnek, Sempra Energy
Bret Lane, President & COO - Southern California Gas Company
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